No. 21-

IN THE

Supreme Court of the United States

CUSTOMPLAY, LLC,

Petitioner,

v.

AMAZON.COM, INC., AND INTERVENOR BELOW, THE UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

SUPPLEMENTAL APPENDIX

JOHN C. CAREY
Counsel of Record
CAREY RODRIGUEZ MILIAN, LLP
1395 Brickell Avenue, Suite 700
Miami, FL 33131
(305) 372-7474
jcarey@careyrodriguez.com

Counsel for Petitioner

313213

COUNSEL PRESS
(800) 274-3321 • (800) 359-6859

TABLE OF APPENDICES

Page

APPENDIX A — FINAL WRITTEN DECISION OF THE UNITED STATES PATENT AND TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD, DATED MARCH 11, 2020 . . . . . 1a

APPENDIX B — JUDGMENT OF THE UNITED STATES PATENT AND TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD, DATED MARCH 5, 2020 . . . . . 60a

APPENDIX C — JUDGMENT OF THE UNITED STATES PATENT AND TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD, DATED MARCH 4, 2020 . . . . . 147a

APPENDIX A — FINAL WRITTEN DECISION OF THE UNITED STATES PATENT AND TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD, DATED MARCH 11, 2020

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

Date: March 11, 2020

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

LEE, *Administrative Patent Judge.*

Appendix A

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.

Appendix A

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.

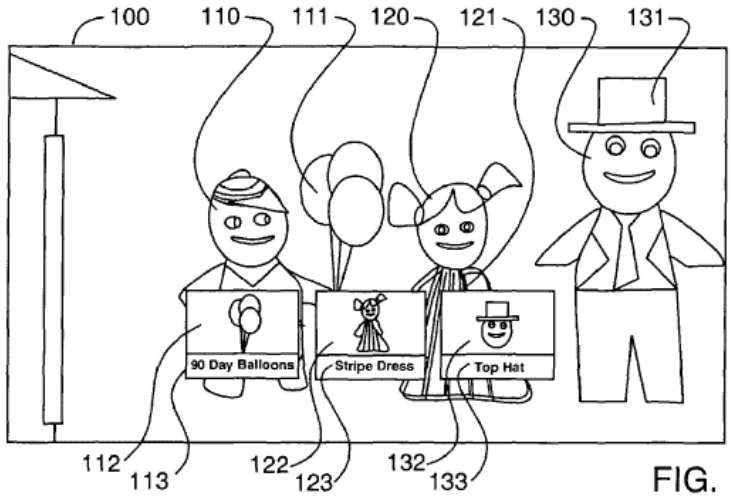


FIG. 1C

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.

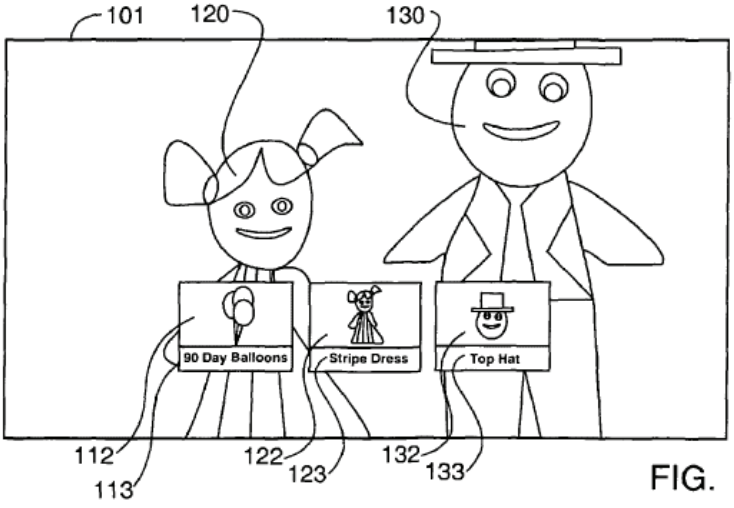


FIG. 1D

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 unpatentability[1] 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.

Appendix A

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

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").

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 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"

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.

that, in response to a user request, "accesses the video information database and identifies video 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]

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.*,

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* (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,

---

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.

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

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.

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.

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 preponderances 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 order[11] of the steps recited in claim 4. *See* PO Resp. 45–46.

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.

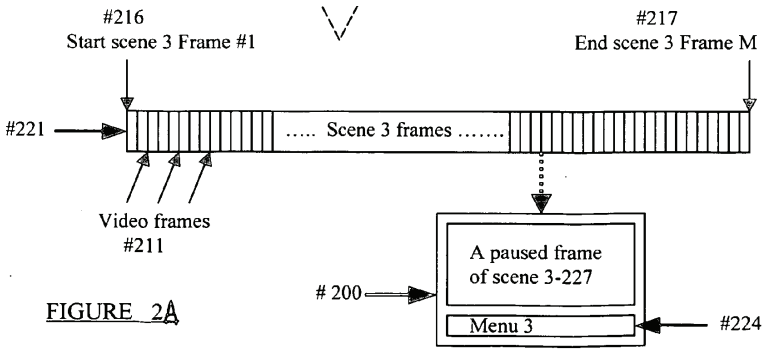


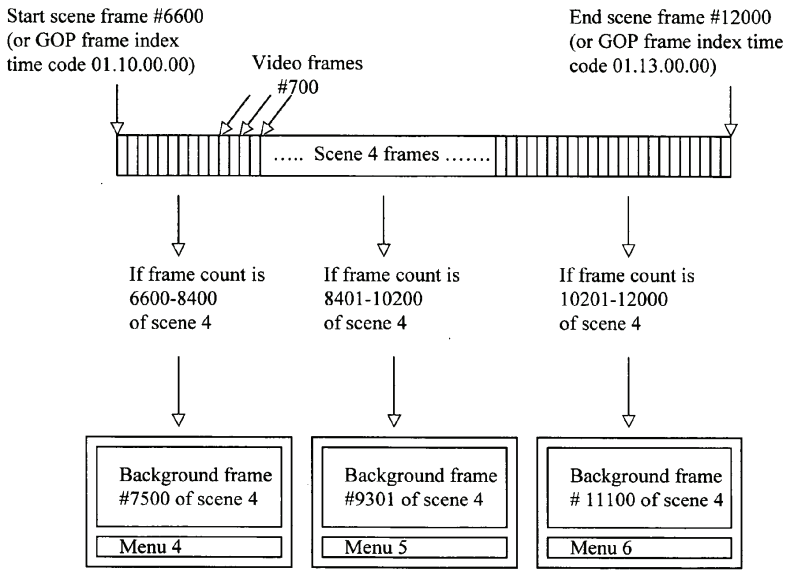
FIGURE 2A

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.*

Appendix A

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.

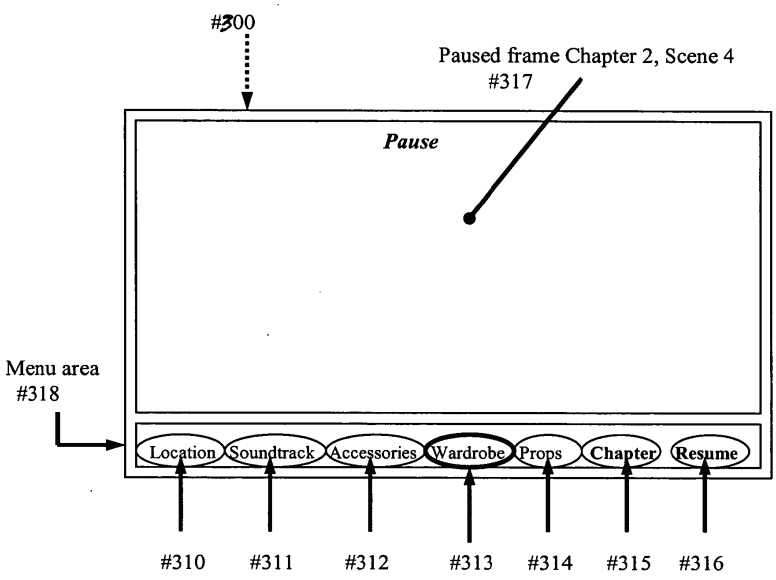


FIGURE 3

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.

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.

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. 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.

CONCLUSION[13]

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 Unpatent-able	Claims Not Shown Unpatent-able
4, 9, 12, 14, 16, 19	103(a)	McIntire, Dey		4, 9, 12, 14, 16, 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).

Appendix A

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatent-able	Claims Not Shown Unpatent-able
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 Out-come			4, 7–9, 12, 14, 16, 18, 19	

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.

APPENDIX B — JUDGMENT OF THE UNITED STATES PATENT AND TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD, DATED MARCH 5, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM, INC.,

Petitioner,

v.

CUSTOMPLAY, LLC.,

Patent Owner.

Case IPR2018-01497
Patent 9,124,950 B2

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

KENNY, *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)

Appendix B

I. INTRODUCTION

This *inter partes* review, instituted pursuant to 35 U.S.C. § 314, challenges the patentability of claims 2, 4, 6, 14, 16, and 19 ("challenged claims") of U.S. Patent No. 9,124,950 B2 (Ex. 1001, "the '950 patent" or "the challenged patent"), owned by CustomPlay, LLC ("Patent Owner"). We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons discussed below, Petitioner (Amazon.com Inc.) has shown by a preponderance of the evidence that all challenged claims are unpatentable.

A. Procedural Background

Petitioner filed a Petition for *inter partes* review of the challenged claims. Paper 1 ("Pet."). Patent Owner filed a Preliminary Response. Paper 6 ("Prelim. Resp."). Pursuant to our authorization, Petitioner filed a Reply to the Preliminary Response, and Patent Owner filed a Sur-Reply to that Reply. Papers 8 and 10. We instituted an *inter partes* review of all challenged claims on all asserted grounds. Paper 13 ("Institution Decision," "Inst. Dec."). Patent Owner filed a Corrected Patent Owner's Response (Paper 20, "PO Resp."), to which Petitioner filed a Reply (Paper 24, "Pet. Reply"), to which Patent Owner filed a Sur-Reply (Paper 27, "Sur-Reply"). Patent Owner also filed a Motion to Exclude (Paper 29), which is addressed below. An oral hearing was held on December 18, 2019. Paper 39 ("Tr.").

Appendix B

B. Related Proceedings

The parties identify the following related proceedings: *CustomPlay, LLC v. Amazon.com, Inc.*, No. 9:17-cv-80884 (S.D. Fla.); IPR2018-01496; and IPR2018-01498. Pet. 1; Paper 4, 1.

C. The Challenged Patent

The challenged patent relates to identifying, during the playing of a video, an indication that information is available for a depicted item. Ex. 1001, 2:12–16. In accordance with the claimed invention, as shown in Figure 1B (reproduced below), an indication identifies an item for which information is available:

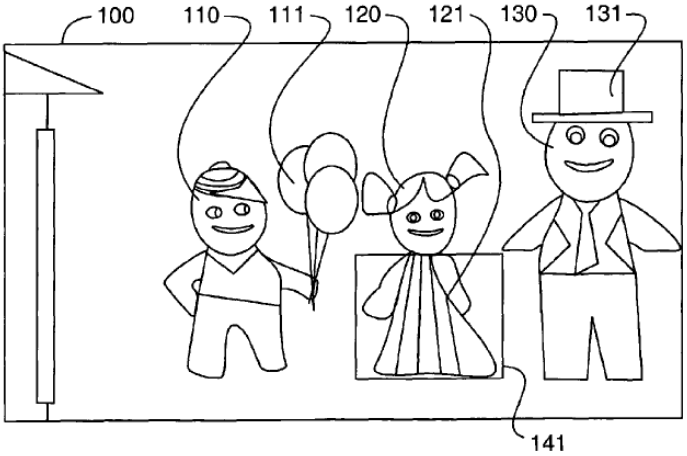


FIG. 1B

Appendix B

Figure 1B depicts an embodiment of the claimed invention where a "video frame within a motion picture" and a "display of an indication that information is available for an item being depicted." Ex. 1001, 3:7–9. In particular, outline 141 (an indication) identifies that information is available regarding dress 121 (an item). *Id.* at 7:42–46.

Further, in accordance with the claimed invention, after a user requests information about an item or items, information about that item or items can be displayed, as shown in Figure 1C, reproduced below:

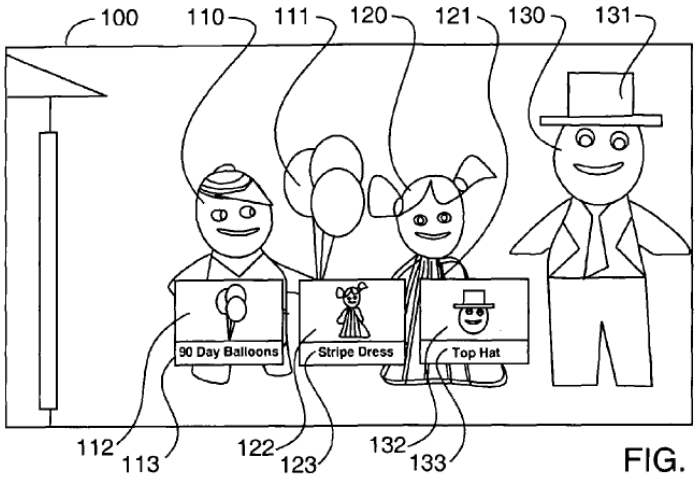


FIG. 1C

Figure 1C depicts the display of item information 112 and 113 for balloons 111, item information 122 and 123 for dress 121, and item information 132 and 133 for hat 131. Ex. 1001, 3:13–14. Information 112, 122, and 123 are images, and information 113, 123, and 133 are text. *Id.* at 10:5–10.

Appendix B

Figures 1B and 1C display the same frame 100 because a user activated the item identification routines when the target item was on the screen. Ex. 1001, 9:35–38. The challenged patent, however, recognizes that this often is not the case. *Id.* at 9:39–40. According to the patent, a user may request item information for an item that was just depicted but is no longer depicted. *Id.* at 9:40–44. To accommodate those situations, the system considers a request location and predetermined play period prior to the request location. *Id.* at 9:44–47. "For example, the request location (e.g., a frame within the video) may be adjusted to include the request location and a predetermined play period prior to the request location, for example, 10 seconds." *Id.* at 9:47–51.

Figure 1D (reproduced below) illustrates the display of item information for items that do not appear in the video frame:

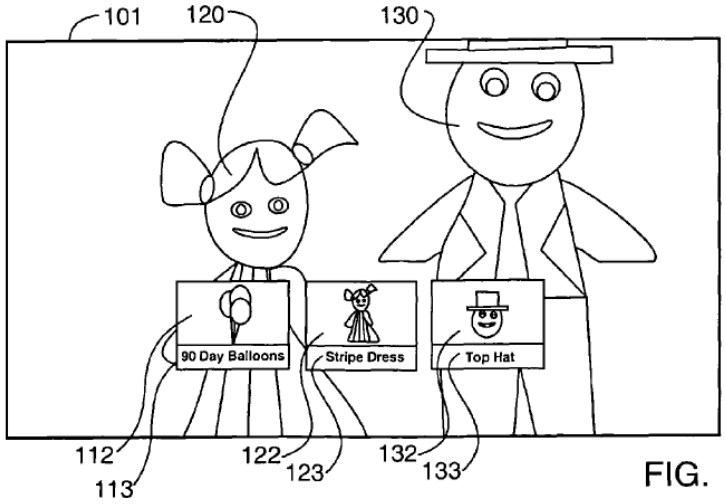


FIG. 1D

Figure 1D depicts video frame 101, which follows frame 100, which is shown in Figure 1C. Ex. 1001, 3:15–16. Frame 101 depicts girl 120 and man 130, only partially depicts hat 131, and does not depict boy 110 or balloons 111. *Id.* at 9:63–67. Frame 101, however, still displays item information 112 and 113 for balloons 111 and item information 132 and 133 for hat 131, which were displayed for frame 100. *Id.* at 10:1–10.

D. Challenged Claims

Petitioner challenges 2, 4, 6, 14, 16, and 19 of the '950 patent. Claims 2, 6, 14, 16 and 19 are independent claims. Claim 6 is illustrative and is reproduced below:

> 6. An apparatus capable of processing data and instructions executable by a processor; the apparatus, when executing the instructions, performs the steps of:
>
> retrieving, from a plurality of video frame identifiers, a video frame identifier that is responsive to a play location within a playing of a video;
>
> displaying, responsive to the video frame identifier, an initial indication that information is available that is responsive to the play location;
>
> retrieving a subsequent video frame identifier that is responsive to a subsequent play location;

displaying, responsive to the subsequent video frame identifier and contemporaneously with the displaying of the initial indication, a subsequent indication that information is available that is responsive to the subsequent play location;

receiving, following the displaying of the subsequent indication, a request responsive to the initial indication, for information; and displaying information associated with the initial indication that information is available.

E. Asserted Prior Art and Declarations

Petitioner relies on the following references:

Reference		**Publication/ Issue Date**	**Exhibit**
Rakib	U.S. Patent Application Publication No. 2009/0327894 A1	Dec. 31, 2009	1013
Rangan	U.S. Patent No. 6,154,771	Nov. 28, 2000	1014
Armstrong	U.S. Patent Application Publication No. 2007/0003223 A1	Jan. 4, 2007	1021

Livesey	U.S. Patent Application Publication No. 2008/0253739 A1	Oct. 16, 2008	1022

Reference	**Publication/ Issue Date**	**Exhibit**	
Abecassis	U.S. Patent No. 6,038,367	Mar. 14, 2000	1024

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

F. Instituted Grounds

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

Claims Challenged	**35 U.S.C. §**	**Reference(s)/Basis**
6, 19	103(a)	Rangan[1]
2, 14, 16	103(a)	Rangan, Rakib

1. For this ground, Petitioner also expressly relies on the knowledge of an ordinarily skilled artisan. Pet. 13.

4	103(a)	Rangan, Rakib, Abecassis
2, 6, 14, 16, 19	103(a)	Armstrong, Livesey
4	103(a)	Armstrong, Livesey, Abecassis
2 4, 6, 14, 16, 19	103(a)	Rakib, Livesey

Pet. 13.

G. Level of Ordinary Skill in the Art

Petitioner asserts that an ordinarily skilled artisan with respect to the challenged patent would have a bachelor's degree in Electrical Engineering, Computer Engineering, or Computer Science, and at least three years of experience in the design of digital video systems. Pet. 11 (citing Ex. 1002 ¶¶ 24–26). Patent Owner does not dispute Petitioner's formulation of the level of ordinary skill in the art. Based on the information and testimony presented in the Petition, we adopt Petitioner's formulation.

II. 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.[2] 37 C.F.R. § 42.100(b); *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. 12. Patent Owner contends the inventor acted as his own lexicographer in presenting a number of definitions in the Specification of the '950 Patent, and asserts that these definitions "should be followed and adopted by the Board." PO Resp. 6.

In our Institution Decision, we noted that Petitioner relies on implicit constructions for the terms "retrieve" and "item" for its showing of the asserted obviousness of claims 14 and 19. Inst. Dec. 11–12; *see also* Pet. 17, 26. Therefore, we construed "retrieve" and "item" as they are defined in the Specification. Specifically, we construed "retrieve" as comprising "obtain, acquire, procure, download, transfer, extract, and to come into possession by any means or methodology." Inst. Dec. 12; *see also* Ex. 1001, 15:4–8. And we construed "item" as "(i) items, products, objects, properties, acts, or information, whether or not they offer a commercial or purchase opportunity; (ii) items, products, objects, properties, acts, or information that constitute actual or potential product placements, whether prior to or after production of the video; (iii) product placements; and (iv) items, products, objects, properties, acts, or information, that offer informational or entertainment opportunities." Inst. Dec. 12; *see also* Ex. 1001, 4:48–55. For our construction for "item," we included the Specification's definition of

2. The Petition in this proceeding was filed on August 1, 2018.

"product placement," which is "(i) items, products, objects, properties, acts, or information that offer a commercial or purchase opportunity; (ii) items, products, objects, properties, acts, or information that constitute actual or potential product placements, whether prior to or after production of the video; and (iii) product placements." Inst. Dec. 13; *see also* Ex. 1001, 4:55–61.

Neither party objected to our preliminary constructions of these terms. PO Resp. 6; Pet. Reply, generally. We maintain these constructions and determine that we do not need to expressly construe any other claim term. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

III. ALLEGED OBVIOUSNESS

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *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) if in evidence, objective evidence of nonobviousness, 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)).

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.

A. Alleged Obviousness Based on Rangan

Petitioner asserts that claims 6 and 19 would have been obvious over Rangan. Pet. 15–26.

1. Overview of Rangan

Rangan discloses "Video On Web Video Cassette Recorder" software ("VOW VCR") that operates within a personal computer system, a digital television, or a television enhanced by a set-top box, of a client subscriber user-viewer ("client"). Ex. 1014, 12:15–24, 57–60. This software's functionality is analogous to a video cassette recorder. *Id.* at 10:51–53, 24:46–58. The VOW VCR receives streaming digital hypervideo that contains

hyperlinks, which are displayed as embedded hotspots that can be clicked on with a mouse. *Id.* at 9:1–8, 12:18–22.

As shown in Figure 4 (reproduced below), the VOW VCR can display hypervideo with an embedded hotspot:

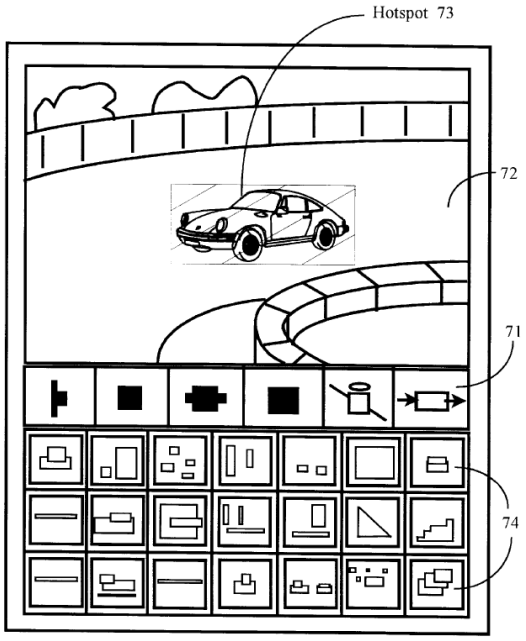


Fig. 4

Figure 4 is a screen display of a VOW VCR playing hypervideo. Ex. 1014, 18:25–26, 25:55–57. The VOW VCR displays controls 71; screen 72; hotpot 73; and thumbnail images 74, which are also termed keyframes. *Id.* at 22:60–62, 25:12–21, 25:55–26:30. A text annotation that is not shown in Figure 4 preferably appears about the object when the user does a mouse-over. *Id.* at 25:57–59. The text annotation can impart additional, supplemental

information about the scene, the objects in the scene, or the hotspot. *Id.* at 25:60–63. For example, the annotation can identify a particular person or a depicted group of persons. *Id.* "More commonly, however, the annotation is, [ ] includes, or indirectly links [to] a Universal Resource Locator (URL)." *Id.* at 25:57–65.

Rangan notes that the displayed objects and events, and their associated hyperlinks, may be transitory. Ex. 1014, 16:1–2. Rangan further discloses that the purpose of interactive video is compromised if the user must remain tensely poised on the unfolding video, ready to both make near instantaneous judgments and to physically spring like a cat when the hyperlink presents itself. *Id.* at 16:2–8.

To avoid that problem, Rangan discloses displaying about twenty-one of the most recent thumb-nail images 74, representing the twenty most recent scenes. Ex. 1014, 16:18–27, 26:29–31. Rangan further discloses displaying the same hotspots in the thumbnails as displayed on the screen. *Id.* at 10:5–9. Thus, a user can click on a hyperlink in a thumbnail image at the user's leisure. *Id.* at 16:49–52.

As illustrated in Figure 7 (reproduced below), the VOW VCR can display hypervideo with a hotspot:

Appendix B

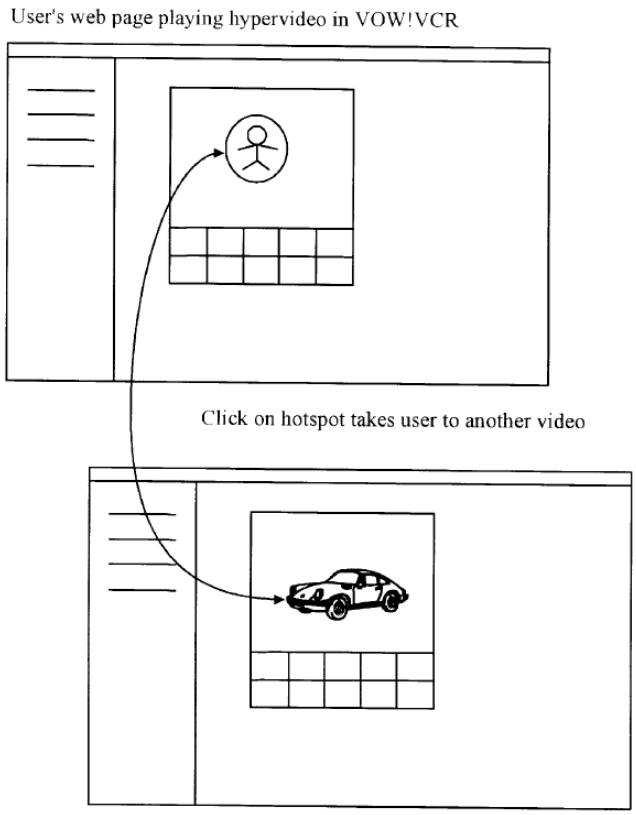


Fig. 7

Figure 7 illustrates a VOW VCR playing a hypervideo with a hotspot, where clicking on the hotspot takes the user to another video or hypervideo. Ex. 1014, 18:42–46.

Further, Rangan discloses that its video frames have frame numbers. Ex. 1014, 30:15–16 ("When recording from current playback position, the decoder provides the current video frame number."); *see id.* at 29:58–64.

2. Independent Claim 6

We start our analysis with claim 6, the broadest, challenged claim.

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

According to Petitioner, Rangan teaches the above preamble recitation by disclosing a computer or set-top box. Pet. 16; Ex. 1002 ¶ 46. Patent Owner does not dispute that Rangan teaches the above recitation. PO Resp. 11. Based on the evidence and arguments in the Petition, we find that Rangan teaches the preamble recitation of claim 6.

> *b. retrieving, from a plurality of video frame identifiers, a video frame identifier that is responsive to a play location within a playing of a video*

The parties dispute whether Rangan teaches or suggests several recitations in the above limitation. Pet. 17–19; PO Resp. 11–20. In particular, the parties dispute whether Rangan teaches or suggests (i) a video frame identifier, (ii) retrieving that video frame identifier from a plurality of video frame identifiers, and (iii) whether that video frame identifier is responsive to a play location within a playing of a video. We address each issue in turn.

Appendix B

i. a video frame identifier

According to Petitioner, Rangan's keyframe thumbnails are video frame identifiers because each keyframe thumbnail identifies a single frame, e.g., the first frame in each scene. Pet. 17; Pet. Reply 1–2; *see* Ex. 1002 ¶¶ 48–51; Ex. 1102 ¶¶ 9–13, 23. Further, Petitioner argues that Rangan's frame numbers are video frame identifiers. Pet. 17–18; Pet. Reply 1–4. Patent Owner asserts that Rangan's keyframe thumbnails are not video frame identifiers because they can have identical images and, thus, would not each identify a single frame. PO Resp. 13–14. Patent Owner also argues that Rangan's keyframe thumbnails are not video frame identifiers because they are reduced images of whole frames. Sur-Reply 3. Further, in its Sur-Reply, Patent Owner argues that Rangan's keyframe thumbnails do not have frame numbers. *Id.* at 4. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan's keyframe thumbnails and frame numbers are video frame identifiers.

First, we agree with Petitioner that Rangan's keyframe thumbnail is a video frame identifier. Rangan creates its keyframe thumbnails from the first frame in each scene. Ex. 1014, 29:8–10 ("A detected scene change is represented by a keyframe (thumbnail image), which is a reduced image of the first frame in the scene."); Ex. 1102 ¶ 9. Further, Rangan uses the keyframe thumbnails to identify from which frame to initiate playback or recording. Ex. 1102 ¶ 9; Ex. 1014, 9:15–20 ("By point-and-click reference to these historical thumbnail scene images,

the SUV [subscriber/user/ viewer] may initiate on demand the retrospective replay of past hypervideo . . ."); 30:7–27 ("a click on a keyframe (a thumbnail image) will initiate recording from start of corresponding scene"). Therefore, we credit Dr. Bovik's testimony that Rangan's thumbnails images each identify a single frame and are video frame identifiers. Ex. 1102 ¶ 9.

Second, Patent Owner argues that keyframe thumbnails are not video frame identifiers because they can have identical images. PO Resp. 13–14. Petitioner, however, has not mapped the video frame identifier to the image within the keyframe thumbnail, but rather to the keyframe thumbnail itself. Pet. 17. As discussed above, each keyframe thumbnail corresponds to the first frame in a scene and can initiate playback from that frame. Ex. 1014, 29:8–10, 30:8–14, 9:15–20. Therefore, even keyframe thumbnails with identical images would identify and initiate playback from different frames and thus identify different frames. Further, Rangan discloses another way of distinguishing keyframe thumbnails, other than merely by their images (e.g., by position in a display). For example, Rangan teaches displaying the sequential keyframe thumbnail images in separate positions. *See* Ex. 1014, Fig. 4, 74. Therefore, even if two frames had identical images, the thumbnails could be distinguished by their positions in the display, as well as the frames they identify and retrieve. *See* Ex. 1102 ¶¶ 19–21; Ex. 1101, 28:7–10, 33:3–6. Thus, Rangan's keyframe thumbnails are video frame identifiers regardless of whether two keyframe thumbnails may have identical images.

Third, Patent Owner argues that Rangan's keyframe thumbnail is not a video frame identifier because Rangan's keyframe thumbnail is a reduced image of the first frame of the scene. Sur-Reply 3. Patent Owner, however, offers no reason why the fact that Rangan's keyframe thumbnail is a reduced image of the first frame of a scene means that thumbnail cannot be a video frame identifier, nor does Patent Owner offer any expert testimony or other evidence to support that contention. *Id.* We credit Dr. Bovik's testimony to the contrary. Ex. 1002 ¶ 55.

Fourth, Patent Owner argues that Dr. Bovik could not explain why Rangan's system would be able to identify a frame from the generated thumbnail images. Sur-Reply 4. Patent Owner cites four pages of deposition testimony, but provides no explanation as to why that testimony purportedly supports this argument. *Id.* (citing Ex. 2031, 39:3–43:3). We find it does not.

Fifth, we find that Rangan teaches or suggests frame numbers for its keyframe thumbnails and those frame numbers also are video frame identifiers. As discussed above, Rangan discloses that its video frames have frame numbers. Ex. 1014, 29:58–64; 30:34–35 ("When recording from current playback position, the decoder provides the current video frame number."); Ex. 1002 ¶ 51. In the Patent Owner Response, Patent Owner does not address or dispute that Rangan's keyframe thumbnails have frame numbers or that those frame numbers are video frame identifiers. PO Resp. 11–17; *see also* Pet. 18 (arguing that Rangan's keyframe thumbnails have frame numbers and that those frame numbers are video frame identifiers).

In its Sur-Reply, however, Patent Owner raises the issue of whether Rangan's keyframe thumbnails have frame numbers. Sur-Reply 4–5. Patent Owner presents no good cause for waiting until the Sur-Reply to raise this issue, and has waived this argument as a result. Accordingly, we will not consider Patent Owner's argument that Rangan's keyframe thumbnails do not have frame numbers. Office Patent Trial Practice Guide, August 2018 Update, 83 Fed. Reg. 39989 (August 13, 2018), at 14 ("Sur-replies should only respond to arguments made in reply briefs, comment on reply declaration testimony, or point to cross-examination testimony."), 15 (A "sur-reply that raises a new issue or belatedly presents evidence may not be considered.").

Further, if were to consider that argument, we would not find it persuasive. Patent Owner cites no testimony from Dr. Reader or any passage from Rangan to support this argument. Sur-Reply 4. Instead, Patent Owner relies solely on unsupported attorney argument, which is not evidence. *Id.* Petitioner, on the other hand, provides persuasive support for its contention that Rangan's frame numbers are video frame identifiers. Pet. 17–18 (citing Ex. 1014, 14:45–63, 30:15–36; Ex. 1002 ¶ 51; Ex. 1021, Fig. 2B; Ex. 1013 ¶ 76).

In sum, we find that Rangan's keyframe thumbnails and frame numbers are video frame identifiers.

Because we find that Rangan's keyframe thumbnails and frame numbers are video frame identifiers, we need not address Petitioner's alternative argument that

something other than a keyframe thumbnail or frame number in Rangan would be a video frame identifier. Pet. 18–19. Consequently, Patent Owner's arguments specific to that alternative argument do not show Rangan fails to teach this claim limitation. PO Resp. 17–18.

ii. retrieving, from a plurality of video frame identifiers, a video frame identifier within a playing of a video

According to Petitioner, Rangan discloses the above limitation by displaying a keyframe thumbnail on its storyboard and moving that thumbnail through the storyboard in a first-in-first-out fashion. Pet. 17. Petitioner argues that Rangan uses frame numbers to retrieve the thumbnails in its storyboard. *Id.* Patent Owner argues that Petitioner has failed to establish that Rangan's system must determine and retrieve the claimed video frame identifier to display the keyframe thumbnails in the storyboard. PO Resp. 11–16. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan teaches or suggests the above limitation.

First, Rangan discloses displaying keyframe thumbnails in a storyboard and moving them through the storyboard in a first-in first-out fashion. Rangan teaches: "[k]eyframes, or thumbnail images, for all scenes appear in a storyboard below the playback window." Ex. 1014, 29:62–64. Further, Rangan states: "At any time a certain number, normally about twenty-one, of the most recent such thumb-nail images 74, representing twenty most

recent scenes will displayed." *Id.* at 26:29–32; *see id.* at Fig. 4. Rangan further discloses that, when a new scene appears, the oldest scene is discarded in a first-in, first-out fashion. *Id.* at 26:32–36; *see id.* at 17:48–54.

Second, Rangan discloses storing the keyframe thumbnails that are displayed in local cache storage in a first-in first-out manner: "a plurality of keyframes, part of the multiplicity ultimately generated and which are indicative of the received streaming digital hypervideo most recently previously displayed, are at least temporarily displayed as still images, normally in a first-in, first-out (FIFO) file of such scene images." Ex. 1014, 17:48–54. Similarly, when addressing keyframe thumbnails 74, Rangan states: "[t]he video corresponding to these twenty scenes is also buffered in FIFO fashion on local storage." *Id.* at 26:34–36.

Third, Rangan describes obtaining the keyframe thumbnails from the cache. Ex. 1014, 34:66–35:5 ("a display, obtaining . . . keyframes from the cache, displaying . . . a plurality of keyframes that are indicative of scenes of streaming digital hypervideo most recently previously displayed.").

Fourth, obtaining key frame thumbnails constitutes retrieving those keyframe thumbnails. As described in Section II, we construe retrieving as encompassing obtaining.

Fifth, we credit Dr. Bovik's testimony that: "[i]n order to display an image, it necessarily must be retrieved from

wherever the image is stored (e.g., the data cache)." Ex. 1102 ¶ 17. We note that Dr. Reader testified:

> Q. And if I had information that was responsive to a play location, I would have to store and retrieve it in order to display it; correct?
>
> A. I think that's correct.

Ex. 1101, 119:20–120:1.

Sixth, Rangan obtains and displays the keyframe thumbnails in its storyboard during the playing of a video. Ex. 1014, 17:48–54 ("received streaming digital video is also displayed in normal time . . . a plurality of keyframes . . . are at least temporarily displayed as still images"), 26:29–38 ("At any time . . . most recent such thumbnail images 74 representing the twenty most recent scenes will [be] displayed.")

Accordingly, Rangan obtains (retrieves) keyframe thumbnails from its data cache (which contains a plurality of keyframe thumbnails) within the playing of a video.

Patent Owner argues that Petitioner fails to establish that an ordinarily skilled artisan "would have understood Rangan's system, which operates on displaying thumbnail images that are 'cached in a digital data cache,' retrieves, from a plurality of video frame identifiers, a video frame identifier." PO Resp. 16. To support this argument, Patent Owner cites the testimony of Dr. Reader, which is conclusory and, thus, entitled to little weight. *Id.*; Ex. 2021

¶ 79. As set forth above, we credit Dr. Bovik's contrary testimony because it is supported by Rangan's disclosures.

Because we find that the disclosures of Rangan discussed above regarding the storage and display of keyframe thumbnails in the storyline teach or suggest the above limitation, we need not address Petitioner's alternative arguments for this limitation, including the arguments that (i) generating a keyframe thumbnail and (ii) extracting a keyframe thumbnail from the hypervideo stream when a scene changes also constitute the recited retrieving. Pet. 17. Further, we need not consider whether the knowledge of an ordinarily skilled artisan without the above disclosures in Rangan would have rendered the above limitation obvious. *Id.* at 18–19. Consequently, Patent Owner's arguments specific to those positions are insufficient to defeat Petitioner's showing. PO Resp. 14–16.

iii. a video frame identifier responsive to a play location within a playing of a video

According to Petitioner, Rangan teaches the above limitation because Rangan's keyframe thumbnails are responsive to a play location within a playing of a video. In particular, Petitioner asserts Rangan's keyframe thumbnails are responsive to each of the following: (i) the frame from which they are generated, (ii) the scene associated with the frame from which they are generated; and (iii) scene changes, all of which Petitioner asserts are play locations within the playing of a video. Pet. 18; Pet. Reply 3. Patent Owner argues that nothing in the

Petition establishes that Rangan's keyframe thumbnails are responsive to anything other than scene changes, which Patent Owner argues are not play locations. PO Resp. 17; Sur-Reply 3–4. Patent Owner further argues that Rangan's data cache from which the keyframe images are sourced demonstrates that its keyframe thumbnails are not responsive to a play location within the playing of a video. *Id.* Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan's keyframe thumbnails are responsive to the (i) the frame from which they are generated, (ii) the scene associated with the frame from which they are generated; and (iii) scene changes, and that all of these are play locations within the playing of a video.

First, Rangan's keyframe thumbnails are responsive to the frames from which they are generated. Rangan expressly discloses generating the keyframe thumbnail from the first frame of a scene: "A keyframe for the scene is generated by mathematically reducing its first frame." Ex. 1014, 29:61–64. Dr. Bovik testifies that, as a result, the key frame thumbnail is responsive to the first frame of a scene, and Dr. Reader acknowledges that the keyframe thumbnail is responsive to the frame it was generated from. Ex. 1102 ¶ 18; Ex. 1101, 118:10–19.

Second, Rangan's keyframe thumbnails are responsive to the scene associated with the frame from which they are generated and scene changes. Ex. 1102 ¶ 18. Rangan describes its keyframe thumbnails as "representing . . . scenes." Ex. 1014, 26:29–31; *see id.* at 22:60–62. Further, Rangan teaches that its keyframe thumbnails are

generated in response to scene changes. *Id.* at 9:12–15, 9:51–53; Ex. 1102 ¶ 18; Ex. 2021 ¶ 80.

Third, we credit Dr. Bovik's testimony that frames, scenes, and scene changes are play locations within the playing of the video. Ex. 1102 ¶ 18. Rangan teaches its frame numbers identify locations (positions) in its video. Ex. 1014, 30:14–15 ("When recording from current playback position, the decoder provides the current video frame number."). Similarly, the scenes and scene changes occur at particular locations in the video. *Id.* at 30:16–18 ("When recording from a scene transition, the SCD [scene change detection] engine provides the starting video frame number."), 22:60–62 ("delimited by the scene's start and end frames").

Fourth, Patent Owner argues that Rangan's keyframe thumbnails are not responsive to a play location within the playing of a video because these thumbnails are generated by detecting scene changes and, thus, are only responsive to scene changes. PO Resp. 17. Patent Owner, however, presents no analysis why generating keyframe thumbnails by detecting scene changes means the keyframe thumbnails are not responsive to play locations. *Id.* Patent Owner cites Dr. Reader's testimony, but Dr. Reader does not provide sufficient analysis of the issue. *See* Ex. 2021 ¶ 80. As described above, scene changes occur at particular locations in the playing of the video, and the thumbnails represent the first frame of a scene, which is also at a particular location. Further, as described above, the scene itself is at a particular location within the playing of a video.

Fifth, Patent Owner argues Rangan's cache from which the keyframe thumbnails are sourced demonstrates that Rangan's keyframe thumbnails are not responsive to a play location within the playing of a video. PO Resp. 17. Patent Owner, however, cites no evidence to support that argument, other than the testimony of Dr. Reader, which is conclusory.[3] *Id.*

We credit Dr. Bovik's contrary testimony, which is supported. Ex. 1102 ¶ 17.

In summary, we find that Rangan discloses that its keyframe thumbnails are responsive to a play location within the playing of a video. Thus, we find Rangan teaches retrieving, from a plurality of video frame identifiers, a video frame identifier that is responsive to a play location within a playing of a video.

> *c. displaying, responsive to the video frame identifier, an initial indication that information is available that is responsive to the play location*

According to Petitioner, Rangan displays hotspots on its keyframe thumbnails. Pet. 19. Further, Petitioner argues that (i) Rangan's hotspots are responsive to

3. Patent Owner provides citations to Rangan to demonstrate that Rangan has a data cache, but these cites do not support its argument that Rangan's use of a data cache means that Rangan's keyframe thumbnails are not responsive to a play location. PO Resp. 17 (citing Ex. 1014, 33:36–39, 34:64–67, 35:36–44, 36:12–15, 37:3–6).

Rangan's keyframe thumbnails (video frame identifiers) and Rangan's hotspots are indications that information is available that is responsive to a keyframe thumbnail. *Id.* Patent Owner argues that Rangan's hotspots are not responsive to a play location. PO Resp. 20–21. Patent Owner further argues that Petitioner improperly maps both the recited video frame identifier and the recited indication that information is available to Rangan's keyframe thumbnails. *Id.* at 12. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan teaches or suggests the above limitation.

First, Rangan's hotspots are frame-specific and are, therefore, responsive to the video frame identifier (e.g., keyframe thumbnail, frame number). Ex. 1002 ¶ 54. Rangan discloses that "[t]he overlaying of the hotspots is preferably done for individual hypervideo frames by use of a rendering filter responsive to the hotspot data." Ex. 1014, 15:41–47. Further, Rangan discloses displaying the same hotspots in the keyframe thumbnails. *Id.* at 10:5–9 ("The same hotspots will normally also be shown within historic static thumbnail scenes."), Fig. 4; Ex. 1002 ¶ 54.

Second, Rangan's hotspots are indications that information is available that is responsive to a keyframe thumbnail. Rangan discloses that its hotspots are visual indications of its hyperlinks. Ex. 1014, 12:18–24 ("'hotspots' (which are visual manifestations of hyperlinks)"). Further, "clicking where a hotspot is . . . will result in hyperlinking." *Id.* at 10:2–5; *see id.* at 9:1–7, 15:23–33. In addition, hyperlinking provides additional information to the user,

such as the information contained in a webpage or video. *Id.* at Figs. 6–8. Further, Dr. Bovik testified that Rangan's hotspots are indications that information is available, and Dr. Reader reached the same opinion. Ex. 1002 ¶¶ 31, 54–55; Ex. 1101, 111:6–8.

Third, Patent Owner argues that Rangan does not teach that its hotspot (the indication) is responsive to a play location. PO Resp. 20–21. Patent Owner provides no reason why the above limitation should be interpreted to require that the *indication* be responsive to the play location, rather than that the available *information* be responsive to the play location. *Id.* The wording of the limitation does not suggest that the phrase "responsive to the play location" modifies "initial indication." Instead, "responsive to the play location" appears to modify the term "information." And both experts have interpreted the limitation as specifying that the recited indication must be responsive to the video frame identifier and not to the play location. Ex. 1101, 63:19–64:2; Ex. 1102 ¶¶ 27–28.

Further, Patent Owner has identified nothing in the Specification that supports the contrary interpretation. PO Resp. 20–21. The Specification, in fact, emphasizes that the information to be provided to the user should be responsive to what is displayed at a particular play location. Ex. 1001, 6:33–35 ("an indication that information is available for an item being depicted"), 9:3–6 ("a display of item information 112 113 for the balloons 111, display of item information 122 123 for the dress 121, and a display of item information 132 133 for the hat 131"), Fig. 1C. Patent Owner's interpretation is inconsistent with

that disclosure. Further, even if we were to construe the phrase as requiring that the indication be responsive to the play location, the hotspot in Rangan depends on the displayed keyframe thumbnail and keyframe, which, as discussed above, represent a location in the playing of the video. Therefore, Rangan's hotspot is responsive to a play location. Ex. 1102 ¶ 28.

Fourth, Patent Owner argues that Petitioner improperly maps both the recited video frame identifier and the recited indication that information is available to Rangan's keyframe thumbnails. PO Resp. 11–12. Patent Owner offers no expert testimony to support that argument, and we do not agree with that argument. *Id.* Rangan's hotspot is a distinct grid, coloration, or some other visually perceptible clue that can be overlaid on the thumbnail. Ex. 1014, 10:14, 15:27–60, 9:63–10:9, Fig. 4; Ex. 1102 ¶ 29. It is not the thumbnail itself. Further, as Dr. Bovik testifies, the Specification of the challenged patent discloses overlaying indications on video frames. Ex. 1102 ¶ 29; Ex. 1001, 7:38–48, Fig. 1B. But the Specification still describes indication 141 and frame 100 as separate elements. Ex. 1001, 6:33–39 ("frame 100"), 7:43–46 ("outline 141"); *see also* Ex. 1102 ¶ 29 (explaining that outline 141 is the recited indication). Thus, Petitioner does not improperly map both the video frame identifier and the recited indication to Rangan's keyframe thumbnails.

In summary, we find that Rangan teaches the above limitation.

d. retrieving a subsequent video frame identifier that is responsive to a subsequent play location

According to Petitioner, Rangan discloses retrieving a subsequent keyframe thumbnail that is responsive to a subsequent play location for its storyboard. Pet. 21–23. Petitioner argues that Rangan discloses displaying twenty recent scenes as thumbnails and that, when thumbnails are displayed for two play locations, the later of the two locations is a subsequent play location and its thumbnail or its frame number is a subsequent video frame identifier. *Id.* at 21. Petitioner further explains that the thumbnail or frame number is retrieved by generation, extraction, or retrieval from storage. *Id.* Aside from reiterating its argument regarding Rangan's disclosure of "retrieving a video frame identifier," which is discussed in Section III.A.2.b. above, Patent Owner presents no counterarguments for the above limitation. PO Resp. 21. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan teaches or suggests the above limitation.

e. displaying, responsive to the subsequent video frame identifier and contemporaneously with the displaying of the initial indication, a subsequent indication that information is available that is responsive to the subsequent play location

According to Petitioner, Rangan discloses the above limitation by disclosing the display of multiple keyframe

thumbnails at once (e.g., in Rangan's storyboard). Pet. 21. Petitioner argues that the hotspots for two of the displayed keyframe thumbnails correspond to the recited initial and subsequent indications. *Id.* at 21–23. In particular, Petitioner argues that the hotspot for the keyframe thumbnail for the earlier play location constitutes the recited initial indication and that the hotspot for the keyframe thumbnail corresponding to the later play location corresponds to the subsequent play location. *Id.* Aside from repeating its argument that Rangan's hotspots are not responsive to play locations (addressed in Section III.A.2.c. above), Patent Owner does not present any additional arguments for the above limitation.[4] PO Resp. 22. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan teaches or suggests the above limitation.

f. receiving, following the displaying of the subsequent indication, a request responsive to the initial indication, for information

According to Petitioner, Rangan teaches this limitation by disclosing that a user can: (i) exercise a hyperlink by clicking on a hotspot and (ii) mouse over a hotspot to see an annotation. Pet. 23–24. Petitioner argues that a user can click or mouse-over a hotspot to make an annotation appear even after subsequent thumbnails have been displayed. *Id.* Patent Owner does not dispute that

4. Patent Owner asserts that Rangan does not display indications contemporaneously. PO Resp. 22. That assertion, however, is based solely on Rangan's alleged lack of display of an indication. *Id.*; Ex. 2021 ¶ 90.

Rangan teaches this limitation. PO Resp. 11–22. Based on the evidence and arguments in the Petition, we find that Rangan teaches the above limitation.

g. displaying information associated with the initial indication that information is available

According to Petitioner, Rangan teaches the above limitation by disclosing that when a user clicks on a hotspot, information associated with that hotspot is displayed. *Id.* Therefore, Petitioner asserts that when a user clicks on the hotspot (the initial indication), information associated with that hotspot (the initial indication) is displayed. *Id.* Patent Owner does not dispute that Rangan teaches this limitation. PO Resp. 11–22. Based on the evidence and arguments in the Petition, we find that Rangan teaches the above limitation.

h. Summary

For the reasons discussed above, we determine that Petitioner has shown by a preponderance of the evidence that Rangan teaches or suggests each limitation of claim 6. Consequently, Petitioner has demonstrated by a preponderance of the evidence that claim 6 would have been obvious over Rangan.

3. Independent Claim 19

Independent claim 19 recites substantially the same elements as claim 6, but restricts the "information" recited

in claim 6 to "item information." Ex. 1001, 34:21–41, 37:13–38:10. Claim 19 also does not recite that the retrieving of a video frame identifier is from a plurality of video frame identifiers as claim 6 does. *Id.*

According to Petitioner, Rangan discloses the indication of, and the display of, item information by disclosing an indication and display of the car shown in its Figure 4. Pet. 26. Petitioner argues the term "item" encompasses items, such as a car. *Id.* (citing Ex. 1001, 4:48–61). Patent Owner does not dispute that to the extent Rangan teaches or suggests the limitations of claim 6, Rangan also teaches the additional "item information" limitation of claim 19. Based on the parties' arguments and full record after trial, we agree with Petitioner, and find that Rangan teaches or suggests all limitations of claim 19.

Consequently, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 19 would have been obvious over Rangan.

B. Alleged Obviousness Based on Rangan and Rakib

Petitioner asserts that claims 2, 14, and 16 would have been obvious over the combination of Rangan and Rakib. Pet. 26–31.

1. Overview of Rakib

Rakib describes a system with a remote control device that allows the user to interact with the interactive video. Ex. 1013, Abstr. As shown in Figure 10 (reproduced below), Rangan discloses a server that provides video to

a media router that provides it to a primary display and a remote control:

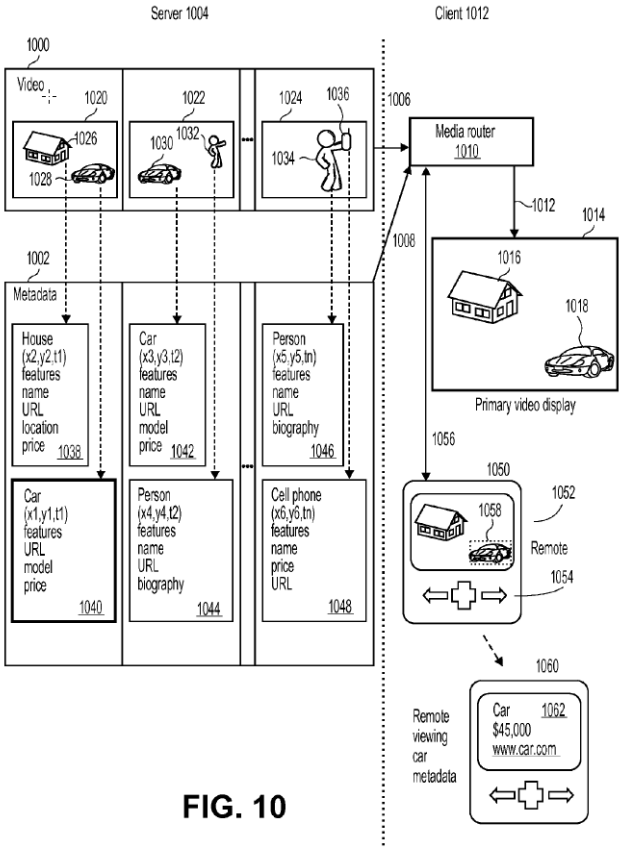


FIG. 10

Figure 10 shows remote server 1004, which contains video file 1000 and metadata file 1002. Ex. 1013 ¶¶ 108–118. Client 1012 has media router 1006, primary video display 1014, and remote control 1050. *Id.* Rakib discloses sending video file 1000 to media router 1014, primary video display 1014, and remote control 1050. *Id.* ¶¶ 108, 117. Video file 1000 contains image 1020, which is displayed in the primary video display and remote control's display. *Id.* at

Appendix B

Fig. 10. Image 1020 shows house 1016 and car 1018, the latter of which has associated metadata 1040. *Id.* ¶ 111.

Media router 101 informs remote control 1050 that car 1018 has associated metadata 1040 and, based on that metadata, remote control 1050 indicates to the viewer that additional information for the car is available by surrounding car 1018 with box 1058. *Id.* ¶ 117. The user can request more information 1040 about car 1018 using controls 1054 on remote control 1050. After such a request, updated display 1060 is shown, which contains the price of car 1018 and hyperlink 1062 for that car. *Id.* ¶ 118.

Figure 13 (reproduced below) illustrates how the remote control, the media router, and a remote video and metadata servers can interact:

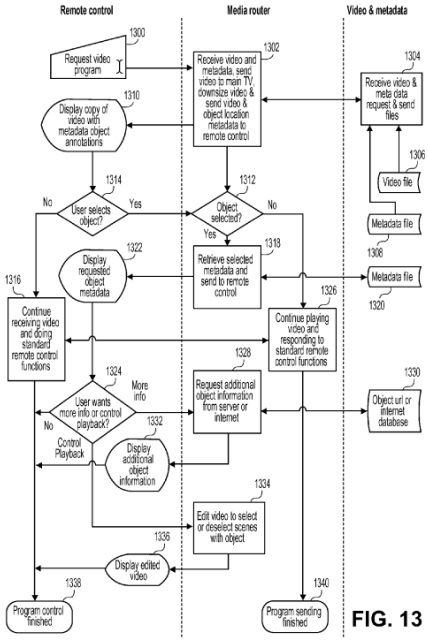


FIG. 13

Appendix B

Figure 13 shows communications between a remote control, a media router, and a remote video and metadata server. Ex. 1013 ¶ 30. As illustrated, software 1314 in the remote control detects whether a user has selected a metadata linked object. *Id.* ¶ 133. If the user makes that selection, the remote control informs media routine 1312, which instructs software 1318 in the media router to retrieve the corresponding metadata. *Id.* ¶ 134. Software 1318 provides the metadata to routine 1322, which displays that metadata on the remote control's display. *Id.* ¶ 135. After reviewing the metadata, the user can request additional information regarding the displayed object. *Id.* ¶ 136. Routine 1324 detects this request and instructs the remote control to request additional object information from the media router. *Id.* Media router routine 1328 receives this request, retrieves the requested additional information, and sends the additional information to remote control routine 1332, which displays it. *Id.*

2. Independent Claim 2

Independent claim 2 recites substantially the same elements as claim 6, but adds the limitations of "receiving a request for additional information relating to a displayed information; and displaying, responsive to the request for additional information, the additional information." Ex. 1001, 33:45–34:2.

Appendix B

a. receiving a request for additional information relating to a displayed information

According to Petitioner, Rangan teaches the above limitation by disclosing that users can see a text annotation by mousing over a displayed object and by disclosing that those text annotations can include URLs that will cause the VOW VCR to jump to another video or webpage when clicked on. Pet. 26–27. Further, Petitioner asserts that the above limitation would have been obvious over Rangan and Rakib and that an ordinarily skilled artisan would have been motivated to combine those references. *Id.* at 27. Patent Owner contends that (i) Rakib fails to remedy the deficiencies of Rangan regarding the above limitation and (ii) modifying Rangan with Rakib would impermissibly change the principle of operation of Rangan. PO Resp. 24. Further, Patent Owner asserts that Petitioner improperly maps both the above limitation and the limitation of "displaying information associated with the initial indication" to Rangan's hotspots. *Id.* at 23–24. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find: that Rangan teaches or suggests the above limitation, that the combination of Rangan and Rakib also teaches or suggests that limitation, and that an ordinarily skilled artisan would have combined the pertinent disclosures in Rangan and Rakib.

First, Rangan teaches the above limitation by disclosing text annotations that typically appear when the user "mouses over" an object. Ex. 1014, Abstract,

13:64–14:7. These text annotations "serve to impart additional, supplemental, information" about the objects in the scene. *Id.* Further, these text annotations can include a URL and if a user "clicks on an object having a URL annotation then the [system] will jump to another video or web page or image." *Id.*; *see id.* at 11:64–66 ("The inserted hyperlinks will . . . serve to access still further, other, digital (hyper)video clips, particularly commercials."), 1:55–61, 3:19–22, 18:43–46, 19:42–45, 26:60–63. The user may access additional information by "branching" from the original hyperlink. *Id.* at 9:1–30, 10:15–19, 10:40–44 ("[The user] may indulge himself or herself to follow all hyperlinks" to "any network place or resource that is desired."), 22:1–10. These disclosures teach or suggest a user requesting information (a text annotation) responsive to the initial indication (the hotspot indicating that additional information is available) by mousing-over the object, and requesting additional information (video, web page, or image) relating to the displayed information. Ex. 1002 ¶ 69

Second, the combination of Rangan and Rakib teaches or suggests the above limitation. Rakib discloses that a user can request additional information about a displayed object, which in turn causes the remote control to request additional information about the displayed object. Ex. 1013 ¶ 136 ("If . . . the user determines that still more additional information is desired (for example the user wishes to purchase a displayed product, and wants access to an internet store), then routine 1324 directs the remote control hardware to send a request for additional object information to the media/router set-top box hardware.");

Ex. 1002 ¶ 69. Rakib further discloses that a user can request additional information about a displayed object by clicking on a hyperlink in the displayed text annotation, which will provide a video or webpage containing additional information. Ex. 1014, 11:64–66; 1:55–61, 3:19–22, 14:52–64 (the user may continue "clicking on objects within successive videos"), 18:43–46, 19:42–45, 26:60–63; Ex. 1002 ¶ 69.

Third, an ordinarily skilled artisan would have been motivated to modify Rangan's apparatus to permit requests for additional information as taught by Rakib for the following reasons: (i) Rangan discloses providing a unique customized experience for numerous users, and an ordinarily skilled artisan would recognize this goal would be best accomplished by providing a portion of the related information and then allowing each user to decide what additional information should be disclosed; (ii) disclosing all information that users may be interested in would be onerous; (iii) Rangan suggests that the user would be able to branch to additional information after selecting the hotspot; and (iv) this modification would be a simple substitution of one known element for another known element to obtain predictable results. Ex. 1002 ¶¶ 71–80. We also find that an ordinarily skilled artisan would have a reasonable expectation of making such a modification. *Id.* ¶ 80.

Fourth, we do not agree with Patent Owner that this modification would impermissibly change Rangan's principle of operation. PO Resp. 24. The proposed combination would not require that any change in the basic

operation of Rangan's system because Rangan's system already requests information. *See supra* Section III.A.2.f.; Ex. 1102 ¶¶ 39–40. The modification would simply involve making another request. Ex. 1102 ¶ 40. We also credit Dr. Bovik's testimony that Rangan and Rakib do not have incompatible operating structures. *Id.*

Fifth, we do not agree with Patent Owner that Petitioner impermissibly maps both the above limitation and the limitation of "displaying information associated with the initial indication that information is available" to Rangan's hotspots. PO Resp. 23–24. Petitioner maps the recited request for additional information to mousing-over the hotspot and clicking on a link shown in a text annotation, not to the hotspot itself. Pet. 26–27.

In conclusion, we find that Rangan teaches or suggests the above limitation, the combined teachings of Rangan and Rakib also teach or suggest the above limitation, and that an ordinarily skilled artisan would have combined Rangan and Rakib.

b. displaying, responsive to the request for additional information, the additional information

According to Petitioner, Rangan teaches displaying the information requested by mousing-over an object in its display and teaches displaying the information requested by clicking on a URL in its text annotations. Pet. 30. Petitioner also argues that Rakib suggests this limitation by disclosing that "additional information" is "displayed." *Id.* (citing Ex. 1013 ¶ 136, Fig. 13 (step 1332); Ex. 1002

¶¶ 82–83.) Patent Owner does not dispute that to the extent Rangan or the combination of Rangan and Rakib teach or suggest "receiving a request for additional information relating to a displayed information," Rangan and Rakib also teach or suggest the above limitation. PO Resp. 23–26. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan teaches or suggests the above limitation and that the combined teachings of Rangan and Rakib also teach or suggest that limitation.

Consequently, Petitioner has demonstrated by a preponderance of the evidence that claim 2 would have been obvious over Rangan and Rakib.

3. Independent Claims 14 and 16

Independent claim 14 recites substantially the same elements as claim 2, but does not require the video frame identifiers to be retrieved "from a plurality of video frame identifiers." Ex. 1001, 33:45–34:2, 36:8–32. Independent claim 16 recites substantially the same elements as claim 14, but restricts the "information" recited in claim 14 to "item information." *Id.* at 36:8–32, 40–63.

For claim 14, Petitioner relies on its showing for claim 2. Pet. 31. For claim 16, Petitioner relies on its showing for claim 19 that Rangan discloses item information and on its showing for claim 14. *Id.*

Patent Owner reiterates the arguments it presents for claim 2. PO Resp. 26. Further, Patent Owner argues that Rakib does not teach "retrieving a video frame identifier

that is responsive to a play location within a playing of a video." *Id.* In addition, Patent Owner asserts that an ordinarily skilled artisan would have had additional reasons for not combining Rangan and Rakib: (i) Rangan's requirement for accurate assessment of objects and shapes to place annotations in a video and (ii) that Rakib's method, for retrieving frames, would be tedious and burdensome. *Id.* at 27.

Petitioner responds that it does not rely on Rakib for retrieving a video frame identifier. Pet. Reply 12. Further, Petitioner argues that it does not propose using Rakib's methodology to receive requests for additional information. *Id*. at 11.

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan teaches or suggests the limitations of claims 14 and 16, that Rangan and Rakib also teach or suggest those limitations, and that an ordinarily skilled artisan would have combined Rangan and Rakib.

As mentioned above, Patent Owner argues that Rakib does not disclose "retrieving, from a plurality of video frame identifiers, a video frame identifier that is responsive to a play location within a playing of a video." Petitioner, however, does not rely upon Rakib for that limitation. Pet. 17–19, 26, 31.

Patent Owner also argues that Rakib's requirement for the accurate assessment of object shapes and sizes to place annotations in the video to alert the user to information is prone to error, particularly when it analyzes

multiple objects that have similar sizes or shapes as other objects. PO Resp. 27. Petitioner, however, does not propose using Rakib's system to place annotations in the video. Pet. 16–31.

Petitioner further argues that Rakib's method, if used to retrieve frames, would be tedious and burdensome. PO Resp. 27. Petitioner, however, does not propose using Rakib's method to retrieve frames. Pet. 16–31.

Consequently, Petitioner has demonstrated by a preponderance of the evidence that claims 14 and 16 would have been obvious over Rangan and Rakib.

C. Alleged Obviousness Based on Rangan, Rakib, and Abecassis

Petitioner asserts that dependent claim 4 would have been obvious over Rangan, Rakib, and Abecassis. Pet. 31–38.

1. Overview of Abecassis

Abecassis is directed to a system for automatically customizing a viewer-selected video responsive to the application of the viewer's video content preferences to a segment map of the video. Ex. 1024, 1:34–37. Abecassis discloses that when a content-on-demand video is paused, Abecassis's 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. *Id.* at 5:6–10. Abecassis states that "[b]y automatically replaying the segment in which

the pause occurred, the viewer may re-engage the video without the loss of continuity." *Id.* at 5:10–12.

2. Dependent Claim 4

Claim 4 depends from claim 2 and recites the additional limitations set forth below.

> *a. pausing the playing in response to a request for additional information.*

According to Petitioner, Rangan teaches or suggests the above limitation by disclosing (i) text annotations that appear with a mouse over, (ii) that the primary video does not need to pause when displaying annotations unless a hyperlink dictates pausing, and (iii) if a user clicks on a hyperlink, pausing the video while the link jumps to another video or web page. Pet. 31–32.

Patent Owner does not dispute that Rangan teaches or suggests the above limitation. PO Resp. 27–31. Based on the evidence and arguments in the Petition, we find that Rangan teaches or suggests that limitation.

> *b. resuming the playing at a beginning of a video clip that is responsive to the location of the request for additional information, the video clip comprises a plurality of contiguous shots.*

According to Petitioner, Abecassis's disclosure of identifying the beginning of a segment in which a pause occurred and resuming the video at that location suggests

the above limitation. Pet. 36. Petitioner argues that an ordinarily skilled artisan would have modified Rangan's apparatus to resume play at the beginning of a video clip as taught by Abecassis because Abecassis discloses the benefit of replaying the segment in which the pause occurred. *Id.* Petitioner also argues that this combination is a simple substitution of one known element for another known element to obtain predictable results. *Id.* Further, Petitioner argues that the combination applies a known technique to a known device and method and yields predictable results.[5] *Id.* at 37. Patent Owner disputes that Abecassis's segment is a video clip. PO Resp. 27–31.

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rangan and Abecassis teach or suggest the above limitation and that an ordinarily skilled artisan would have combined Rangan, Rakib, and Abecassis. As mentioned above, the only issue in dispute regarding this limitation is whether Petitioner has shown that Abecassis discloses a segment that is a video clip.

Patent Owner argues that the challenged patent defines the term "video clip" to be narrower than a generic segment, that Petitioner has merely relied on Abecassis's use of the word "segment" to establish that Abecassis's

5. Petitioner also asserts that, to the extent Patent Owner argues that the above limitation requires resuming playing of the primary video at a location responsive to the location of the request for additional information, that would have been obvious in view of Rangan and Abecassis. Pet. 35–36. Patent Owner, however, does not make that argument. PO Resp. 27–31.

segment is a video clip, and that Abecassis's segment is not a video clip. PO Resp. 30–31. We agree with Patent Owner that the challenged patent defines the term "video clip" to be narrower than a generic segment, but we do not agree that Petitioner merely relies on Abecassis's disclosure of a generic segment or that Abecassis's segment is not a video clip.

Petitioner and Dr. Bovik assert that Abecassis's segment is a video clip because Abecassis's segment is smaller than a chapter and is defined by the individuals appearing on screen. Pet. Reply 16; Ex. 1102 ¶ 53. Dr. Bovik testifies that the challenged patent "provides that a 'clip's definition is responsive to a material change in the participation of the principal characters[.]" Ex. 1102 ¶ 53 (quoting Ex. 1001, 3:62–64). Dr. Bovik explains why he believes Abecassis's segment satisfies that criteria: "Abecassis clarifies that the segment disclosed therein may be defined by the individuals appearing on screen (e.g., an individual panelist)." *Id.* (citing Ex. 1024, 39:64–40:11).

Dr. Bovik further explains that the cited passage in Abecassis (Ex. 1024, 39:64–40:11) discusses an embodiment where segments are defined by individual panelists such that a viewer may skip a panelist by skipping a segment. Ex. 1102 ¶ 53. Dr. Bovik equates these disclosures in Abecassis with a clip's definition that is responsive to a material change in the participation of the principal characters. *Id.* Therefore, in rendering his opinion that "Abecassis' 'segment' is a 'clip' as defined by the [challenged] patent," Dr. Bovik (and Petitioner) does

not merely equate a generic segment with a video clip. And Patent Owner offers no testimony from Dr. Reader or any other evidence that contradicts the above testimony by Dr. Bovik. PO Resp. 30–31; Sur-Reply 16–17. Therefore, we find that Abecassis teaches or suggests the above limitation.

Patent Owner does not dispute that an ordinarily skilled artisan would have combined the teachings of Rangan and Abecassis. PO Resp. 30–31. Based on the arguments and evidence set forth in the Petition, we find that an ordinarily skilled artisan would have made that combination. Pet. 36–38; Ex. 1002 ¶¶ 100–104; Ex. 1024, 5:6-12; Ex. 1026, 210.

Because of the above findings, we need not consider Petitioner's alternative contention that the limitation would have been suggested based on Rangan alone. Pet. 35–36. Consequently, Patent Owner's arguments specific to that contention are insufficient to defeat Petitioner's showing. PO Resp. 28–29; Sur-Reply 15–16.

We determine that Petitioner has shown by a preponderance of the evidence that claim 4 would have been obvious over Rangan, Rakib, and Abecassis.

D. Alleged Obviousness Based on Armstrong and Livesey

Petitioner asserts that claims 2, 6, 14, 16, and 19 would have been obvious over Armstrong and Livesey. Pet. 38–56.

Appendix B

1. Overview of Armstrong

Armstrong discloses a system for allowing "viewers of video content to access more information about specific items in [the] video." Ex. 1021, Abstr. Armstrong plays a movie and, in response to a user pressing a "menu" button on a remote control, displays a menu (#104) listing items for which supplemental information is available. *Id.* ¶ 19. Figure 1A of Armstrong is reproduced below:

FIGURE 1A

Figure 1A is a view of suspended video/audio stream primary video content with a menu for retrieving information for the scene. Ex. 1021 ¶ 6. This view was generated by pressing the pause or menu button on a

remote and suspending the playback of the movie. *Id.* ¶ 19. Display 100 displays frame 102 above menu 104, which has the following buttons/selections: 1. light jacket, 2. scarf, 3. sweater, 4. restaurant, 5. wine, 6. hotel, and 7. wrist watch. *Id.* If, for example, the user highlights and selects button #5, information about the wine in the scene information is displayed to the user (e.g., information describing the manufacture, year, grape variety, type of wine, cost, and where/how to purchase the wine, such as from a restaurant or store). *Id.*

Figure 2A of Armstrong is reproduced below:

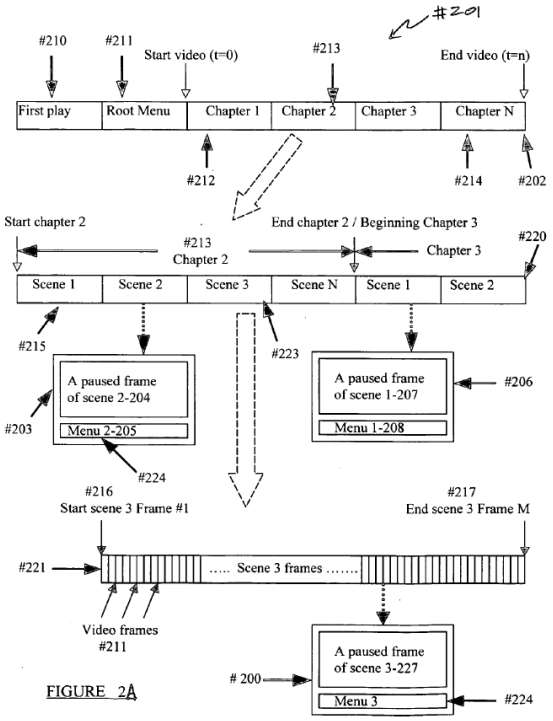


FIGURE 2A

Appendix B

Figure 2A is a hierarchical description of menus and video chapters, scenes and frames. Ex. 1021 ¶ 30. Armstrong discloses that depicted menus 1-208, 2-205, and 3-227 correspond to, respectively, scene 1 and/or frame 227, scene 2 and/or frame 204, and scene 3 and/or frame 227. *Id.* ¶ 31.

2. Overview of Livesey

Livesey discloses a "method of providing additional information to a viewer of a moving image file." Ex. 1022, Abstr. Figure 1 of Livesey is reproduced below:

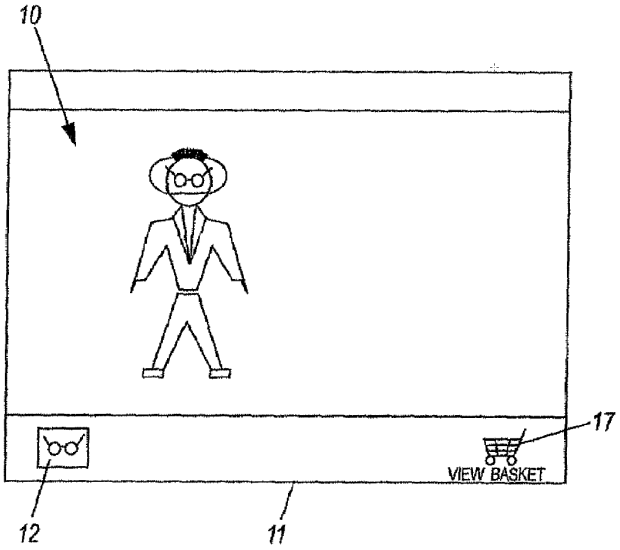


Figure 1 shows exemplary scene 10, from a moving image, on a display with icon bar 11 and shopping cart icon 17. Ex. 1022 ¶¶ 47, 50. If a tagged item appears in a scene, selectable icon 12 appears in icon bar 11. *Id.* ¶ 47. In

Appendix B

Figure 1 and in Figure 2 (reproduced below), the tagged item is spectacles, and icon 12 physically represents those spectacles (*id.*):

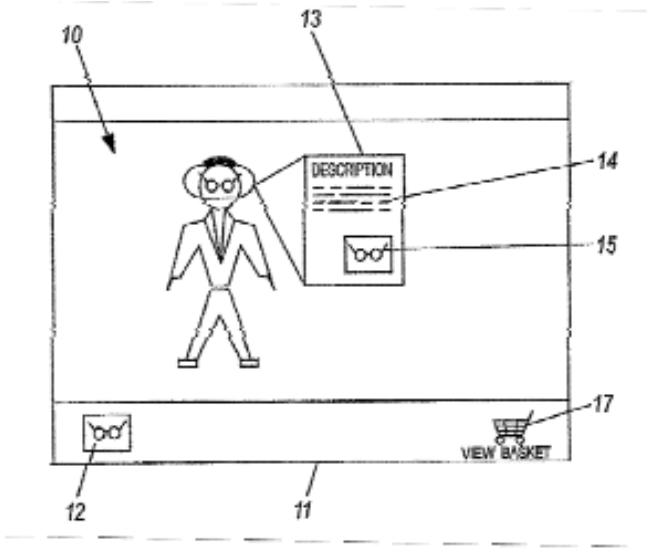


Figure 2 illustrates the effect of selecting icon 12 in Figure 1. In particular, if icon 12 is selected, pop up window 13 appears, which includes description 14 of the qualities of the product spectacles and image 15 of the product. Ex. 1022 ¶ 49.

3. Independent Claim 6

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

According to Petitioner, Armstrong teaches an "apparatus capable of processing data and instructions

executable by a processor" by disclosing personal computers and DVD players. Pet. 31. Patent Owner does not dispute that Armstrong teaches the above recitation. PO Resp. 31. Based on the evidence and arguments in the Petition, we find that Armstrong teaches the preamble recitation of claim 6.

b. retrieving, from a plurality of video frame identifiers, a video frame identifier that is responsive to a play location within a playing of a video

Petitioner argues that Armstrong teaches or suggests the above limitation by (i) identifying frames by frame number, and (ii) when a viewer presses a menu button, retrieving the frame number of the current frame and displaying the corresponding menu. Pet. 41–42. Patent Owner argues that Petitioner has not proven this assertion. PO Resp. 33–35.

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Armstrong teaches or suggests the above limitation.

First, we credit Dr. Bovik's testimony that Armstrong retrieves a frame number to compare it to an index to identify the corresponding menu structure. Ex. 1102 ¶ 57. Armstrong discloses that it counts frames to determine the menu structure to display when the primary video has been paused. Ex. 1021 ¶ 49. Further, Armstrong discloses incrementing or decrementing the frame count by one count for each frame being played during video playback. *Id.* In addition, Armstrong discloses that a sequence of

frame counting where the frame count is compared to a range of frames and when that condition is satisfied, a menu associated with the appropriate scene number is linked. *Id.* ¶ 53. We agree with Dr. Bovik that these disclosures teach retrieving (e.g., obtaining or identifying) the frame number (video frame identifier) in order to compare it to the index and identify the corresponding menu structure. Ex. 1102 ¶ 57; *see also* Ex. 1002 ¶¶ 110–112; Ex. 1101, 151:17–152:2.

Second, Patent Owner argues that a frame number cannot represent a play location because a play location in the challenged patent is functionally different from a video frame identifier. PO Resp. 33–34. According to Patent Owner, identifying the play location within a video is a precondition for retrieving a video frame identifier. *Id.* For these assertions, Patent Owner cites the testimony of Dr. Reader, but that testimony is conclusory. *Id.* (citing Ex. 2021 ¶¶ 106–107). We credit the contrary testimony of Dr. Bovik. Ex. 1102 ¶ 55. The challenged patent, in fact, discloses that "a location within the video may be identified by . . . frame identifiers." Ex. 1001, 18:13–24.

Third, Patent Owner argues that Armstrong does not necessarily determine the frame number of a frame being displayed because Armstrong's DVD authorizing process does not require retrieving a frame number or video frame identifier. PO Resp. 34–37. Patent Owner asserts that Armstrong discloses that its "DVD authorizing process" has "authoring, menu structure, indexing, and/or functionality of the DVD data" "where the current menu may be described as a portion of sub-menu of the menu

structure . . . and the like may be displayed for the current scene." *Id.* at 36 (citing Ex. 1021 ¶¶ 30, 40). Patent Owner cites Dr. Reader's testimony that an ordinarily skilled artisan would understand that such a structure would not teach or suggest the above limitation. *Id.* at 37 (citing Ex. 2021 ¶¶ 109–110). Patent Owner also relies on Dr. Reader's testimony that Armstrong's identification of the menu and scene precedes identification of the suspension point of the video and does not disclose first identifying the play location and then retrieving a frame identifier. *Id.* at 37–38 (citing Ex. 2021 ¶¶ 111–112). Patent Owner also argues that Petitioner has not shown that Armstrong retrieves a video frame identifier during the playing of a video. Sur-Reply 18–19. Further, Patent Owner argues that Dr. Bovik admitted that he did not opine on whether the retrieving in Armstrong occurs within the playing of a video. *Id.* at 19 (citing Ex. 2031, 83:2–6).

We credit Dr. Bovik's testimony that Armstrong's DVD authorizing disclosure does not indicate that Armstrong does not retrieve or have to retrieve a video frame identifier. Ex. 1102 ¶¶ 57–62. Further, Patent Owner and Dr. Reader have not explained adequately why it does. PO Resp. 37–38; Ex. 2021 ¶¶ 111–112. Armstrong discloses comparing each viewed frame to a range of frames associated with the menus to determine the appropriate menu to display. Ex. 1102 ¶ 57. Patent Owner and Dr. Reader have not explained how Armstrong could do that without retrieving a video frame identifier. PO Resp. 37; Ex. 2021 ¶¶ 108, 110. We credit Dr. Bovik's testimony that retrieving a frame identifier is necessary in that process. Ex. 1102 ¶ 57.

Appendix B

Regarding whether Armstrong's retrieval of a video frame identifier occurs during the playing of a video or the above limitation should be construed as having such a requirement, Patent Owner did not timely raise such an issue in the Patent Owner Response. PO Resp. 31–38. Further, Patent Owner presents no good cause for waiting until its Sur-Reply to raise that. Sur-Reply 18–19. Therefore, we will not consider Patent Owner's argument on that issue. Office Patent Trial Practice Guide, August 2018

Update at 15 (a "sur-reply that raises a new issue or belatedly presents evidence may not be considered."). Further, if we were to consider it, we would not construe the above limitation to require that the recited retrieval occur during the playing of a video. The phrase "within a playing of a video" modifies the term "play location," not the word "retrieving." In addition, Dr. Bovik has explained how Armstrong discloses that a video would continue playing during the retrieval of a video frame identifier and display of the initial indication that information is available. Ex. 1002 ¶ 151 (discussing the retrieval of a higher menu level that would not involve pausing of the video).

In summary, Armstrong teaches or suggests the above limitation.

c. displaying, responsive to the video frame identifier, an initial indication that information is available that is responsive to the play location

According to Petitioner, Armstrong teaches the above limitation by disclosing the display of its menu items, which Petitioner argues are responsive to the frame number and are initial indications that information is available that is responsive to the play location. Pet. 43–44. Patent Owner argues that that Petitioner has only shown that Armstrong's display of menu items is responsive to the play location. PO Resp. 39. Patent Owner argues that Petitioner has failed to show that Armstrong's display of menu items is also responsive to Armstrong's video frame identifier, which is required by the above limitation. *Id.*

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Armstrong teaches or suggests the above limitation. Armstrong discloses that a menu overlay allows "viewers of video content to access more information about specific items in a video segment." Ex. 1021 ¶¶ 15, 19–20. An annotated copy of Figure

1A (reproduced below) illustrates that menu overlay:

Appendix B

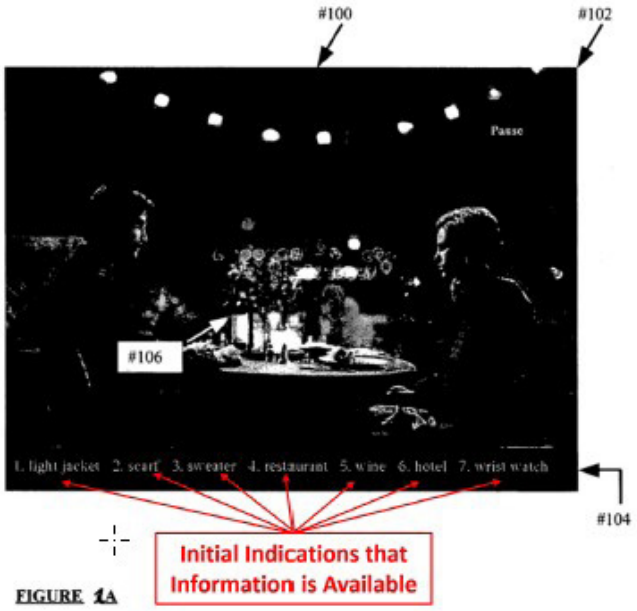


FIGURE 1A

The above figure shows the video content of a DVD with a menu overlay that allows the traversal of a menu structure hierarchy to retrieve secondary information for the scene with annotations by Petitioner. Ex. 1021 ¶ 6; Ex. 1002 ¶ 114. The annotations identify menu items, for example, "1. light jacket" and "2. scarf," which indicate that information is available for these items. Ex. 1021 ¶ 19, Fig. 2A; *see* Ex. 1002 ¶ 114. Armstrong discloses that "if the user highlights and then selects item #5 of menu #104 in FIG. 1A for the wine in the scene, information about the wine is displayed to the user (e.g., information describing the manufacture, year, grape variety, type of wine, cost, and where/how to purchase the wine, such as from a restaurant or store)." Ex. 1021 ¶ 19.

Further, Armstrong discloses that the menu displayed (hence the menu items displayed) is determined based on frame number. Ex. 1002 ¶ 115. Armstrong states: "One purpose for counting frames (e.g., by time, count, and/or registers) to index the beginning and end of the scene, is that indexing will determine which menu structure to display when the primary video has been paused." Ex. 1021 ¶ 49. Similarly, Armstrong shows a menu with a corresponding scene/frame in its Figure 2A. Armstrong describes that figure as displaying "scene 2 of chapter 2 and corresponding menu 205 (e.g., corresponding to scene 2 and/or frame 204 . . . ." Ex. 1021 ¶ 31.

We further credit Dr. Bovik's testimony that by choosing a menu (and hence menu items) based on the frame numbers, Armstrong discloses displaying initial indications (menu items) responsive to a video frame identifier (frame number). Ex. 1002 ¶¶ 113–115; Ex. 1102 ¶ 63. And, as set forth in Section III.D.3.b, we find that Armstrong discloses retrieving frame numbers.

Thus, we find that Armstrong teaches or suggests the above limitation.

d. retrieving a subsequent video frame identifier that is responsive to a subsequent play location

According to Petitioner, Armstrong teaches the above limitation by disclosing that its menus can be used for multiple frames, in which case Armstrong would retrieve subsequent frame numbers that are responsive

to subsequent play locations. Pet. 44. Petitioner argues that each frame after the first frame would be subsequent to the first frame. *Id.* According to Petitioner, therefore, as Armstrong's apparatus plays a video, it would retrieve subsequent frame numbers (video frame identifiers) that are responsive to subsequent play locations. *Id.* Patent Owner argues that Armstrong does not teach the above limitation for the same reasons Armstrong does not teach "retrieving . . . a video frame identifier." PO Resp. 40; *see also* Ex. 2021 ¶ 114.

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Armstrong teaches or suggests the above limitation. *See supra* Section III.D.3.b.

> *e. displaying, responsive to the subsequent video frame identifier and contemporaneously with the displaying of the initial indication, a subsequent indication that information is available that is responsive to the subsequent play location*

According to Petitioner, Armstrong teaches the above limitation by disclosing that, as new items are introduced in a video, menu indices can be added and by disclosing that earlier menu items can be displayed when new menu items are added. Pet. 45–46. Patent Owner disputes that Armstrong displays earlier menu items when it adds new menu items, arguing that Armstrong deletes indices for items that are no longer present. PO Resp. 42–44.

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Armstrong teaches or suggests the above limitation. Armstrong discloses adding indices to the menu when new items appear in a video: "[a]s new items are introduced in the primary video, indices to them can be added as they appear in the scenes." Ex. 1021 ¶ 23. And Armstrong does not disclose deleting any previously displayed indices. *Id.* As a result, this disclosure at least suggests adding the indices for the new items while preserving the indices for the previously displayed items.

Patent Owner argues that Armstrong must delete the previously displayed menu items because Armstrong discloses that its displayed menu only contains an index of items in the current scene. PO Resp. 45. We do not agree with this argument, however. If an item is added to a scene, and no items are deleted from the scene, displaying only indices for the items in the current scene would display indices for the previously displayed items (that are still in the scene) as well as the indices for the added items.

Thus, we find that Armstrong teaches or suggest the above limitation. Because of this finding, we need not consider Petitioner's alternative contention that Armstrong in combination with Livesey would teach or suggest this limitation.[6] Pet. 47–52. Consequently,

6. Petitioner argues that Armstrong alone teaches or suggests this limitation. Pet. 47 ("Armstrong therefore teaches . . . it would have been obvious to a POSITA in view of Armstrong.") Petitioner also argues alternatively that the combination of

Patent Owner's arguments specific to that contention are insufficient to defeat Petitioner's showing. PO Resp. 46–50; Sur-Reply 21–22.

f. receiving, following the displaying of the subsequent indication, a request responsive to the initial indication, for information

Petitioner argues that Armstrong teaches or suggests adding indices to its displayed menu for subsequent items while retaining prior indices. Pet. 52. Further, Petitioner asserts that a user could request information using the retained prior indices. *Id.* Therefore, according to Petitioner, "Armstrong discloses or renders obvious (alone or with Livesey) that a user can request information responsive to the initial indication (e.g., index for item #5 associated with the wine) following the display of the subsequent indication (indices added to the menu in subsequent frames)." *Id.* Patent Owner does not dispute that Armstrong receives a request responsive to the initial indication following what Petitioner has identified as the display of the subsequent indication. PO Resp. 50–51. Patent Owner, however, disputes that Armstrong teaches or suggests "displaying . . . a subsequent indication." *Id.*

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that

---

Armstrong and Livesey teach or suggest the limitation "[t]o the extent CustomPlay argues that contemporaneously displaying the initial and subsequent indications would not have been obvious in view of Armstrong, it would have been obvious in further view of Livesey." Pet. 47.

Armstrong teaches or suggests the above limitation. *See supra* Section III.D.3.d. Because of this finding, we need not consider Petitioner's alternative contention that Armstrong in combination with Livesey would teach or suggest this limitation.[7] Pet. 47–52. Consequently, Patent Owner's arguments specific to that contention are insufficient to defeat Petitioner's showing. PO Resp. 46–50; Sur-Reply 21–22.

g. displaying information associated with the initial indication that information is available

Petitioner argues that Armstrong teaches the above limitation by disclosing that, when a user clicks on a menu item, more detailed information about the menu item is displayed. Pet. 53–54. Patent Owner does not dispute that Armstrong teaches this limitation. PO Resp. 31–51.

Based on the evidence and arguments in the Petition, we find that Armstrong teaches the above limitation.

As set forth above, Armstrong teaches or suggests every limitation of claim 6. Because we find that Armstrong

7. Petitioner argues that Armstrong alone teaches or suggests this limitation, and in the alternative that Armstrong in combination with Livesey teach or suggest this limitation: "maintaining the indices throughout the scene (and therefore contemporaneously displaying a first and second indication associated with different frames) would have been obvious in view of *Armstrong, alone or in combination with Livesey*." Pet. 51 (emphasis added).

teaches or suggests every limitation of claim 6, we need not consider the parties' arguments and evidence regarding whether an ordinarily skilled artisan would have combined Armstrong's and Livesey's teachings. Nevertheless, we have considered those arguments and evidence and find that an ordinarily skilled artisan would have combined those teachings for the reasons set forth in the Petition. Pet. 48–51; Ex. 1002 ¶¶ 128–136. Patent Owner argues that the proposed combination would change Armstrong's principle of operation or require undue experimentation to implement. PO Resp. 49–50; Ex. 2021 ¶¶ 116, 119. We, however, credit Dr. Bovik's testimony that no changes to Armstrong's basic functioning would be required. Ex. 1002 ¶ 135; Ex. 1102 ¶ 70. Armstrong already displays indications. To the extent that it is argued that Armstrong does not display a subsequent indication, Armstrong would merely need to repeat its earlier step of displaying an indication. Ex. 1002 ¶ 135; Ex. 1102 ¶ 70. Further, Dr. Bovik sets forth the analysis and evidence that underlies his opinion that the combination would require no change to Armstrong's basic functioning (Ex. 1002 ¶ 135; Ex. 1102 ¶ 70), whereas Dr. Reader's contrary testimony is conclusory (Ex. 2021 ¶ 116), and thus of little weight.

Consequently, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 6 would have been obvious over Armstrong and Livesey.

4. Independent Claim 2

Petitioner argues that Armstrong discloses the receiving-a-request-for additional information limitation

of claim 2 by disclosing that its information pages may contain links to additional information. Pet. 54–55. Petitioner provides as an example that "Armstrong discloses that information about an Armani shirt may show locations and websites where the item can be purchased." *Id.* at 54. Petitioner argues that clicking on a link to those websites would constitute "receiving a request for additional information (e.g., clicking a link to the video/website) relating to displayed information." *Id.* at 55.

Petitioner asserts that Armstrong discloses the displaying-additional-information limitation of claim 2 by displaying websites where items can be purchased or video clips associated with products. Pet. 55.

Patent Owner does not dispute that Armstrong teaches these limitations of claim 2. PO Resp. 31–51. Based on the evidence and arguments in the Petition, we find that Armstrong teaches the above limitations.

For the limitations that claim 2 shares with claim 6, both parties rely on their arguments and evidence for claim 6. As set forth in Section III.D.3., we find that Armstrong teaches or suggests all of those limitations. Consequently, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 2 would have been obvious over Armstrong and Livesey.

5. Independent Claims 14, 16, and 19

For independent claim 14, Petitioner relies on its showing for claim 2. Pet. 56. For independent claims

16 and 19, Petitioner argues that items disclosed in Armstrong (e.g., clothing, wine, location) are "item information." *Id.* Petitioner further relies on its showings for claim 14 and 6, respectively. *Id.* Patent Owner does not dispute that Armstrong discloses item information. PO Resp. 31–51. Instead, Patent Owner presents the same counterarguments for claims 14, 16, and 19 as for claim 6. *Id.*

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Armstrong teaches or suggests all limitations of claims 14, 16, and 19. *See supra* Section III.D.3. Consequently, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 14, 16, and 19 would have been obvious over Armstrong and Livesey.

E. Alleged Obviousness Based on Armstrong, Livesey, and Abecassis

Petitioner asserts that dependent claim 4 would have been obvious over Armstrong, Livesey, and Abecassis. Pet. 56–61.

a. pausing the playing in response to a request for additional information.

Petitioner argues that Armstrong teaches or suggests the above limitation by disclosing (i) that its video can continue playing with menu items overlaid on the screen and further disclosing that pausing of the video can occur prior to display of a sub-menu and (ii) the use of a partial

overlay and access to a video. Pet. 56–57. Patent Owner disagrees. PO Resp. 52–53. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Armstrong teaches or suggests the above limitation.

First, Armstrong teaches or suggests the above limitation by disclosing that its primary video can continue playing with menu items overlaid on the screen and that pausing can occur prior to display of a sub- menu. Armstrong discloses that "the [primary] video does not have to pause but can keep playing" with the menu of indices overlaid on the screen. Ex. 1021 ¶ 23. Armstrong further discloses that "asserting a button will suspend play of the primary video content and activate or display a portion or sub-menu of the menu structure corresponding the [sic] a scene or frame other than the current scene or frame being played or displayed." *Id.* ¶¶ 47–48. We credit Dr. Bovik's testimony that in order to reach a sub- menu, the viewer would have need to make an initial request for information (i.e., to access a higher menu level) and then make a subsequent request for additional information (i.e., to access the sub-menu) which would pause the video. Ex. 1002 ¶¶ 50–51. As a result, Armstrong discloses pausing the primary video as a result of a request for additional information (e.g., access to the sub-menu). *Id.*

Second, Armstrong teaches or suggests the above limitation by disclosing the use of a partial overlay and access to a video. Armstrong discloses using a partial overlay, illustrated in its Figure 1A. Ex. 1021 ¶ 20, Fig. 1A. We credit Dr. Bovik's testimony that an ordinarily

skilled artisan would recognize that with that overlay (particularly, with its illustrated position and size), the primary video need not be paused while a user views the overlaid menu. Ex. 1002 ¶ 153; Ex. 1021 ¶¶ 20, Fig. 1. Armstrong also discloses that its displayed links can take a user to a video. Ex. 1021 ¶ 62 ("At video screen button (#513), a separate video clip can be activated that would demonstrate a process or a product of display 500 in use."), Fig. 5. Further, Armstrong teaches expanding the portion of the screen with the menu linked to the video so the linked video can be seen. *Id.* ¶ 62 ("On screen button could also be a motion button (#513), which shows a running video clip and can become expanded when asserted such as a 'play' button that expands to show video content."). We credit Dr. Bovik's testimony that the expansion of this portion of the screen to play a video and the playing of a second video would suggest pausing the primary video due to its obstruction and the distraction of having a user otherwise simultaneously watch two videos. Ex. 1002 ¶¶ 153–157.

Third, Patent Owner argues that claim 4 requires that at the time of displaying information, the video is not paused, but is paused when displaying additional information. PO Resp. 51. Patent Owner argues that Petitioner has not shown how that requirement is satisfied. PO Resp. 51; Sur-Reply 21–22. But Petitioner explains and Dr. Bovik testifies, that to reach a sub-menu in Armstrong, a user would need to request access to a higher menu level (an initial request for information). Pet. 56; Ex. 1002 ¶ 151. After that higher level menu is displayed (the information), the user can request access to the sub-menu, which would

cause the primary video to pause. Pet. 56; Ex. 1002 ¶ 151. Thus, Petitioner has explained how the pausing of the video in Armstrong due to display of the sub-menu would occur after the display of information (the higher level of the menu) and with the display of the additional information (the sub-menu).

In summary, we find that Armstrong teaches or suggests the above limitation. Because of this finding, we need not consider Petitioner's alternative contention based on Livesey. Pet. 56–59. Consequently, Patent Owner's arguments specific to that contention are insufficient to defeat Petitioner's showing. PO Resp. 52–53; Sur-Reply 21–22.

b. resuming the playing at a beginning of a video clip that is responsive to the location of the request for additional information, the video clip comprises a plurality of contiguous shots.

Petitioner argues that Abecassis's disclosure of identifying the beginning of a segment in which a pause occurred and resuming the video at that location suggests this limitation, and that an ordinarily skilled artisan would have combined this teaching from Abecassis with Armstrong. Pet. 59–61; Pet. Reply 23. Petitioner argues that Abecassis discloses the benefit of doing so. Pet. 60.

Patent Owner disputes only that Abecassis discloses a video clip, presenting the same arguments regarding this limitation as it presents for Rangan, Rakib, and Abecassis (i.e., that Abecassis does not teach a video clip). PO Resp.

55–56. As discussed in Section III.C.2.b, we find that Abecassis teaches a video clip. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Abecassis teaches or suggests the above limitation.

Patent Owner does not dispute that an ordinarily skilled artisan would have combined the teachings of Armstrong and Abecassis. PO Resp. 55–56; Sur-Reply 22. Based on the arguments and evidence set forth in the Petition, we find that an ordinarily skilled artisan would have made that combination. Pet. 36–38; Ex. 1002 ¶¶ 100–104, 160–161; Ex. 1024, 5:6-12; Ex. 1026, 210.

Because of the above findings, we need not consider Petitioner's alternative contention that the limitation would have been suggested based on Armstrong alone. Pet. 59–60; Sur-Reply 22. Consequently, Patent Owner's arguments specific to that contention are insufficient to defeat Petitioner's showing. PO Resp. 53–55; Sur-Reply 15–16.

We determine that Petitioner has demonstrated by a preponderance of the evidence that claim 4 would have been obvious over Rangan, Rakib, and Abecassis.

F. Alleged Obviousness Based on Rakib and Livesey

Petitioner asserts that all challenged claims would have been obvious over Rakib and Livesey. Pet. 61.

Appendix B

1. Independent Claim 6

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

According to Petitioner, Rakib teaches the above preamble recitation by disclosing remote device 150 with processing unit 800. Pet. 61–62. Patent Owner does not dispute that Rakib teaches the above preamble recitation. PO Resp. 56–63. Based on the evidence and arguments in the Petition, we find that Rakib teaches that recitation.

b. retrieving, from a plurality of video frame identifiers, a video frame identifier that is responsive to a play location within a playing of a video

Petitioner argues that Rakib teaches the above limitation by disclosing retrieving, from all frame numbers associated with the video, a frame number (t) that is responsive to a play location within a playing of a video. Pet. 61–66. Patent Owner disagrees, arguing that Rakib's subset of video data used to construct a video signature is not the recited video frame identifier. PO Resp. 60. Patent Owner further argues that Livesey does not teach the above limitation. *Id.* at 61.

Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rakib teaches or suggests the above limitation. Rakib

discloses that each object with supplemental information is linked to a metadata file using spatio-temporal coordinates (x, y, t), which denote an object's location on the screen (x, y) and in time (t). Ex. 1013 ¶ 87. Rakib further discloses that the time coordinate, t, may be a frame number. *Id.* ¶ 76. Further, we credit Dr. Bovik's testimony that when a video is displayed, (i) Rakib's media router and the remote control retrieve a video frame identifier (frame number, t), (ii) the media router uses the frame number to determine whether linked metadata should be sent to the remote, and (iii) the remote uses the frame number to at least determine when objects shown in the video have linked metadata that the remote should highlight. Ex. 1002 ¶¶ 165–172 (citing Ex. 1013 ¶¶ 52, 67–68, 75–76, 87, 91–94, 113, 117, 132–33, 141, Fig. 10). We further credit Dr. Bovik's testimony to make these determinations, namely that Rakib retrieves the frame number of the current play location. *Id.* Thus, Rakib discloses retrieving, from a plurality of video frame identifiers (all frame numbers associated with the video), a video frame identifier (frame number, t) that is responsive to a play location within a playing of a video. *Id.* ¶ 171.

Patent Owner argues that Rakib's subset of video data around coordinates (x,y,t) used to construct a video spatio-temporal coordinates are not video frame identifiers. PO Resp. 60. Dr. Reader testifies in support of this proposition. Ex. 2021 ¶ 120. But neither Patent Owner nor Dr. Reader address Rakib's disclosure that the time coordinate, t, may be a frame number. PO Resp. 60; Ex. 2021 ¶ 120. Therefore, we credit Dr. Bovik's contrary testimony, which accounts for that teaching. Ex. 1002 ¶ 171.

In sum, we find that Rakib teaches or suggests the above limitation.

> *c. displaying, responsive to the video frame identifier, an initial indication that information is available that is responsive to the play location*
>
> *retrieving a subsequent video frame identifier that is responsive to a subsequent play location*

Petitioner argues that Rakib discloses the displaying-an-initial-indication limitation above by disclosing metadata alert signals that indicate that information responsive to a play location is available. Pet. 66. According to Petitioner, the car and the house shown in picture-in-picture display 1122 in Figure 11 of Rakib are such indications. *Id.*

Petitioner further asserts that Rakib discloses the retrieving-a- subsequent-video-frame-identifier limitation above by disclosing images 1020, 1022, and 1024 and metadata associated with those images. Pet. 67. According to Petitioner, the frame numbers associated with images 1022 and 1024 are subsequent video frame identifiers that are responsive to a subsequent frame location as compared to the frame with image 1020. *Id.* at 68.

Patent Owner argues that Rakib and Livesey do not teach or suggest either of the above limitations because Rakib and Livesey do not teach or suggest video frame identifiers. PO Resp. 62. Considering both parties'

arguments and the complete record after trial, we agree with Petitioner and find that Rakib teaches or suggests the above limitations. *See supra* Section III.F.1.b.

d. displaying, responsive to the subsequent video frame identifier and contemporaneously with the displaying of the initial indication, a subsequent indication that information is available that is responsive to the subsequent play location

According to Petitioner, Rakib teaches the above limitation by disclosing the display of the metadata alert signal for the car shown in image frame 1020 (which is displayed at t1) when image frame 1022 is displayed (at time t2). Pet. 69. According to Petitioner, at "t2, which is subsequent to t1, an alert signal for a person, responsive to a subsequent video frame identifier (t2), is displayed (subsequent indication), and it is displayed contemporaneously with the displaying of the initial indication (car signal)." *Id.* Petitioner also argues that displaying the alert signal for the person contemporaneously with the alert signal for the car would have been obvious in view of Livesey because Livesey discloses displaying an icon indicating that supplemental information is available until the end of a scene. *Id.* at 69–72.

Patent Owner argues that Rakib and Livesey do not teach or suggest the above limitation because Rakib and Livesey do not teach or suggest displaying an initial indication. PO Resp. 63. Considering both parties'

arguments and the complete record after trial, we agree with Petitioner and find that Rakib teaches or suggests the above limitations. *See supra* Section III.F.1.c.

> *e. receiving, following the displaying of the subsequent indication, a request responsive to the initial indication, for information displaying information associated with the initial indication that information is available*

Petitioner argues that Rakib discloses the receiving limitation above because Rakib permits a user to make a request responsive to the car displayed in image frame 1020 when image frame 1022 is displayed. *Id.* at 72–73. In addition, Petitioner asserts that it would have been obvious to modify Rakib in view of Livesey to maintain icons when an object is no longer on display and allow a user to make a request responsive to the initial indication following the display of the subsequent indication. *Id.* at 73.

Petitioner argues that Rakib teaches the displaying limitation above by disclosing the display of information (price and a URL hyperlink) associated with the picture-in-picture of a car, which is an initial indication that information is available. Pet. 74.

Patent Owner argues that Rakib and Livesey do not teach or suggest either of the above limitations because Rakib and Livesey do not teach or suggest retrieving a subsequent video frame identifier. PO Resp. 63. Considering both parties' arguments and the complete

record after trial, we agree with Petitioner and find that Rakib teaches or suggests the above limitations. *See supra* Section III.F.1.c.

As set forth above, Rakib teaches or suggests every limitation of claim 6.[8] Because we reach that finding, we do not need to consider the parties' arguments and evidence regarding whether an ordinarily skilled artisan would have combined Rakib's and Livesey's teachings. Nevertheless, we have considered those arguments and evidence and find that an ordinarily skilled artisan would have combined those teachings for the reasons set forth in the Petition. Pet. 70–72; Ex. 1002 ¶¶ 182–189. Patent Owner argues that the proposed combination would change Rakib's principle of operation or require undue experimentation to implement. PO Resp. 61–62; Ex. 2021 ¶ 119. We, however, credit Dr. Bovik's testimony that no changes to Rakib's basic functioning would be required. Ex. 1102 ¶ 76. Rakib already displays indications. To the extent that it is argued that Rakib does not display a subsequent indication, Rakib would merely need to repeat its earlier step of displaying an indication and contemporaneously display the indications. Ex. 1102 ¶ 76. Further, Dr. Bovik sets forth his analysis and the

8. Petitioner asserts that Rakib teaches or suggests each limitation of claim 6. Pet. 61–75. Petitioner further presents the alternative argument that, if we do not find that Rakib teaches or suggests the limitations of "displaying, responsive to the subsequent video frame identifier . . . responsive to the subsequent play location" and "receiving . . . a request responsive to the initial indication," the combination of Rakib and Livesey would teach or suggest those limitations. *Id.* at 69–74.

evidence that sets forth his opinion that the combination would require no change to Rakib's basic functioning (Ex. 1002 ¶¶ 180–188; Ex. 1102 ¶ 76), whereas Dr. Reader's contrary testimony is conclusory (Ex. 2021 ¶ 119), and thus of little weight.

Consequently, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 6 would have been obvious over Armstrong and Livesey.

2. Independent Claim 2

Petitioner argues that Rakib discloses the limitation of receiving a request for additional information because Rakib discloses, with the algorithm of Figure 13, that, if the user determines that more information is desired, the remote control "send[s] a request for additional object information to the media/router set-top box hardware." Pet. 76 (quoting Ex. 1013 ¶ 136).

Petitioner argues that Rakib discloses the limitation of displaying additional information because Rakib discloses, with the algorithm of Figure 13, that the additional information sent to the remote control is handled and displayed. Pet. 77.

Patent Owner presents the same counterarguments for claim 2 as for claim 6. PO Resp. 64. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rakib teaches or suggests the above limitations, as well as the

limitations claim 2 shares with claim 6. *See supra* Section III.F.1. Consequently, Petitioner has demonstrated by a preponderance of the evidence that claim 2 would have been obvious over Rakib and Livesey.

3. Dependent Claim 4

a. pausing the playing in response to a request for additional information.

Petitioner argues that Rakib and Livesey would have disclosed or rendered obvious the additional limitations recited by claim 4. Pet. 78–82. Petitioner asserts that Rakib teaches that a video playback may be stopped so that the primary video on a remote control is no longer played. *Id.* at 79. Petitioner further argues that Livesey discloses pausing video after a request for information, but discloses its steps can occur in a different order. *Id.* Further, Petitioner contends that an ordinarily skilled artisan would have understood that a partial overlay could be used to display information, such as that contained in Figure 10 of Rakib, while continuing to play a video. *Id.* Petitioner asserts that, with a partial overlay, an ordinarily skilled artisan would recognize that the video need not be paused. *Id.* Petitioner further asserts that Rakib discloses that the pertinent additional information could be a website, which would motivate an ordinarily skilled artisan to pause the primary video. *Id.* Petitioner also argues that pausing in response to a request for additional information would have been obvious because it simply arranges old elements (requests for information and pausing control instructions), with each performing

the same function it had been known to perform, and yields no more than predictable results. *Id.* Further, Petitioner contents that an ordinarily skilled artisan would have had a reasonable expectation of success in adding this feature to Rakib. *Id.*

Patent Owner argues that Rakib and Livesey do not teach the above limitation, and Petitioner's argument that Rakib suggests the above limitation rests on impermissible hindsight. PO Resp. 64.

Considering both parties' arguments and the complete record after trial, we agree with Patent Owner and do not find that Rakib and Livesey teach or suggest the above limitation. Petitioner's obviousness theory for this limitation rests on its arguments about what an ordinarily skilled artisan *could* have done. According to Petitioner, an ordinarily skilled artisan would have understood that a partial overlay *could* be used to display information. Then Petitioner argues what an ordinarily skilled artisan would have been motivated to do if the artisan decided to use a partial overlay. But Petitioner provides no persuasive evidence that an ordinarily skilled artisan would have been motivated to choose the partial overlay— the predicate act in Petitioner's analysis. And obviousness cannot be established by merely proving what an ordinarily skilled artisan *could* have done. *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 993 (Fed. Cir. 2017); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015).

Further, Petitioner's argument and Dr. Bovik's testimony that the above limitation simply arranges old

elements (requests for information and pausing control instructions), with each performing the same function it had been known to perform, and yields no more than predictable results, are conclusory. Pet. 80–81; Ex. 1002 ¶¶ 202–203. For that reason, we are not persuaded by that argument or that testimony.

> *b. resuming the playing at a beginning of a video clip that is responsive to the location of the request for additional information, the video clip comprises a plurality of contiguous shots.*

Petitioner argues that Rakib teaches the above limitation by disclosing that if, after obtaining information, the user decides no further information is needed, the remote control can be sent a short optional catch- up clip to quickly review missed video at higher than normal speeds. Pet. 81–82.

Patent Owner argues that Rakib's playing of a catch-up clip at higher than normal speeds and resuming the regular video at a later location is not the claimed resuming. PO Resp. 65. Patent Owner also argues that Petitioner has not shown that the catch-up clip is a video clip. *Id.*

Petitioner responds that resuming play at normal speeds is not a claim limitation. Pet. Reply 26–27. Petitioner further argues that Dr. Reader did not testify that Rakib's clip is not a video clip, whereas Dr. Bovik testifies it is. *Id.* at 27.

Considering both parties' arguments and the complete record after trial, we agree with Patent Owner that Petitioner has not proven the playing of the catch-up clip at higher speeds constitutes the recited resuming. Thus, we do not find that Rakib and Livesey teach or suggest the above limitation.

Petitioner has not persuasively explained why playing a new video clip at a higher rate of speed than the old video was shown at would constitute "resuming" the play of the video previously displayed. Petitioner's argument that the limitation recites no absolute speed requirement is unavailing. Pet. 81–82; Pet. Reply 26–27. Petitioner may be correct that the above limitation could be satisfied by the playing and pausing of a video that is shown at higher than normal speeds. For example, showing a video at double speed, pausing, and then resuming the play of that video at double speed may satisfy the above limitation. But that is different from playing a video at normal speed, pausing, and then displaying a catch-up clip at a higher speed. Petitioner has not persuasively explained why the latter constitutes resuming the play of the recited video. Pet. 81–82; Pet. Reply 26–27.

Consequently, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claim 4 would have been obvious over Rakib and Livesey

4. Independent Claims 14, 16, and 19

Referencing its arguments for Grounds 1 and 2, Petitioner argues that "claims 14, 16, and 19 are invalid

for the same reasons as claims 2, 4, and 6, respectively." Pet. 82. Patent Owner responds that "[t]he Petition fails with respect to claims 14, 16, and 19 for the same reasons discussed with respect to claims 2 and 6." PO Resp. 66.

As discussed in Section III.B.3., claim 14 is broader than claim 2. Therefore, Petitioner's showing for claim 2 establishes the unpatentability of claim 14. Claims 16 and 19, however, recite "item information," which claims 2 and 6 do not. Dr. Bovik addresses this additional limitation of claims 2 and 6, testifying that the challenged patent "'defines item' to refer to, among other things, items, products, and objects." Ex. 1002 ¶ 208 (citing Ex. 1001, 4:48–61). Dr. Bovik opines that "[t]his definition encompasses the items disclosed in Rakib." *Id.* Patent Owner has not challenged this evidence regarding Rakib's disclosure of "item information" or Petitioner's showing regrading item information. PO Resp. 66. Instead, Patent Owner merely challenges Petitioner's proof regarding claims 2 and 6. *Id.* Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Rakib teaches or suggests the above limitations. *See supra* Section III.F.1.

We determine that Petitioner has demonstrated that claims 14, 16, and 19 would have been obvious over Rakib and Livesey.

IV. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude certain portions of Dr. Reader's testimony during his deposition (*see* Ex. 1101)

under Rule 403.[9] Paper 29 ("Mot.") 1–2. More specifically, Patent Owner alleges the testimony to be excluded is "prejudicial."[10] *Id.* at 1; *see* Paper 33 ("Mot. Reply") 1.

According to Patent Owner, Petitioner's questions were purportedly vague, ambiguous, and/or beyond the scope of Dr. Reader's direct examination (i.e., his Declaration). *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"). We also note that none of the testimony at issue directly formed part of the basis for any determination made in this Decision.

---

9. In its Reply in support of the Motion, Patent Owner further invokes Rule 611(b) as a basis for excluding the evidence in question. Mot. Reply 1. We determine this argument was untimely and waived because it was not included in the Motion, and, as a result, Petitioner did not have a reasonable opportunity to address it. *See* 37 C.F.R. §§ 42.5(a), 42.23(b), 42.64(c).

10. Patent Owner also alleges this testimony is "irrelevant," but the Motion does not assert an objection based on Rule 402. *See* Mot. 1; Mot. Reply 1–3. Indeed, Rule 403 explicitly addresses *relevant* evidence by definition. *See* Fed. R. Evid. 403 ("The court may exclude relevant evidence if its probative value is substantially outweighed . . . ."). To the extent Patent Owner intends to challenge the relevance of any of the testimony in question, we are not persuaded as a result.

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 any of the testimony at issue should be excluded and, thus, we deny Patent Owner's Motion to Exclude.

V. CONCLUSION[11]

For the foregoing reasons, Petitioner has shown by a preponderance of the evidence that the challenged claims of the '950 Patent are unpatentable, as summarized in the following table:

11. 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).

Appendix B

Claims	35 U.S.C. §	Reference(s)	Claims Shown Unpatentable	Claims Not Shown Unpatentable
6 and 19	103(a)	Rangan	6 and 19	
2, 14, and 16	103(a)	Rangan and Rakib	2, 14, and 16	
4	103(a)	Rangan, Rakib, and Abecassis	4	
2, 6, 14, 16, and 19	103(a)	Armstrong and Livesey	2, 6, 14, 16, and 19	
4	103(a)	Armstrong, Livesey, and Abecassis	4	
2, 4, 6, 14, 16, and 19	103(a)	Rakib and Livesey	2, 6, 14, 16, and 19	4
Overall Outcome			2, 4, 6, 14, 16, and 19	

It is:

VI. ORDER

ORDERED that the challenged claims of the '950 Patent are held unpatentable in view of the following asserted grounds:

Claims 6 and 19 as unpatentable under 35 U.S.C. § 103(a) over Rangan;

Claims 2, 14, and 16 as unpatentable under 35 U.S.C. § 103(a) over Rangan and Rakib;

Claims 4 as unpatentable under 35 U.S.C. § 103(a) over Rangan, Rakib, and Abecassis;

Claims 2, 6, 14, 16, and 19 as unpatentable under 35 U.S.C. § 103(a) over Armstrong and Livesey;

Claim 4 as unpatentable under 35 U.S.C. § 103(a) over Armstrong, Livesey, and Abecassis; and

Claims 2, 6, 14, 16, and 19 as unpatentable under 35 U.S.C. § 103(a) over Rakib and Livesey;

FURTHER ORDERED that claim 4 is not held to be unpatentable under 35 U.S.C. § 103(a) over Rakib and Livesey;

FURTHER ORDERED that Patent Owner's Motion to Exclude (Paper 24) is *denied* as set forth above;

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.

Appendix B

FOR PETITIONER:

Colin Heideman
Joseph Re
Christie Matthaei
KNOBBE, MARTENS, OLSON & BEAR, LLP
2cbh@knobbe.com
2jrr@knobbe.com
2crw@knobbe.com

FOR PATENT OWNER:

Bryan Wilson
Adam Underwood
CARERY RODRIGUEZ MILIAN GONYA, LLP
bwilson@careyrodriguez
aunderwood@careyrodriguez.com

APPENDIX C — JUDGMENT OF THE UNITED STATES PATENT AND TRADEMARK OFFICE, PATENT TRIAL AND APPEAL BOARD, DATED MARCH 4, 2020

UNITED STATES PATENT
AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL
AND APPEAL BOARD

IPR2018-01496
Patent 8,494,346 B2

AMAZON.COM, INC.,

Petitioner,

v.

CUSTOMPLAY, LLC,

Patent Owner.

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)

Appendix C

INTRODUCTION

Amazon.com, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 4–6 and 10–20 ("the challenged claims") of U.S. Patent No. 8,494,346 B2 (Ex. 1001, "the '346 Patent"). An *inter partes* review of all challenged claims was instituted on March 7, 2019. Paper 12 ("Inst. Dec."). After institution, CustomPlay, LLC ("Patent Owner") filed a Patent Owner Response (Paper 16, "PO Resp."), Petitioner filed a Reply (Paper 19, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 22, "PO Sur-reply"). Patent Owner also filed a Motion to Exclude (Paper 24) that remains pending, which is addressed below. An oral hearing was held on December 18, 2019. Paper 33 ("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 '346 Patent

The '346 Patent relates to providing information to a user regarding a performer in a video during playback of that video. Ex. 1001, 1:61–64. In accordance with the claimed invention, as shown in Figure 1B (reproduced below), performers appearing in a movie scene may be identified.

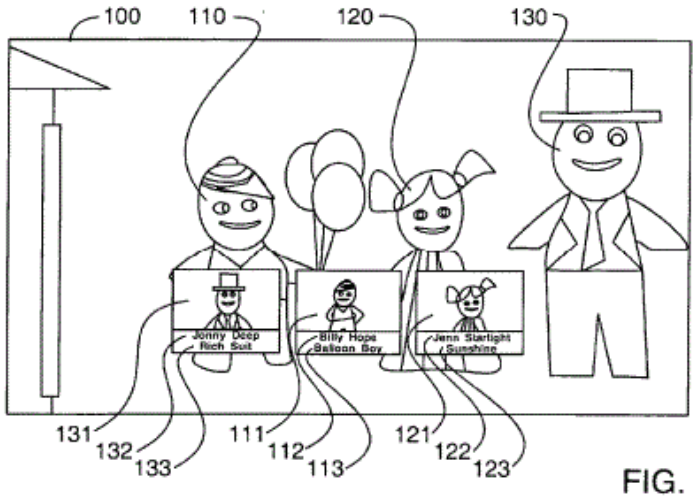


FIG. 1B

Ex. 1001, Fig. 1B. Figure 1B depicts an embodiment of the claimed invention wherein a "video frame within a motion picture" is presented, which includes characters 110, 120, and 130. *Id.* at 6:29–33. "[S]uperimposed on that frame of video are a visual depiction of each of the characters and corresponding performer's and character's name." *Id.* at 6:34–36. For example, character 110 is identified as "Balloon Boy" (113), the performer playing that role is identified as "Billy Hope" (112), and image 111 of the

performer is shown along with the names. *Id.* at Fig. 1B, 6:39–43. The image may be provided, for example, by downloading it from a website via a link. *Id.* at 6:48–51.

The performer and character information may continue to be provided even when a performer no longer appears on the screen at a later point in the same clip within the motion picture. *Id.* at 7:42–53, Fig. 1E. This is accomplished by basing the presentation of information on specifications of clips rather than "precise video frame specific information." *Id.* at 7:48–56. According to the Specification, such an embodiment is advantageous because it "does not require the user to pause the playing of the video at a video frame depicting the character of interest since it is not dependent on the actual contemporaneous onscreen presence of that character." *Id.* at 7:56–60. Alternatively, performer information may be presented based on specific frames (rather than clips)—a "frame accurate mapping"—to "support a continuous display of identification information contemporaneously with the playing of the video," such that the information presentation is "continuously activated and updated while the video is playing." *Id.* at 8:15–21.

C. Challenged Claims

Petitioner challenges claims 4–6 and 10–20 of the '346 Patent. Claim 10 is illustrative and is reproduced below:

> 10. An apparatus capable of processing data, the data comprising: (i) a name of a performer of a character depicted within a video frame of

a video; and (ii) a reference to a visual depiction of the performer of the depicted character; the apparatus performs the steps of:

receiving, from a user, during a playing of a video, a request for information for identifying a performer of a character that is depicted during the playing of the video;

identifying a current location in the video;

identifying a name of a performer associated with the identified location;

retrieving, responsive to the reference, a visual depiction of the performer; and

providing, the user, the identified name of the performer, and the visual depiction of the performer.

D. Instituted Grounds of Unpatentability and Asserted Prior Art

Trial was instituted on the following grounds of unpatentability[1] asserted in the Petition:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
4–6, 10–20	103(a)	Thomas[2]
4–6, 10–20	103(a)	Thomas, McIntire[3]
4–6, 10–20	103(a)	McIntire, Thomas
4–6, 10–12, 14–19	103(a)	Reimer,[4] McIntire
13, 20	103(a)	Reimer, McIntire, Thomas
4–6, 10–20	103(a)	Clarke,[5] Reimer

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.

2. U.S. Patent Application Publication No. 2002/0042920 A1, published Apr. 11, 2002 (Ex. 1003, "Thomas").

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

4. U.S. Patent No. 5,696,905, issued Dec. 9, 1997 (Ex. 1005, "Reimer").

5. U.S. Patent No. 9,762,967 B2, filed June 14, 2012, issued Sep. 12, 2017 (Ex. 1006, "Clarke").

Inst. Dec. 44–45. The parties dispute whether Clarke qualifies as prior art under 35 U.S.C. § 102(e). *See* Pet. 13; PO Resp. 51–52; Pet. Reply 3–4; PO Sur-reply 6–7.

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 own 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. 10–11 (citing Ex. 1002 ¶¶ 24–26). Patent Owner does not dispute Petitioner's formulation of the level of ordinary skill in the art. Based on the information and testimony presented in 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. 11. Patent Owner contends the inventor acted as his own lexicographer in presenting a number of definitions in the Specification of the '346 Patent, and asserts that these definitions should be used in this proceeding. PO Resp. 16. We determine that no claim terms of the challenged claims in the '346 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).

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 nonobviousness, 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 Thomas

Petitioner asserts that all challenged claims would have been obvious over Thomas. Pet. 14–28. Thomas discloses "systems and methods for supplementing on-demand media," such as "video-on-demand." Ex. 1003 ¶¶ 5–6. The supplementation could include displaying text, graphics, video, or other supplemental content—for example, "actor interviews"—in an overlay over the on-demand media. *Id.* ¶¶ 6–7. The supplemental content can be triggered when "the user first accesses a segment of on-demand media (e.g., a scene in a movie)," or "in response to the user's request (e.g., selecting an on-screen button)." *Id.* ¶ 7.

Appendix C

a. Independent Claim 10

According to Petitioner (Pet. 14–17), Thomas teaches an apparatus capable of processing data that comprises a performer name and a reference to a visual depiction of that performer, as recited in claim 10, in its disclosure of a system that overlays a "pop-up window" on top of a video that can display supplemental content such as "the names of the characters or actors" in the scene or "actor interviews." *See* Ex. 1003 ¶¶ 98–102. This content, or links to such content, may be provided via "synchronous metadata." *Id.* ¶ 44. Patent Owner does not dispute that Thomas teaches these aspects of claim 10.[6] Based on the evidence and arguments in the Petition, we find that Thomas teaches these claim elements.

Petitioner asserts Thomas teaches receiving a user's request for information identifying a performer in a video, as recited in claim 10, in its descriptions of "'Actor Interviews' button 906" and "'Cast Info' button 908." Pet. 17–18 (citing Ex. 1003 ¶¶ 98, 102). In both instances, Thomas discloses that "[i]n response to a user selecting" the button, the system provides supplemental content relating to an actor or actors that "the user is currently watching"—i.e., actor interviews or actor information

6. Patent Owner takes issue (PO Resp. 26–27) with the statement in the Petition that "[i]ncluding a performer's name in data" was "well-known by those of ordinary skill" (Pet. 15–16). We address Patent Owner's position in more detail below in conjunction with a related limitation, but note here that Patent Owner does not dispute that Thomas teaches the name of a performer in a video and an apparatus that is "capable of processing" that data.

(such as his/her name), respectively. Ex. 1003 ¶¶ 98, 102. Patent Owner does not dispute that Thomas teaches these limitations. Based on the evidence and arguments in the Petition, we find that Thomas teaches these elements of claim 10.

With respect to the limitation of "identifying a current location in the video," Petitioner notes that Thomas discloses providing supplemental content relating to actors "the user is currently watching" and relating the content to "the current portion" of the video, arguing a person of ordinary skill would have understood this as teaching the limitation. Pet. 18 (quoting Ex. 1003 ¶¶ 100, 102). Petitioner further argues that even if Thomas does not explicitly teach this limitation, "it is inherent" and "[a]lternatively, this would have been obvious because it was widely known to those of ordinary skill." *Id.* at 18 (citing Ex. 1002 ¶¶ 60–61). Patent Owner argues, however, that Petitioner's showing is inadequate. *See* PO Resp. 22–26; PO Sur-Reply 22–24. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Thomas explicitly teaches this limitation of claim 10.

More specifically, Patent Owner first argues that the existence of Petitioner's alternative argument based on inherency "tacitly acknowledges" a failing in Petitioner's primary arguments. PO Resp. 22. We decline to infer that an argument fails merely because Petitioner put forth an alternative argument, particularly because the two arguments in question are not inconsistent or incompatible—it is entirely possible for a reference to both

explicitly teach a claim element *and* disclose it inherently at the same time. Indeed, such a circumstance would be consistent with the maxim that anticipation (such as by inherent disclosure) is the "epitome of obviousness." *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019).

Patent Owner next argues that Thomas does not disclose identifying a current location in a video because the system in Thomas has no need to do so due to its "synchronous" nature. PO Resp. 23–24; PO Sur-reply 22–23. In essence, Patent Owner contends Thomas discloses that supplemental content is provided in a "synchronous" manner, which makes identifying the current location in a video unnecessary because the corresponding content is already synchronized to the video. *See* PO Resp. 23–24 (citing Ex. 2021 ¶¶ 70–72; Ex. 1003 ¶ 44). As Petitioner notes (Pet. Reply 22), however, the teachings of Thomas are not limited to a "synchronous" embodiment, which is presented expressly as a mere "example." *See* Ex. 1003 ¶ 44 ("Supplemental content . . . may be distributed . . . as, *for example*, synchronous metadata." (emphasis added)). Moreover, Thomas discloses that metadata may be supplied "prior to the media [(i.e., video)] *but with information associating it with media (e.g., identifiers, links, or any other suitable information)*." *Id.* (emphasis added); *see id.* ¶ 123. We are persuaded that these disclosures would have taught, to a skilled artisan, identifying the current location in the video in using such "identifiers, links, or any other suitable information" associating the metadata to

the appropriate places in the video.[7] *See* Pet. Reply 22–23; Ex. 1102 ¶¶ 11–14; Ex. 1001, 135:20–136:20.

Because we find that Thomas explicitly teaches this limitation, we need not (and do not) consider Petitioner's alternative arguments, including whether the identified disclosures of Thomas meet the standard required for inherency. *See* Pet. 18; Pet. Reply 23–24. Consequently, Patent Owner's arguments specific to those positions are insufficient to defeat Petitioner's showing. *See* PO Resp. 24–26; PO Sur-reply 23–25.

Proceeding to the next limitation of claim 10, Petitioner contends (Pet. 19) that Thomas teaches identifying a name of a performer associated with the current location in the video, as recited in claim 10, by disclosing that the supplemental content relating to actors "the user is currently watching" may include "the names of the characters or actors." Ex. 1003 ¶ 102. Patent Owner disputes this contention. *See* PO Resp. 26–27. Considering both parties' arguments and the complete record after trial, we agree with Petitioner and find that Thomas explicitly teaches this limitation.

---

7. Although the parties and their respective expert witnesses disagree about whether certain of these disclosures of Thomas relate to "synchronous" or "asynchronous" embodiments, we note that neither term is recited in claim 10 of the '346 Patent. *See* Pet. Reply 22–23; PO Sur-reply 22–23. Of greater relevance here, we find credible and persuasive Dr. Bovik's testimony that providing metadata prior to a video and using links to associate that metadata with particular locations in the video, such as described in Thomas, would have indicated to a skilled artisan that the current location in the video would be identified. *See* Ex. 1102 ¶¶ 11–14.

In particular, Patent Owner's arguments focus on Petitioner's *alternative* argument that this limitation, and "including" performer names in general, were "well-known" generally. *Id*. Patent Owner does not, however, address the specific disclosures of Thomas identified in the Petition as explicitly teaching or suggesting identifying a name of a performer associated with the current location in the video. Whether doing so was "well-known" independent of Thomas is inapposite given our finding that Thomas would have explicitly taught it to a person of ordinary skill.

For the limitation of "retrieving, responsive to the reference, a visual depiction of the performer," Petitioner relies on the disclosure in Thomas of displaying "actor interviews" in one embodiment, and a disclosure of displaying "a picture of the [music] artist" in another embodiment. Ex. 1003 ¶¶ 100, 111; *see* Pet. 20–21. Petitioner also asserts that the general disclosure of supplemental content including an actor's "biographical information" and "other suitable information relating to . . . the actor" would teach or suggest to a skilled artisan to retrieve a visual depiction of the actor. Pet. 21 (citing Ex. 1003 ¶ 106; Ex. 1002 ¶ 68). According to Petitioner, Thomas indicates such supplemental content is retrieved "responsive to" a reference, such as metadata with a link to the content. *Id.* at 20 (citing Ex. 1003 ¶ 128; Ex. 1002 ¶ 65). In addition, Petitioner argues that even if Thomas does not explicitly teach this limitation, it is "inherent." *Id.* at 20 (citing Ex. 1002 ¶ 66). Patent Owner, however, argues that actor interviews do not "necessarily" disclose a "visual depiction of the performer," and that the disclosure

of displaying "a picture of the artist" in an embodiment relating to on-demand music does not teach or suggest doing so during a video. PO Resp. 29–30; Pet. Reply 24–25. Further, Patent Owner asserts that "links" in Thomas are "not used for 'retrieving . . . a visual depiction of the performer.'" PO Resp. 30–31.

Based on the parties' arguments and the complete record after trial, we agree with Petitioner and find that Thomas explicitly teaches this limitation. Even assuming Patent Owner is correct that an "actor interview" does not "necessarily" require a visual depiction of the actor in the context of inherency (*id.* at 29), Patent Owner fails to address Petitioner's primary argument, i.e., that the actor interview functionality described in Thomas would have explicitly taught or suggested retrieving a "visual depiction" of the actor, particularly given the description in Thomas that the interview is displayed in "pop-up window 1002," which may be "any suitable *video* or application window" (emphasis added). *See* Ex. 1003 ¶¶ 98, 100, Fig. 12.

We also find Petitioner's position more persuasive with respect to "links" discussed in Thomas. Contrary to Patent Owner's assertion (PO Resp. 30), Petitioner provides sufficient explanation and evidence as to how Thomas teaches retrieving supplemental content (such as a visual depiction of an actor) responsive to a reference, such as metadata with a link to that supplemental content. Pet. 20 (citing Ex. 1003 ¶ 128; Ex. 1002 ¶ 65). Rather than address Petitioner's evidence, Patent Owner instead discusses a *different* portion of Thomas regarding *different* links,

which describes that the supplemental content may itself include links to *other* content and gives examples that do not explicitly mention visual depictions of performers (although it does mention "an actor's homepage"). PO Resp. 31 (quoting Ex. 1003 ¶ 113).

Additionally, we find that the disclosure of displaying a "picture of the artist" for the on-demand music embodiment of Thomas also would have taught or suggested to a skilled artisan to do so also for a video embodiment. *See* Pet. 20–21 (citing Ex. 1003 ¶ 111). Patent Owner argues that the '346 Patent distinguishes between visual depictions of performers and those of characters, noting that the Specification and certain claims (e.g., claim 1 vs. claim 10) distinguish between them. PO Resp. 28–29; PO Sur-reply 1–5. According to Patent Owner, the picture of a music artist described in Thomas is more akin to a depiction of a character than that of a performer, noting that the members of the rock band "KISS" wore make-up and costumes to portray on-stage personas. PO Sur-reply 24–25.

But the '346 Patent itself undermines Patent Owner's position—for example, the Specification discloses a preferred embodiment where "a visual depiction of a performer need not be more than an image of the performer performing the character which may be extracted from within the video as in the case of a visual depiction of character." Ex. 1001, 12:60–64; Pet. Reply 2–3. And as Petitioner argues (Pet. Reply 2–3), claim differentiation indicates that two claims using different terms have different scope, but does not require complete

mutual exclusivity—i.e., they may still overlap. Thus, even considering claims 1 and 10, a visual depiction of a performer and that of a character may be one and the same in some cases, as Patent Owner's expert, Dr. Reader, agreed at his deposition. *See* Ex. 1101, 206:5–13. For instance, while Patent Owner's "KISS" example may be an instance where the two may be different, a picture of the music artist Billy Joel or Carrie Underwood would likely be both a visual depiction of them as performers and as "characters" (to the extent they can be analogized to "characters" when they perform) because their on-stage and off-stage appearances are essentially the same.

With respect to the final limitation of claim 10, Petitioner relies on disclosures in Thomas of displaying supplemental content in pop-up windows, including actor names and interviews, as a teaching of providing a performer name and visual depiction to the user, as recited in claim 10. Pet. 22–24 (citing Ex. 1003 ¶¶ 98, 102–106, Figs. 12, 14). Aside from the arguments already discussed above with respect to other limitations reciting the performer name and visual depiction, Patent Owner does not present additional arguments regarding this aspect of the claim. Considering both parties' arguments and the complete record, we agree with Petitioner and find that Thomas explicitly teaches this limitation of claim 10.

In conclusion, for the reasons set forth above, Petitioner has demonstrates that Thomas teaches each limitation of claim 10. Consequently, based on the full record after trial, we determine that Petitioner has shown by a preponderance of the evidence that claim 10 is unpatentable as obvious over Thomas.

b. Dependent Claims 11 and 12

Claim 11 depends from claim 10, and adds the limitation, "wherein the apparatus further performs the step of retrieving and providing, the user, a filmography corresponding to the identified name of the performer." Petitioner relies on the description in Thomas of providing, "actor information, such as . . . other movies with that actor." Ex. 1003 ¶ 106; *see* Pet. 24. Patent Owner does not advance any arguments beyond those it presents for claim 10, which are unpersuasive for the same reasons as discussed above. PO Resp. 31.

Claim 12 also depends from claim 10, adding the limitation, "wherein the apparatus further performs the step of pausing the playing of the video in response to the receiving of the request for information." The Petition cites a disclosure in Thomas that the system "may pause the on-demand media when the supplemental content is provided." Pet. 24 (quoting Ex. 1003 ¶ 108). Patent Owner does not dispute that Thomas teaches this limitation.

Based on the arguments and evidence discussed above, we find that Thomas teaches each limitation of claims 11 and 12. Consequently, Petitioner has shown by a preponderance of the evidence that these claims are unpatentable as obvious over Thomas.

c. Independent Claims 4 and 13

Independent claim 4 recites substantially the same elements as claim 10, but further recites additional

elements relating to "a plurality of segment definitions each defining a video segment within a video." According to Petitioner, Thomas teaches that supplemental content (such as actor names or interviews) may be related to a "portion" of a video, such as a "scene," which teaches the recited "segment definitions." Pet. 25–26 (citing Ex. 1003 ¶¶ 100, 102, 104–105). Thomas indicates, for example, actor information can be displayed when an actor enters a scene of a video, and the information windows "appear and disappear automatically as scenes change." Ex. 1003 ¶¶ 102, 104–105. Based on these disclosures, Petitioner argues that Thomas teaches identifying a segment definition that includes the current location in the video, as recited in claim 4, because a person of ordinary skill would understand the system would have to identify such a segment definition (e.g., scene) to determine the supplemental content associated with that segment. *See* Pet. 26–27 (citing Ex. 1002 ¶¶ 77–79).

Patent Owner contends that Thomas does not teach the recited segment definitions, and does not perform the recited steps (e.g., identifying a segment definition that includes the identified location), because "Thomas relies on *synchronous* metadata." PO Resp. 33–34; PO Sur-reply 25–26. These arguments are similar to those Patent Owner advances with respect to claim 10, and they are unpersuasive for the same reasons discussed above. Additionally, Patent Owner does not explain, nor can we discern, any basis in the record to find that a "scene" would not have taught a "segment definition." In contrast, Petitioner's analysis and evidence are persuasive, and we find that Thomas teaches the limitations of claim 4 on that basis.

Independent claim 13 also recites substantially similar elements as claim 10, but further requires that the current location in the video, and the name of a performer associated with that location, are identified "continuously." Additionally, the identified name and visual depiction of the performer are "contemporaneously updat[ed]" as well as provided to the user "as the video continues to be played." According to the Petition (Pet. 27), Thomas teaches these limitations by disclosing that the windows displaying the supplemental content (e.g., actor names and interviews) "appear and disappear automatically as scenes change and as actors enter or exit in the on-demand media," i.e., as the video continues to be played. Ex. 1003 ¶ 105; *see id.* ¶¶ 102, 104; Ex. 1002 ¶¶ 81–82.

Similar to its approach to claim 4, Patent Owner asserts that Thomas does not teach these limitations of claim 13 because Thomas is limited to using "synchronous" metadata. *See* PO Resp. 34–35; PO Sur-reply 25–26. Again, these arguments are unpersuasive for the same reasons discussed above for claim 10. Based on the parties' arguments and full record after trial, we agree with Petitioner's analysis and evidence, and find that Thomas teaches the limitations of claim 13 on that basis.

Therefore, in conclusion, we determine that Petitioner has shown by a preponderance of the evidence that claims 4 and 13 would have been obvious in view of Thomas.

d. Remaining Challenged Claims

Claims 5 and 6 depend from claim 4, but otherwise recite the same limitations as claims 12 and 11, respectively. Petitioner relies on the same arguments and evidence as for claims 12 and 11 (*see* Pet. 28), and Patent Owner does not present any arguments specific to these claims. We are persuaded Petitioner demonstrates by a preponderance of the evidence that claims 5 and 6 would have been obvious in view of Thomas for the same reasons discussed above for claims 11 and 12.

Claims 14–16 are method claims, but otherwise recite substantially the same elements as claims 4–6. Similarly, claims 17–19 are method claims reciting substantially the same limitations as claims 10–12, and claim 20 is a method claim reciting substantially the same limitations as claim 13. Petitioner relies on the same arguments and evidence as for those corresponding claims, and Patent Owner does not argue these claims separately. We conclude that Petitioner has shown claims 14–20 would have been obvious over Thomas, by a preponderance of the evidence, for the same reasons discussed above for the corresponding claims. *See* Pet. 24, 28.

3. Obviousness Based on Thomas in View of McIntire

Petitioner asserts that all challenged claims would have been obvious over Thomas in view of McIntire. Pet. 28–34. McIntire relates to a method and apparatus for annotating media streams. Ex. 1004 ¶ 15. Such media

streams may include "television, hosted online video and the like." *Id.* ¶ 14. This annotation may be accomplished through a "mapping" in which segments of the media stream are associated with supplemental content, such as "actors featured in the segment." *Id.* ¶ 141. This supplemental content is displayed in response to a signal from the viewer. *Id.* ¶ 272, Fig. 8.

a. Independent Claim 10

As an initial matter, Petitioner relies on the same evidence and arguments for this ground as for its asserted ground of obviousness based on Thomas alone. *See* Pet. 28. In addition to those contentions, Petitioner further asserts that McIntire also teaches the "visual depiction" limitations of claim 10, and that a person of ordinary skill would have been motivated to combine those teachings with the teachings of Thomas. *Id.* at 28–31.

More specifically, Petitioner relies on McIntire's disclosure of retrieving supplemental content, including "an image of the actress" (visual depiction of the performer), based on a mapping (reference) that associated that content to the segment depicting that actress. *See* Ex. 1004 ¶ 278; Pet. 28–29. Petitioner asserts *inter alia* that a skilled artisan would have been motivated to combine these teachings with the system in Thomas because displaying an actor's image, as taught in McIntire, would have been a well-known technique applied in a conventional fashion to the similar device taught in Thomas to yield predictable results. *See* Pet. 29–30 (citing Ex. 1002 ¶ 68; *KSR*, 550 U.S. at 417). In addition, the Petition notes that Thomas teaches

displaying "actor information" such as "biographical information" and "[a]ny other suitable information relating to . . . the actor," which would have suggested to a skilled artisan to include images of the actor. *Id.* at 30 (quoting Ex. 1003 ¶ 106); Ex. 1002 ¶ 68. This analysis is persuasive, and its supporting evidence is credible and convincing.

Patent Owner first disputes Petitioner's contentions by arguing that combining Thomas with the teachings of McIntire "would require a change in the synchronous metadata operating principle of Thomas." PO Resp. 36. As discussed above, however, Thomas is not limited to a "synchronous" operating principle. Moreover, both Patent Owner's argument (*id.*) and the cited testimony of Dr. Reader (Ex. 2021 ¶¶ 94–98) are conclusory and fail to explain why the combination of Thomas and McIntire would require a change in operating principle.

Next, Patent Owner contends that McIntire does not teach a visual depiction of a *performer* but rather describes visual depictions of *characters*. PO Resp. 36–37. According to Patent Owner, McIntire discloses an image of an actress in the displayed television show, i.e., the actress playing the role of a character in the show. *Id.* As discussed above, however, the '346 Patent indicates that the visual depiction of the performer may be the same as a visual depiction of a character played by that performer. *See* Ex. 1001, 12:60–64. Thus, even accepting Patent Owner's characterization of McIntire, the disclosures regarding the image of an actress clearly teach the visual depiction of a performer recited in claim 10.

Lastly, Patent Owner argues that a person of ordinary skill would not have been motivated to combine the teachings of Thomas and McIntire. PO Sur-reply 26–27. Patent Owner's argument, however, is premised on its view that Thomas is limited to using synchronous metadata. *See id.* As discussed above, we do not agree. Patent Owner also fails to address Petitioner's specific contentions, which rely on an express suggestion in Thomas, the well-known nature of McIntire's teaching of displaying actor/actress images, and the conventionality of applying that teaching to a similar system in Thomas. *See* Pet. 29–30.

Based on the arguments and complete evidentiary record after trial, we find that a preponderance of the evidence supports Petitioner's analysis that the combination of Thomas and McIntire would have taught or suggested each limitation of claim 10, and that a skilled artisan would have been motivated to combine their teachings to reach the claimed invention. Therefore, Petitioner has established by a preponderance of the evidence that the combined teachings of Thomas and McIntire render claim 10 obvious.

b. Independent Claim 4

Petitioner relies on the same evidence and arguments for claim 4 as for its asserted ground of obviousness based on Thomas alone. *See* Pet. 28. In addition to those contentions, Petitioner further asserts that McIntire also teaches the "segment definitions" limitations of claim 4, and that a person of ordinary skill would have been motivated to combine those teachings with the teachings

of Thomas. *Id.* at 31–34. We agree with Petitioner, as explained below.

Specifically, Petitioner cites McIntire's disclosure that "segments of the media stream (i.e., sequences of frames) are identified . . . by (possibly unique) segment identifiers," which may "comprise sets of frame numbers associated with the segments." Ex. 1004 ¶ 96; Pet. 31. McIntire further discloses determining "in accordance with the mapping . . . which segment identifier corresponds to the point in time at which the first signal was received [from the viewer]." Ex. 1004 ¶ 272. Supplemental content mapped to that segment identifier is then displayed to the viewer. *See id.* at Fig. 8 (step 812). According to Petitioner, modifying the system of Thomas to use segment identifiers as taught in McIntire would have been a simple substitution of one known technique (McIntire's segment identifiers) for another known technique (a "scene" or "portion" of a video in Thomas) to obtain predictable results. Pet. 32–33 (citing *KSR*, 550 U.S. at 417). Petitioner also notes that systems using segment definitions were commonplace at the time of the invention. *Id.* at 33 (citing Ex. 1002 ¶ 76).

In addition to its arguments also relating to claim 10, which we examined above, Patent Owner contends that McIntire would not teach a person of ordinary skill to identify a current location or identify a segment definition that includes that location because McIntire's segment identifiers are embedded as part of the closed captioning stream of the media stream. PO Resp. 37–38 (quoting Ex. 1004 ¶ 90). According to Patent Owner, McIntire's system has no need to identify a current location because (similar

to Patent Owner's characterization of "synchronous metadata" in Thomas) the segment identifier is embedded in the media stream, so each segment already is associated with its identifier from the beginning without a separate identification step needed. *See* PO Sur-reply 18–19. Petitioner notes that the portion of McIntire on which Patent Owner relies discusses only one embodiment, and other embodiments also are disclosed. Pet. Reply 28 (citing Ex. 1004 ¶¶ 90–92, 96–98).

After considering the parties' arguments and evidence, we find Petitioner's positions more persuasive. McIntire discusses embedding segment identifiers into the media stream as "one embodiment" (Ex. 1004 ¶ 90), but also discusses other methods of associating segment identifiers with the segments of the media stream (*id.* ¶¶ 92, 96–98). Moreover, as discussed above, Thomas teaches identifying a current location, and we find that Petitioner's evidence indicates a person of ordinary skill would have been motivated to combine those teachings with McIntire's teachings regarding segments and their associated segment identifiers, as Petitioner contends. *See* Pet. 31–34. We also note that "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference." *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). "Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *Id.*

Thus, we determine that Petitioner has shown by a preponderance of the evidence that the teachings of

Thomas in view of those of McIntire render claim 4 obvious.

c. Remaining Challenged Claims

For the remaining challenged claims, i.e., claims 5, 6, and 11–20, the Petition relies on the same arguments and evidence as for the asserted ground of obviousness based on Thomas alone, i.e., it does not rely on McIntire for any further limitations beyond those discussed above for independent claims 4 and 10. *See* Pet. 28. Patent Owner does not offer any arguments with respect to these claims other than those already discussed above. Thus, for these claims, we also rely on our analysis above. Based on the complete record after trial, we conclude that Petitioner has shown by a preponderance of the evidence that the teachings of Thomas in view of those of McIntire render claims 5, 6, and 11–20 unpatentable as obvious.

4. Obviousness Based on McIntire in View of Thomas

Petitioner asserts that all challenged claims would have been obvious over the teachings of McIntire in view of Thomas. Pet. 35–51. Although these are the same prior art references as in the asserted ground of obviousness based on Thomas in view of McIntire discussed above, Petitioner relies on somewhat different teachings of the references for this proposed ground of unpatentability. For clarity and consistency, we analyze this ground separately as both parties have done.

Appendix C

a. Independent Claim 10

According to Petitioner (Pet. 35–37), McIntire teaches an apparatus capable of processing data that comprises a performer name and a reference to a visual depiction of that performer, as recited in claim 10, in its disclosure of an "apparatus for annotating media streams." Ex. 1004 ¶ 15. McIntire describes mapping "segment identifiers to at least one item of supplemental content or metadata (e.g., data about the media stream that is underlying the video signal)." *Id.* ¶ 136. The supplemental content may include "an individual appearing in or associated with the media stream (e.g., an actor or director)." *Id.* Figure 22 of McIntire shows exemplary mapping 2200, which associates segment identifier XYZ-100 with supplemental content that identifies "Actress A." *Id.* ¶ 141, Fig. 22. McIntire further discloses that the supplemental content may also include "an image of the actress" depicted in a segment associated with a particular segment identifier. *Id.* ¶ 278. We agree with Petitioner and find that McIntire teaches the elements of the preamble of claim 10.

Patent Owner argues that McIntire fails to teach a visual depiction of a performer because the disclosed image of the actress is, in fact, an image of the actress "*in* character" and, thus, is a visual depiction of the character instead. PO Sur-reply 17; PO Resp. 39–40. This argument depends on Patent Owner's contention that a depiction of a character cannot be a depiction of a performer. As discussed above, we disagree and determine that the '346 Patent explicitly discloses that an image of a performer in character is both a depiction of the performer and a

depiction of the character. *See* Ex. 1001, 12:60–64. Thus, for similar reasons as discussed above, Patent Owner's argument is unpersuasive.

Next, Petitioner contends McIntire teaches receiving a user's request for information identifying a performer in a video, as recited in claim 10, in its disclosure of "receiv[ing] a first signal from a viewer of the media stream," which "indicates that the viewer wishes to view at least a subset of the information embodied in the supplemental content." Ex. 1004 ¶ 268; *see id.* at Fig. 8. As discussed above, McIntire teaches that the supplemental content may include identifying information for an actor. *See id.* ¶ 141, Fig. 22. Petitioner also cites teachings in Thomas for this limitation (the same teachings discussed above for this limitation in the context of the previous grounds based on Thomas), and presents evidence that a person of ordinary skill would have combined those teachings with McIntire. Pet. 39–40 (citing Ex. 1002 ¶¶ 126–130). Patent Owner does not dispute that the combination of McIntire and Thomas teaches this limitation, and that a skilled artisan would have combined their teachings. We find Petitioner has shown sufficiently that this limitation is taught by McIntire and Thomas.

With respect to "identifying a current location in the video," Petitioner contends persuasively that McIntire teaches this limitation recited in claim 10 by describing "determin[ing] . . . which segment identifier corresponds to *the point in time at which the first signal was received* (i.e., what segment of the media stream was being displayed when the viewer sent the first signal." *Id.* ¶ 272 (emphasis

added); *see* Pet. 40–41. Patent Owner disputes Petitioner's contention. PO Resp. 40–41.

First, Patent Owner argues that rather than identifying a current location in the video, McIntire discloses identifying a segment identifier. *Id*. Patent Owner, however, does not explain persuasively why identifying a segment identifier is inconsistent with identifying a current location in the video. As Petitioner explains (Pet. Reply 19), McIntire describes a process (Ex. 1004, Fig. 8) in which the system determines "the point in time at which the first signal was received," which is then used to determine "which segment identifier corresponds to" that point in time, thereby indicating "what segment of the media stream was being displayed when the viewer sent the first signal" indicating his/her request for supplemental content. Ex. 1004 ¶ 272, Fig. 8. McIntire indicates, for example, that the "point in time" may be determined by "computing the hash of the current frame of the media stream [and] identifying the time associated with the computed hash," or by identifying "time-code data." *Id*. According to the '346 Patent, identifying the current location may be performed by identifying a "time code, frame identifier, or some other indicator of the place or location, within the video at which . . . the Who request was received." Ex. 1001, 9:60–65. Dr. Reader also acknowledged that both determining a time code and identifying a current frame would constitute identifying a current location, which a person of ordinary skill would have known how to perform. *See* Ex. 1101, 77:1–14, 92:2–93:7.

Next, Patent Owner argues that McIntire does not teach this limitation because its segment identifiers are "embedded," which indicates that identifying a current location is unnecessary. PO Sur-reply 18–19. As discussed above with respect to the asserted ground of unpatentability based on Thomas (as the primary reference) combined with McIntire (as the secondary reference), McIntire indicates that embedding segment identifiers is only "one embodiment" and discusses other approaches. *See* Ex. 1004 ¶¶ 90, 92, 96–98. Moreover, we are not persuaded that the description of embedded segment identifiers negates McIntire's teachings regarding identifying a time code or frame corresponding to the current location in the media stream. For similar reasons as discussed above, we are not persuaded by this argument, and we agree with Petitioner regarding this limitation.

For the next limitation of claim 10, Petitioner asserts that McIntire teaches "identifying a name of a performer associated with the identified location," by describing how the mapping of supplemental content to a segment identifier can be used to identify the name of an actress in the segment. Pet. 41–42 (citing Ex. 1004 ¶¶ 141, 278, Fig. 22). This can be done when a signal is received from the viewer "at a time when one or more segments identified by the segment identifier depicted an actress," such that supplemental content relating to that actress is displayed. Ex. 1004 ¶ 278. Patent Owner does not dispute Petitioner's argument. We are persuaded that the Petition shows sufficiently that McIntire would have taught this limitation to an artisan of ordinary skill.

Next, Petitioner contends that McIntire teaches retrieving a visual depiction of the performer by disclosing that the supplemental content for the segment identifier for the current location in the video may include "an image of the actress" that is depicted in the segment. Pet. 42–43 (quoting Ex. 1004 ¶ 278). Patent Owner's position on this limitation is the same as its position on the "visual depiction of a performer" recited in the preamble, discussed above. PO Resp. 39–40; PO Sur-reply 17. We find Petitioner has shown sufficiently that McIntire teaches this limitation.

Lastly, Petitioner relies on McIntire's Figure 8 and its accompanying description as teaching providing the performer name and visual depiction to the user, as recited in claim 10. Pet. 43–44 (citing Ex. 1004 ¶¶ 277–278, Fig. 8). As discussed above, Petitioner has shown sufficiently that the supplemental content of McIntire teaches both performer name and visual depiction. As shown in Figure 8, McIntire discloses that the supplemental content is displayed to the viewer. Ex. 1004 ¶¶ 277–278, Fig. 8. Patent Owner does not present any arguments for this limitation beyond those already discussed above. We find that the Petition shows this limitation would have been taught by McIntire.

In conclusion, for the reasons set forth above and based on the complete record after trial, Petitioner has demonstrated that the combination of McIntire and Thomas teaches each limitation of claim 10, and that a person or ordinary skill would have combined their teachings in the manner asserted. Thus, we conclude that Petitioner has shown by a preponderance of the evidence

that claim 10 is unpatentable as obvious over McIntire in view of Thomas.

b. Dependent Claims 11 and 12

As discussed above, claim 11 of the '346 Patent depends from claim 10 and adds the limitation, "wherein the apparatus further performs the step of retrieving and providing, the user, a filmography corresponding to the identified name of the performer." Petitioner relies on the description in McIntire of providing "the actress's filmography" as part of the supplemental content displayed to the viewer. Ex. 1004 ¶ 278; *see* Pet. 44–45. Patent Owner does not dispute that McIntire teaches this limitation.

Claim 12 also depends from claim 10 and adds the limitation, "wherein the apparatus further performs the step of pausing the playing of the video in response to the receiving of the request for information." Petitioner relies on McIntire's disclosure that in one embodiment, "the display of the media stream is paused while the supplemental content is displayed." Pet. 45 (quoting Ex. 1004 ¶ 278). Patent Owner also does not dispute that McIntire teaches this limitation.

Based on full record after trial, we agree with Petitioner and find that McIntire and Thomas teach each limitation of claims 11 and 12. Thus, Petitioner has demonstrated by a preponderance of the evidence that these claims are unpatentable as obvious over McIntire and Thomas.

c. Independent Claims 4 and 13

As already noted, independent claim 4 recites substantially the same elements as claim 10, but further recites additional elements relating to "a plurality of segment definitions each defining a video segment within a video." As Petitioner notes (Pet. 45–46), McIntire discloses "segments of the media stream (i.e., sequences of frames) are identified . . . by (possibly unique) segment identifiers" that may "comprise sets of frame numbers associated with the segments." Ex. 1004 ¶ 96. According to Petitioner, the segment identifiers teach the recited "plurality of segment definitions." We agree with Petitioner and find that McIntire teaches this limitation.

McIntire further describes determining "which segment identifier corresponds to the point in time at which the first signal was received (i.e., what segment of the media stream was being displayed when the viewer sent the first signal)." *Id.* ¶ 272; *see id.* at Fig. 8. Petitioner contends this teaches identifying a current location in the video ("the point in time at which the first signal was received"), and then identifying a segment definition including that location (determining "which segment identifier corresponds to that point in time . . ."). Pet. 46. Patent Owner does not present any arguments beyond those already discussed above, which are unpersuasive for the same reasons. Based on the full record, we find that McIntire teaches this limitation as well.

Like claim 4, independent claim 13 also recites substantially similar elements as claim 10, but further

requires that the current location in the video, and the name of a performer associated with that location, are identified "continuously." Additionally, the identified name and visual depiction of the performer are "contemporaneously updat[ed]" as well as provided to the user "as the video continues to be played." We find that the combination of McIntire and Thomas teaches these limitations for the following reasons.

According to Petitioner (Pet. 47–48), McIntire teaches these limitations in its description of a "synchronized" embodiment wherein different supplemental content is displayed at different times—"i.e., the supplemental content is displayed automatically in accordance with the synchronization." Ex. 1004 ¶¶ 423–424. According to Petitioner, an artisan of ordinary skill would have understood that automatically displaying supplemental content synchronized to the media stream would involve continuously identifying the current location. Pet. Reply 21 (citing Ex. 1102 ¶ 47). Petitioner also cites teachings in Thomas for this limitation (the same teachings discussed above for this limitation in the context of the previous grounds based on Thomas), and sets forth evidence and argument supporting its contention that a skilled artisan would have been motivated to combine those teachings with McIntire. *See* Pet. 48–51 (citing Ex. 1002 ¶¶ 150–161).

Patent Owner disputes that McIntire teaches "continuously identifying a current location in the video," based on its assertion that McIntire does not teach identifying a current location at all. PO Resp. 41. As discussed above with respect to claim 10, however,

we find that McIntire teaches identifying a current location. Moreover, Petitioner relies on both McIntire and Thomas as teaching this limitation, not McIntire alone. Although Patent Owner disputes that Thomas teaches this limitation (PO Sur-reply 21), we disagree and find that it does, as discussed above for the previous grounds based on Thomas (as the primary reference).

Additionally, Patent Owner contends that the "automatic" updating of supplemental content relied on by Petitioner does not teach identifying a current location "continuously," as recited in claim 13. PO Sur-reply 20–21.[8] Much of Patent Owner's argument seeks to propose an "equally plausible alternative" to rebut Dr. Bovik's purported "inherency theory." *Id*. We do not discern any "inherency theory" in Dr. Bovik's testimony at issue (*see* Ex. 1102 ¶ 47) or in Petitioner's briefs regarding this issue. Even accepting *arguendo* Patent Owner's "equally plausible alternative," Patent Owner at most establishes that a person of ordinary skill would have known that McIntire's teachings could be practiced either in a manner in which the current location is continuously identified (per Dr. Bovik's testimony), or in a manner in which it is not continuously identified (per Patent Owner's contention). The record would still support Petitioner's argument that a skilled artisan would have found it obvious to identify

8. Patent Owner also asserts that Dr. Bovik's testimony in support of Petitioner's Reply "should not be given any weight" because it constitutes a "new theory." PO Sur-reply 20–21. Upon review, we determine that the testimony at issue was proper as it directly rebuts testimony provided by Dr. Reader to support the Patent Owner Response. *See* Ex. 1102 ¶ 47 (citing Ex. 2021 ¶ 108).

a current location continuously based on McIntire's teachings. Put another way, Patent Owner's contention does not contradict Dr. Bovik's testimony, which we find credible and persuasive.

Based on the reasoning above and the evidence presented by the parties, both for these claims and for corresponding limitations of claim 10, we find that the combination of McIntire and Thomas teaches each limitation of claims 4 and 13. As a result, we conclude that Petitioner has demonstrated by a preponderance of the evidence that these claims are unpatentable as obvious over McIntire in view of Thomas.

d. Remaining Challenged Claims

Claims 5 and 6 depend from claim 4, but otherwise recite the same limitations as claims 12 and 11, respectively. Petitioner relies on the same arguments and evidence as for claims 12 and 11 (*see* Pet. 51), and Patent Owner does not present any arguments specific to these claims. We are persuaded Petitioner demonstrates by a preponderance of the evidence that claims 5 and 6 would have been obvious over McIntire in view of Thomas for the same reasons discussed above for claims 11 and 12.

Claims 14–16 are method claims, but otherwise recite substantially the same elements as claims 4–6. Similarly, claims 17–19 are method claims reciting substantially the same limitations as claims 10–12, and claim 20 is a method claim reciting substantially the same limitations as claim 13. Petitioner relies on the same arguments and evidence

as for those corresponding claims, and Patent Owner does not argue these claims separately. We conclude Petitioner has shown claims 14–20 would have been obvious over McIntire in view of Thomas, by a preponderance of the evidence, for the same reasons discussed above for those corresponding claims. *See* Pet. 44–45, 51.

5. Obviousness Based on Reimer in View of McIntire

Petitioner contends that claims 4–6, 10–12, and 14–19 would have been obvious over Reimer in view of McIntire. Pet. 51–65. 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. This information may include, for example, "the names of the actors, other credited roles, or scene technical detail for the current scene." *Id.* at 5:39–40.

a. Independent Claim 10

According to Petitioner (Pet. 51–54), Reimer teaches an apparatus capable of processing data that comprises a performer name and a reference to a visual depiction of that performer, as recited in claim 10, in its disclosure of a system (including a "full function PC" or "settop box") that retrieves actor information relating to a frame of a movie. *See* Ex. 1005, 8:14–15, 18:19–31. Reimer discloses that the system retrieves from a data table "rows that relate to the current frame" of the movie, which "identify the actors who appear in the current frame." *Id.* at 18:19–31; *see id.* at Fig. 10A. This information includes actor names. *Id.* at 18:38–43, Fig. 10A.

With respect to the recited visual depiction of a performer, Petitioner notes that Reimer indicates the system stores video and image content related to the movie. Pet. 53–54; *see* Ex. 1005, 11:34–37 (referring to "video indices" and "image content indices"). Petitioner further cites McIntire's teachings of this element, relying on the same evidence and arguments addressed previously for the other McIntire-based obviousness grounds. *See* Pet. 54 (citing Pet. 28–30). According to Petitioner, a person of ordinary skill would have been motivated to combine McIntire's visual depiction teachings with the Reimer system because Reimer discusses using video and image content, such content would have been known

to advantageously provide further information to a user, and applying McIntire's teachings would have been simply applying a known technique to a known system in a routine and conventional way to obtain predictable results. *Id.* at 54–56 (citing Ex. 1002 ¶¶ 181–187).

Patent Owner disputes that the combination of Reimer and McIntire teaches a visual depiction of a performer and that a skilled artisan would have been motivated to combine their teachings, but its arguments are premised on its view that the references only teach depictions of characters, which cannot be depictions of performers as a result. PO Resp. 42–44; *see* PO Sur-reply 11–14.[9] As discussed above, we disagree with this view. We agree instead with Petitioner's arguments and supporting evidence, in particular that a person of ordinary skill would have been motivated to combine Reimer with McIntire's teachings regarding visual depictions of performers. *See* Pet. 54–56. For those reasons, and additionally for the same reasons explained above with respect to the previous McIntire-based grounds, we agree that the combination of Reimer and McIntire teach the "visual depiction of a performer" elements of the preamble of claim 10.

9. Patent Owner also alleges that various Petitioner arguments are "conclusory" (PO Sur-reply 12), that Petitioner "fail[ed] to provide a rationale for modifying Reimer" (*id.* at 13), and that Petitioner improperly incorporated arguments from Dr. Bovik's declaration (*id.* at 14). We determine that none of these allegations have merit, and that the relevant portions of the Petition provide sufficient explanation and present sufficient evidentiary support. *See* Pet. 53–56.

Petitioner contends McIntire teaches receiving a user's request for information identifying a performer in a video, as recited in claim 10, by disclosing that a user can send a query to the system in Reimer, such as by pressing the "Pause" button, to inquire as to the identity of a person in a movie scene or frame. Pet. 56 (citing Ex. 1005, 16:5–25). Patent Owner does not dispute that Reimer teaches this limitation, and we find Petitioner has shown sufficiently that it is taught by Reimer.

With respect to "identifying a current location in the video," Petitioner contends Reimer teaches this limitation by disclosing the step of "determin[ing] the time code corresponding to the current frame" after receiving a user query. Ex. 1005, 16:61–17:10, Fig. 9B (step 904); *see* Pet. 57–58. Petitioner further asserts that Reimer teaches "identifying a name of a performer associated with the identified location," as recited in claim 10, by describing how the system retrieves rows of information from a data table that "relate to the current frame" and that "identify the actors who appear in the current frame." Ex. 1005, 18:19–31, Fig. 10A *see* Pet. 58–59. Patent Owner does not dispute that Reimer teaches these limitations, and we find Petitioner has shown sufficiently that they are taught by Reimer.

With respect to retrieving a visual depiction of the performer, as recited in claim 10, Petitioner relies on the combined teachings of Reimer and McIntire discussed above for the recitation of the visual depiction in the preamble, further noting that Reimer teaches the use of "indices" to retrieve data, including "video indices" and

"image content indices." Pet. 59–60; Ex. 1005, 11:17–44; *see also* Pet. 52–56 (explaining the teachings of Reimer and McIntire regarding visual depictions of a performer). Patent Owner's arguments against Petitioner's contentions regarding the recited "visual depiction of a performer" generally are addressed above and are unpersuasive for this limitation for the same reasons. We agree with Petitioner and find that the combined teachings of Reimer and McIntire teach this limitation.

Finally, Petitioner relies on Reimer's disclosure of presenting retrieved information, including actor information, to a user as teaching providing the performer name and visual depiction to the user, as recited in claim 10. Pet. 60 (citing Ex. 1005, 18:38–43, 18:50–55, 18:60–19:2, 19:16–24, Fig. 11). Patent Owner does not dispute that Reimer teaches this limitation, and we find Petitioner has shown sufficiently that it is taught by the asserted prior art.

In conclusion, for the reasons set forth above, we find that the combination of Reimer and McIntire teaches each limitation of claim 10, and that a person of ordinary skill would have been motivated to combine their teachings as asserted in the Petition. Thus, we conclude that Petitioner has established by a preponderance of the evidence that claim 10 is unpatentable as obvious over Reimer in view of McIntire.

b. Dependent Claims 11 and 12

As discussed above, claim 11 of the '346 Patent depends from claim 10 and adds the limitation, "wherein the apparatus further performs the step of retrieving and providing, the user, a filmography corresponding to the identified name of the performer." Reimer discloses that the information supplied to the user could include "the names of the actors [and] other credited roles," as well as "other movies [or] TV shows" with the same actor, director, etc. *See* Ex. 1005, 5:39–45.

Dependent claim 12 adds the limitation, "wherein the apparatus further performs the step of pausing the playing of the video in response to the receiving of the request for information." Petitioner notes that Reimer discloses a user submitting a query for information by pressing the "Pause" button. Pet. 62 (citing Ex. 1005, 16:5–21, 17:3–5). In addition, Petitioner also relies on McIntires's disclosure that the media stream may be "paused while the supplemental content is displayed," also explaining why a skilled artisan would have combined this teaching with Reimer. Pet. 62–63 (citing Ex. 1004 ¶ 278; Ex. 1002 ¶¶ 208–212).

Patent Owner does not dispute that the combination of Reimer and McIntire teaches the above limitations. Based on the complete record after trial, we find that the combination of Reimer and McIntire teaches each limitation of claims 11 and 12. Thus, Petitioner has established by a preponderance of the evidence that these claims are unpatentable as obvious over the combination of Reimer and McIntire.

c. Independent Claim 4

As already discussed, independent claim 4 recites substantially the same elements as claim 10, but further recites additional elements relating to "a plurality of segment definitions each defining a video segment within a video." As Petitioner notes (Pet. 63), Reimer discloses that each row of its data tables is associated with a particular range of time codes corresponding to certain frames in the movie. Ex. 1005, 13:19–48. According to Petitioner, these ranges teach the recited plurality of segment definitions. *See* Pet. 63.

Reimer further describes extracting information related to the movie from its data tables by retrieving rows with a range of frame time codes that encompass the time code for the current frame. *Id.* at 17:15–22. Petitioner contends this teaches identifying a segment definition including the identified current location, as recited in claim 4. Pet. 64.

Patent Owner does not present any arguments regarding claim 4 beyond its arguments for the corresponding limitations of claim 10. PO Resp. 45. Based on the full record, we find that Reimer in combination with McIntire teaches each limitation of claim 4. Consequently, Petitioner has demonstrated by a preponderance of the evidence that claim 4 is unpatentable as obvious over Reimer in view of McIntire.

d. Remaining Challenged Claims

Claims 5 and 6 depend from claim 4, but otherwise recite the same limitations as claims 12 and 11, respectively. Petitioner relies on the same arguments and evidence as for claims 12 and 11 (*see* Pet. 65), and Patent Owner does not present any arguments specific to these claims. We are persuaded Petitioner demonstrates by a preponderance of the evidence that claims 5 and 6 would have been obvious in view of Reimer and McIntire for the same reasons discussed above for claims 11 and 12.

Claims 14–16 are method claims, but otherwise recite substantially the same elements as claims 4–6. Similarly, claims 17–19 are method claims reciting substantially the same limitations as claims 10–12. Petitioner relies on the same arguments and evidence as for those corresponding claims, and Patent Owner does not argue these claims separately. We conclude Petitioner has shown claims 14–19 would have been obvious over Reimer and McIntire, by a preponderance of the evidence, for the same reasons discussed above for those corresponding claims. *See* Pet. 61–63, 65.

6. Obviousness Based on Reimer in View of McIntire and Thomas

According to Petitioner, claims 13 and 20 would have been obvious over the teachings of Reimer in view of McIntire and Thomas. Pet. 65–68. As discussed above, independent claim 13 recites substantially similar elements as claim 10, but further requires that the current location

in the video, and the name of a performer associated with that location, are identified "continuously." Additionally, the identified name and visual depiction of the performer are "contemporaneously updat[ed]" as well as provided to the user "as the video continues to be played."

Petitioner relies on the combination of Reimer and McIntire to contend that the limitations of claim 13 that overlap with those of claim 10 would have been obvious, based on the same arguments and evidence advanced in the Petition against claim 10, which are persuasive for the same reasons discussed above. Pet. 65. With respect to the remaining aspects of claim 13, Petitioner relies at least in part on the teachings of Thomas. *Id.* at 66–68 (citing Ex. 1003 ¶¶ 102, 104, 105). Petitioner's arguments relating to Thomas are the same as those for this claim under Petitioner's asserted ground of obviousness based on Thomas alone. *See* Pet. 27, 66. As explained above, we agree with Petitioner that Thomas teaches the "continuously" and "contemporaneously updating" limitations of claim 13.

Patent Owner argues, however, that Thomas does not teach these limitations of claim 13. PO Resp. 47–49. First, Patent Owner repeats its argument that Thomas does not teach "identifying a current location" (*id.* at 47), which is belied by the evidence of record, as discussed above. Patent Owner also repeats its argument that Thomas is limited to "synchronous" operation (*id.* at 48–49), which also is belied by the record, as discussed above as well. Lastly, Patent Owner argues that "automatically" (as in the automatic opening/closing of supplemental content

during the video described in Thomas) does not "require" continuously, as recited in claim 13. *Id.* at 48. As an initial matter, we note that the standard for proving obviousness does not demand the prior art "require" what is claimed, but that the prior art teach or suggest it. *See Southwire Co. v. Cerro Wire LLC*, 870 F.3d 1306, 1311–12 (Fed. Cir. 2017) (affirming the Board's conclusion of obviousness where the prior art taught a limitation but insufficient evidence existed to prove the limitation necessarily resulted from the prior art's teachings); *see also Keller*, 642 F.2d at 425 ("The test for obviousness is not . . . that the claimed invention must be expressly suggested in any one or all of the references [but rather] the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.").

Moreover, we agree substantively with Petitioner—and disagree with Patent Owner—about whether the "automatic" changing of displayed supplemental content in Thomas would have taught these limitations. In our analysis above of the asserted ground based on Thomas alone, we explained our finding that Thomas teaches identifying a current location and the name of a performer associated with that location, as well providing the name and visual depiction of that performer, as recited in the challenged claims. Also as discussed above, Thomas describes that "pop-up windows" displaying "information relating to each actor that the user is *currently watching*" may "appear and disappear automatically as scenes change and as actors enter or exit" in the video. Ex. 1003 ¶¶ 102, 105 (emphasis added). "For example, when Ben Stiller enters a scene, a pop-up window may appear to

indicate that the actor that the user is currently watching is Ben Stiller." *Id.* ¶ 102. The window "may automatically disappear after . . . the actor that the user is currently watching exits the particular scene." *Id.* ¶ 104.

Based on this body of evidence, we are persuaded that a skilled artisan would have been taught by the above disclosures to identify the current location (i.e., to determine what scene the user is "currently watching"), and identify a performer's name (e.g., Ben Stiller), and to do so *continuously* to update that information according to the video as it is being played (i.e., to account for when the performer enters or exits a scene). *See* Ex. 1002 ¶ 81. We also are persuaded these disclosures teach that the information being displayed is contemporaneously updated and provided to the user as the video is played because Thomas describes the actor information changing to reflect who is displayed in the video as it is being viewed. *See id.*; Ex. 1003 ¶¶ 102, 104–105.

The Petition sets forth several rationales supporting Petitioner's position that a person of ordinary skill would have combined these teachings of Thomas with those of Reimer and McIntire regarding the independent claims. Pet. 66–68 (citing Ex. 1002 ¶¶ 220–230). For example, Petitioner asserts that a skilled artisan would have recognized that the Thomas approach would advantageously simplify the user's experience by removing the need to repeatedly submit queries each time actor information is desired. *Id.* at 66 (citing Ex. 1002 ¶ 223). In addition, the Petition argues that applying the Thomas approach would have been simply applying

a known technique to a known system (Reimer) in a conventional manner to obtain predictable results, with the Thomas approach being one of a finite number of potential solutions. *See id.* at 67–68 (citing Ex. 1002 ¶¶ 226–229; *KSR*, 550 U.S. at 417, 421). We find these arguments persuasive.

In response, Patent Owner first argues that Reimer does not teach continuous updating of a script, which is asserted in the Petition as also teaching the "continuous" aspects of claim 13. PO Resp. 46–47; *see* Pet. 65–66; Pet. Reply 13–15. We agree with Patent Owner that the cited portions of Reimer disclose that the current frame is only identified once (i.e., not continuously) in order to synchronize the script with the movie, and the data tables provide information regarding the length of each scene that is used to maintain the synchronization until the end of the movie. *See* Ex. 1005, 22:10–40. As discussed above, however, Petitioner does not rely on Reimer alone; instead, Petitioner relies persuasively on the teachings of Thomas combined with Reimer's system.

Lastly, Patent Owner argues that modifying Reimer to apply the teachings of Thomas would "impermissibly change the principle of operation of Reimer." PO Resp. 49–51. This argument, however, is premised on Patent Owner's contention that Thomas is limited to "synchronous" operation. *See id.* Again, as discussed above, we disagree with that contention, which is not supported by the evidence of record.

Based on the arguments and evidence presented during trial, we agree with Petitioner and find that a preponderance of the evidence shows that the combination of Reimer, McIntire, and Thomas teaches each limitation of claim 13, including that a person of ordinary skill would have been motivated to combine the teachings to arrive at the invention of claim 13.[10] Claim 20 is a method claim reciting substantially the same limitations as claim 13, and Petitioner relies on the same arguments and evidence as for claim 13. For the same reasons as for claim 13, Petitioner has proven the asserted combination of prior art teaches each limitation of claim 20. Thus, we determine that, based on a preponderance of the evidence, claims 13 and 20 would have been obvious over Reimer in view of McIntire and Thomas.

8. Obviousness Based on Clarke in View of Reimer

Petitioner asserts that all challenged claims would have been obvious over Clarke in view of Reimer. Pet. 69–85. Clarke relates to "a system for including time based metadata information as a form of supplemental content in connection with the presentation of media content." Ex. 1006, 3:36–38. This media content may

10. Patent Owner addresses certain preliminary determinations in the Decision on Institution regarding this ground. *See* PO Resp. 2–5. We note, however, that Patent Owner did not file a request for rehearing of the Decision on Institution, and, in any event, any arguments made in its Preliminary Response but *not* made after trial was instituted were waived. *See In re Nuvasive, Inc.*, 842 F.3d 1376, 1380–81 (Fed. Cir. 2016).

include, for example, a movie or television program. *Id.* at 3:43–45. That content may be "enhanced with the display of relevant metadata information," such as supplementing "the appearance of an actor in the movie" with "the name of the actor . . . as well as additional information about the actor or character." *Id.* at 3:45–52.

a. Whether Clark Qualifies as Prior Art

The parties dispute whether Clarke qualifies as prior art to the '346 Patent. Specifically, Petitioner asserts that it qualifies as prior art under 35 U.S.C. § 102(e)(2) because it is entitled to the priority date of its provisional application, which was filed on June 14, 2011. Pet. 13, 85–86. Patent Owner argues Petitioner failed to meets its burden to properly establish that Clarke is entitled to the earlier priority date. PO Resp. 5–7, 51–52. Specifically, Patent Owner argues that Petitioner identified written description support for only *one* claim of Clarke and, thus, failed to do so for *all* claims of Clarke as required by controlling case law. *Id.* (citing *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015)); *see also* PO Sur-reply 6–7 (same). Petitioner disagrees with Patent Owner's view of the applicable law. Pet. Reply 3–4.

We first address this key legal issue, i.e., whether written description support for *all* claims of a patent must be shown in a provisional application to gain the benefit of that application for purposes of qualifying as prior art under § 102(e)(2). In *Dynamic Drinkware*, the petitioner ("Dynamic") asserted that a patent ("Raymond") was

prior art under § 102(e)(2) by virtue of the priority date of a provisional application. 800 F.3d at 1377. Dynamic provided a comparison of Raymond to the claims of the challenged patent, and a comparison of the provisional application to the claims of the challenged patent. *Id.* at 1381. The Federal Circuit held that these showings were insufficient to establish that Raymond was prior art because "[n]owhere, however, does Dynamic demonstrate support in the Raymond provisional application for *the claims of the Raymond patent*." *Id.* at 1381–82. Patent Owner relies on this sentence in *Dynamic Drinkware*, specifically the reference to the plural "claims." PO Resp. 52.

As Petitioner notes (Pet. Reply 4), the decision in *Dynamic Drinkware* addressed a case in which no attempt had been made to show support for *any* claim of the reference patent. The question of whether support for one claim is sufficient, or whether support for all claims is required, was not before the court in *Dynamic Drinkware*. Thus, we are not persuaded that the use of the plural "claims" in the Federal Circuit's opinion represents a holding that all claims of a patent must be supported in the provisional application's disclosure to benefit from its priority date. The same holds true for the remaining authorities cited by Patent Owner. *See* PO Sur-reply 7 (citing *Amgen Inc. v. Sanofi*, 872 F.3d 1367 (Fed. Cir. 2017); *Ariosa Diagnostics, Inc. v. Illumina, Inc.*, 705 Fed. App'x 1002 (Fed. Cir. 2017)).

The Federal Circuit in *Dynamic Drinkware* began with the requirement that a patent must satisfy 35

U.S.C. § 119(e)(1) to gain the benefit of a provisional application filing date. *Dynamic Drinkware*, 800 F.3d at 1378. According to the Federal Circuit, this requirement includes that "the specification of the provisional must 'contain a written description of the invention . . . in such full, clear, concise, and exact terms,' . . . to enable an ordinarily skilled artisan to practice the invention claimed in the non-provisional application." *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1294 (Fed. Cir. 2002) (quoting 35 U.S.C. § 112, first paragraph), *quoted in Dynamic Drinkware*, 800 F.3d at 1378.

Of particular note is the focus on "the *invention* claimed" in the nonprovisional application (later issued as the reference patent). *Id.* (emphasis added). This is consistent with prior Federal Circuit precedent explaining that the rationale behind § 102(e) is that a patent should be "treated as prior art as of its filing date because at the time the application was filed in the Patent Office the inventor was presumed to have disclosed an invention which, but for the delays inherent in prosecution, would have been disclosed to the public on the filing date." *In re Wertheim*, 646 F.2d 527, 536 (CCPA 1981); *see also id.* at 532 (discussing *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390 (1926), and that § 102(e) is "a codification of the rule of" the *Milburn* case).

Therefore, under the reasoning of these cases, a patent may be considered prior art as of the date of a provisional application so long as the provisional disclosed (sufficiently under § 112) the same invention eventually claimed in the patent. As a result, if the patent is shown to have at

least *one* claim to an invention that is supported by the disclosure of a provisional application, it can be said that the provisional disclosed the same invention eventually claimed in the patent, and the patent may be considered prior art as of the filing date of the provisional under § 102(e)(2). Nothing in *Dynamic Drinkware* indicates a departure or change in this line of reasoning from the *New Railhead* and *Wertheim* line of cases; to the contrary, the court in *Dynamic Drinkware* relied on those precedents for its decision. *See Dynamic Drinkware*, 800 F.3d at 1378, 1381.

That this is the correct interpretation of the case law is supported further by the reasoning of prior panels of the Board addressing this issue, with which we agree. *See*, *e.g.*, *Polaris Indus. Inc. v. Arctic Cat Inc.*, IPR2016-01713, Paper 9 at 13 (PTAB Feb. 27, 2017). And as a panel of the Board noted in *Medtronic, Inc. v. Niazi Licensing Corporation*, requiring all claims of a patent to be supported by a provisional application to gain the benefit of its filing date would lead to the dubious result that a patent with two claims covering inventions disclosed earlier in two different provisional applications would be unable to be afforded the priority date of either provisional. IPR2018-00609, Paper 8 at 10–11 (PTAB Aug. 20, 2018) (citing *Ex Parte Mann*, Appeal No. 2015-003571, 2016 WL 7487271, at *6 (PTAB Dec. 21, 2016)).

In the present case, the parties do not dispute that Petitioner bears the burden of establishing that Clarke qualifies as prior art, including that the Clarke provisional application provides sufficient written description support for Clarke to confer the benefit of its priority date. The

Petition indicates that "Clarke was filed within one year of the Clarke provisional's filing, names at least one inventor in common, and includes a specific reference to the Clarke provisional." Pet. 85. Petitioner also asserts that "at least claim 16 of Clarke is fully supported and enabled by the Clarke provisional," and provides a chart identifying such support. *Id.* at 85–87. Further, as noted in our Decision on Institution (Inst. Dec. 43), the Petition provides parallel citations to Clarke and corresponding disclosures in the Clarke provisional application (*see generally* Pet. 69–85) to demonstrate that the relevant disclosures of Clarke were carried over from the provisional. *See In re Giacomini*, 612 F.3d 1380, 1383 (Fed. Cir. 2010) (holding that a claim is unpatentable "if another's patent discloses the same invention, which was carried forward from an earlier U.S. provisional application or U.S. nonprovisional application"); *Mann*, 2016 WL 7487271, at *5 (requiring a showing that the disclosure of the provisional provides support for the subject matter relied on to show obviousness).

Patent Owner does not dispute that the Clarke provisional provides sufficient § 112 support for claim 16 of Clarke, or that the provisional provides sufficient support for the subject matter in Clarke relied on by Petitioner to demonstrate obviousness. Upon review of the Petition and the full trial record, we agree with Petitioner and find that the Clarke provisional provides the requisite support for claim 16 and the disclosures relevant to Petitioner's obviousness grounds. Consequently, after considering the parties' arguments and the evidence identified in the Petition, we conclude that Petitioner has carried its burden to establish that Clarke qualifies as prior art under § 102(e)(2).

b. Independent Claim 10

According to Petitioner (Pet. 69–72), Clarke teaches an apparatus capable of processing data that comprises a performer name and a reference to a visual depiction of that performer, as recited in claim 10. Specifically, Petitioner cites Clarke's disclosure of "playback devices" (such as Blu-ray players), as well as computers and mobile devices, that access and retrieve metadata information. Ex. 1006, 2:30–61, 3:11–34. Clarke further discloses that such metadata can include "actor names for characters that appear in individual scenes" of a movie. *Id.* at 16:14–17; *see id.* at Fig. 6A. In Figure 6C of Clarke, metadata is shown to include a small photograph of an actor on the screen (Mark Wahlberg). *Id.* at Fig. 6C. We agree with Petitioner and find that Clarke teaches the elements of the preamble of claim 10.

Patent Owner argues that Clarke fails to teach a visual depiction of a performer. PO Resp. 53–54. Again, however, Patent Owner's argument is premised on its contention that the '346 Patent precludes a visual depiction of a *character* from also being a visual depiction of a *performer*. *See id.*; PO Sur-reply 8–9. As discussed above, the evidence of record—including, most importantly, the Specification of the '346 Patent—does not support Patent Owner's contention. Thus, Patent Owner's argument regarding the depictions in Clarke is unpersuasive.[11]

11. Patent Owner notes, and we agree, that significant portions of the figures of Exhibit 1006 (Clarke) are illegible. PO Sur-reply 8. Patent Owner admits, however, that the image in Figure 6C, for example, is an image of the actor performing as the character in the

Appendix C

Petitioner asserts the combination of Clarke and Reimer teaches receiving a user's request for information identifying a performer in a video, as recited in claim 10. Pet. 72–75. The Petition relies on the same teachings of Reimer here as for its contention that Reimer teaches this limitation in the context of obviousness over Reimer and McIntire, discussed above. Further, as Petitioner notes (*id.* at 72), Clarke indicates that a user may operate a device to render media content, and the user "can elect to enhance the media playback with time based metadata," such as by "mak[ing] a request" for such metadata from a service. Ex. 1006, 6:44–50. The Petition sets forth several reasons why a person of ordinary skill would have been motivated to combine these teachings, including that it constitutes a simple substitution of one known technique (Reimer's request for actor information) for another similar technique (Clarke's request for metadata) to obtain predictable results. Pet. 73–75 (citing *KSR*, 550 U.S. at 417). Although Patent Owner argues Clarke "teaches away" from the claimed user request and that the combination of Clarke and Reimer is based on impermissible hindsight, its positions are unpersuasive because they are conclusory and unsupported. PO Resp. 54–55. In particular, with regard to teaching away, Patent Owner fails to identify evidence indicating that a skilled artisan would have understood Clarke to "criticize, discredit, or otherwise discourage the solution claimed" in the '346 Patent. *See In re Fulton*, 391 F.3d 1195, 1201

---

video being played. *See id*. Dr. Reader, Patent Owner's expert, also testified about Figure 6C that "[t]he page is about Mark Wahlberg, so it would make sense for it to be a picture of Mark Wahlberg." Ex. 1101, 231:15–20.

(Fed. Cir. 2004). Based on the complete record, we find that this limitation is taught by the combination of Clarke and Reimer, and that an ordinary artisan would have been motivated to combine their teachings.

With respect to the limitation of "identifying a current location in the video," Petitioner relies on Clarke's discussion of "time stamps" that indicate the location and duration of an event, such as an actor's presence in a particular scene. Pet. 75; *see* Ex. 1006, 4:16–24, 55–57. Such events, when they occur, can trigger supplementation of the movie with relevant metadata. Ex. 1006, 3:47–52. Thus, according to Petitioner, Clarke teaches identifying a current location in the video to determine whether an event should trigger metadata based on the time stamp. Pet. 75–76. Patent Owner does not dispute these contentions. We agree with Petitioner's reasoning and find that this limitation is taught by Clarke.

Next, Petitioner asserts that Clarke teaches identifying a name of a performer associated with the current location in the video and retrieving a visual depiction of that performer, as well as providing them to the user, as recited in claim 10. Pet. 76–79. As shown in Figures 6A and 6C of Clarke, the names of actors in the current scene of a movie are displayed as metadata, which can also include a small photograph. Ex. 1006, Figs. 6A, 6C, 3:46–52. Patent Owner does not dispute these contentions beyond the arguments regarding Clarke's visual depictions, which are unpersuasive as discussed above. On the full record, Petitioner has shown sufficiently that these limitations are taught by Clarke.

In conclusion, for the reasons set forth above and based on the complete record after trial, we find that the combination of Clarke and Reimer teaches each limitation of claim 10, and Petitioner has established by a preponderance of the evidence that claim 10 is unpatentable as obvious over these references.

b. Dependent Claims 11 and 12

Claim 11 depends from claim 10 and adds the limitation, "wherein the apparatus further performs the step of retrieving and providing, the user, a filmography corresponding to the identified name of the performer." Petitioner asserts that Clarke discloses retrieving and displaying a filmography of the depicted actor in Figures 6B and 6C. Pet. 81–82 (citing Ex. 1006, Figs. 6B, 6C, 16:30–32). Patent Owner does not dispute that Clarke teaches this limitation.

Claim 12 also depends from claim 10, adding the limitation, "wherein the apparatus further performs the step of pausing the playing of the video in response to the receiving of the request for information." The Petition cites a disclosure in Clarke that "the media content may be paused" when supplemental presentations are displayed, such as actor information. Ex. 1006, 17:15–19. Patent Owner does not dispute Petitioner's contention that Clarke teaches this limitation.

Based on the parties' arguments and evidence presented during trial, we agree with Petitioner and find that Clarke and Reimer teach each limitation of claims 11

and 12. Thus, we conclude a preponderance of the evidence shows that these claims are unpatentable as obvious over Clarke and Reimer.

c. Independent Claims 4 and 13

Independent claim 4 recites substantially the same elements as claim 10, but further recites additional elements relating to "a plurality of segment definitions each defining a video segment within a video." Petitioner relies on the "time stamps" (i.e., the recited segment definitions) discussed above, which indicate the location and duration of an event, such as the presence of a particular character in a scene or the portion of a movie when a particular song is played. *See* Ex. 1006, 4:5–36. According to Petitioner, Clarke teaches that the current location is identified and used to determine whether a time stamp (segment definition) is triggered (i.e., coincides with the current location), for example, to retrieve metadata (such as actor information) associated with a particular event. Pet. 83–84 (citing Ex. 1006, 4:5–36, Fig. 8).

Independent claim 13 also recites substantially similar elements as claim 10, but further requires that the current location in the video, and the name of a performer associated with that location, are identified "continuously." Additionally, the identified name and visual depiction of the performer are "contemporaneously updat[ed]" as well as provided to the user "as the video continues to be played." According to the Petition (Pet. 84–85), Clarke teaches these limitations by disclosing that the time stamps can be used to "automatically" activate triggers to

"cause the rendering of associated information or content items." Ex. 1006, 4:11–15. Petitioner argues this shows that Clarke teaches that information is continuously updated and provided to the user as time stamps automatically activate triggers. Pet. 84–85.

Patent Owner does not advance any arguments regarding these claims other than those already addressed above with respect to claim 10. Based on the complete record after trial, we agree with Petitioner and find that the combination of Clarke and Reimer teaches each limitation of claims 4 and 13. As a result, we conclude that, based on a preponderance of the evidence, these claims are unpatentable as obvious over Clarke and Reimer.

d. Remaining Challenged Claims

Claims 5 and 6 depend from claim 4, but otherwise recite the same limitations as claims 12 and 11, respectively. Petitioner relies on the same arguments and evidence as for claims 12 and 11 (*see* Pet. 85), and Patent Owner does not present any arguments specific to these claims. We are persuaded Petitioner demonstrates by a preponderance of the evidence that claims 5 and 6 would have been obvious in view of Clarke and Reimer for the same reasons discussed above for claims 11 and 12.

Claims 14–16 are method claims, but otherwise recite substantially the same elements as claims 4–6. Similarly, claims 17–19 are method claims reciting substantially the same limitations as claims 10–12, and claim 20 is a method claim reciting substantially the same limitations

as claim 13. Petitioner relies on the same arguments and evidence as for those corresponding claims, and Patent Owner does not argue these claims separately. We conclude Petitioner has shown claims 14–20 would have been obvious over Clarke and Reimer, by a preponderance of the evidence, for the same reasons discussed above for the corresponding claims. *See* Pet. 81–83, 85.

9. Additional Patent Owner Arguments

Patent Owner advances two additional arguments that are not specific to particular grounds of unpatentability. First, Patent Owner argues the Petition is defective because Petitioner fails to "admit to any differences between the prior art and the claims at issue, i.e., that any of the prior art references fail to disclose any one of the several claim limitations." PO Resp. 7. We disagree. Patent Owner identifies no authority, nor are we aware of any such authority, holding that obviousness may only be asserted when one or more prior art references "fail to disclose" a claim limitation. *Graham* merely identifies "differences between the prior art and the claims at issue" (if any) as one of the underlying factual inquiries in the obviousness analysis; the Court does not require differences to exist to prove obviousness. *See* 383 U.S. 17–18. Indeed, the Federal Circuit has said that anticipation (i.e., no differences between a prior art reference and the claims) often is the "epitome of obviousness." *E.g.*, *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983).

Second, Patent Owner asserts that the Petition advances a "statistical nightmare" of "voluminous and

excessive number of grounds" because of "a multiplicity of combinations of allegations applied to each of the multiple limitations" in the challenged claims. PO Resp. 8–12 (quoting *Adaptics Ltd. v. Perfect Co.*, IPR2018-01596, Paper 20 at 15–16, 18–19 (PTAB Mar. 6, 2019)). After reviewing the Petition, we disagree. The Petition includes multiple arguments, some in the alternative, for many (but not all) limitations of some challenged claims. We determine, however, that the arguments are not excessive and are explained with sufficient particularity to put Patent Owner reasonably on notice of Petitioner's positions.

D. Patent Owner's Motion to Exclude (Paper 24, "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.[12] Mot. 2–11. More specifically, Patent Owner alleges the testimony in question is "prone to misunderstanding" and "prejudicial."[13] *Id.*

12. In its Reply in support of the Motion, Patent Owner further invokes Rule 611(b) as a basis for excluding the evidence in question. Mot. Reply 1. We determine this argument is untimely and waived because it was not included in the Motion, and, as a result, Petitioner did not have a reasonable opportunity to address it. *See* 37 C.F.R. §§ 42.5(a), 42.23(b), 42.64(c).

13. Patent Owner also alleges this testimony is "irrelevant," but the Motion does not assert an objection based on Rule 402. *See* Mot. 1; Mot. Reply 3–4. Indeed, Rule 403 explicitly addresses *relevant* evidence by definition. *See* Fed. R. Evid. 403 ("The court may exclude relevant evidence if its probative value is substantially outweighed

at 1; *see* Paper 27 ("Mot. Reply"), 1, 3–4. According to Patent Owner, Petitioner's questions were purportedly vague, ambiguous, improperly repetitive, and/or beyond the scope of Dr. Reader's direct examination (i.e., his Declaration). *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"). We also note that none of the testimony at issue directly formed part of the basis for any determination made in this Decision. Further, we are not persuaded by Patent Owner's accusations of Petitioner "cherry-pick[ing]" only certain portions of Dr. Reader's deposition testimony to support its arguments. Mot. Reply 2–3. That Petitioner would rely on the evidence most supportive of its positions is unremarkable and, more importantly, does not form a basis for excluding evidence under the Federal Rules of Evidence.

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

. . . ."). To the extent Patent Owner intends to challenge the relevance of any of the testimony in question, we are not persuaded as a result.

be excluded and, thus, we deny Patent Owner's Motion to Exclude.

CONCLUSION[14]

For the foregoing reasons, Petitioner has shown by a preponderance of the evidence that the challenged claims of the '346 Patent are unpatentable, as summarized in the following table:

14. 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).

Appendix C

Claims	**35 U.S.C. §**	**Reference(s)/ Basis**	**Claims Shown Unpatentable**	**Claims Not Shown Unpatentable**
4–6, 10–20	103(a)	Thomas	4–6, 10–20	
4–6, 10–20	103(a)	Thomas, McIntire	4–6, 10–20	
4–6, 10–20	103(a)	McIntire, Thomas	4–6, 10–20	
4–6, 10–12, 14–19	103(a)	Reimer, McIntire	4–6, 10–12, 14–19	
13, 20	103(a)	Reimer, McIntire, Thomas	13, 20	
4–6, 10–20	103(a)	Clarke, Reimer	4–6, 10–20	
Overall Outcome			4–6, 10–20	

Appendix C

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the challenged claims of the '346 Patent are held unpatentable in view of the following asserted grounds:

Claims 4–6 and 10–20 as unpatentable under 35 U.S.C. § 103(a) over Thomas;

Claims 4–6 and 10–20 as unpatentable under 35 U.S.C. § 103(a) over Thomas in view of McIntire;

Claims 4–6 and 10–20 as unpatentable under 35 U.S.C. § 103(a) over McIntire in view of Thomas;

Claims 4–6, 10–12, and 14–19 as unpatentable under 35 U.S.C. § 103(a) over Reimer in view of McIntire;

Claims 13 and 20 as unpatentable under 35 U.S.C. § 103(a) over Reimer, McIntire, and Thomas; and

Claims 4–6 and 10–20 as unpatentable under 35 U.S.C. § 103(a) over Clarke in view of Reimer;

FURTHER ORDERED that Patent Owner's Motion to Exclude (Paper 24) 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.