

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BYTEDANCE LTD. and TIKTOK INC.,
Petitioner,

v.

TRILLER, INC.,
Patent Owner.

IPR2021-00099
Patent 9,691,429 B2

Before GEORGIANNA W. BRADEN, GREGG I. ANDERSON, and
MINN CHUNG, *Administrative Patent Judges*.

ANDERSON, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

I. INTRODUCTION

ByteDance Ltd. and TikTok Inc. (collectively “Petitioner”) filed a Petition requesting *inter partes* review of claims 1–10 of U.S. Patent No. 9,691,429 B2 (Ex. 1001, “the ’429 patent”). Paper 2 (“Pet.”). Triller, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 7 (“Prelim. Resp.”). We instituted *inter partes* review on April 21, 2021. Paper 8 (“Inst. Dec.”). Patent Owner filed a Response (Paper 14, “PO Resp.”), Petitioner filed a Reply (Paper 20, “Reply”), and Patent Owner filed a Sur-Reply (Paper 21, “Sur-Reply”). A hearing was held on January 20, 2022, and a transcript has been made of record. Paper 27 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 314. Upon considering the record, for reasons discussed below, we find claims 1–10 unpatentable.

II. BACKGROUND

A. Real Parties in Interest

Petitioner identifies ByteDance Ltd., ByteDance Inc., TikTok Inc., and TikTok Pte. Ltd. as real parties-in-interest. Paper 6, 2. Patent Owner identifies itself as a real party-in-interest. Paper 5, 2. Patent Owner also states that Triller Holdco LLC is the parent corporation to Triller, Inc. but “[i]t is unclear whether Triller Holdco LLC is considered a real party in interest in this Petition for *Inter Partes* Review, but Triller provides this information in the spirit of full disclosure.” *Id.*

B. Related Matters

The parties identify *Triller, Inc. v. TikTok Inc.*, Case No. 6:20-cv-00693 (W.D. Tex.) (“’693 Lawsuit”) as a related matter. Pet. 82; Paper 5, 2. The ’693 Lawsuit was transferred to the Northern District of California and is pending as Case No. 4:21-cv-05300 (“’5300 Lawsuit”); ’693 Lawsuit, Dkt No. 86; *see also* Pet. 77 (“Petitioner *intends to file* a motion to transfer the

District Court case to the U.S. District Court for the Northern District of California.”). The ’5300 Lawsuit is stayed pending the outcome of this *inter partes* review proceeding. See ’5300 Lawsuit, Dkt. 96 (“Corrected Joint Status Report” reporting on the status of this proceeding).

Patent Owner also identifies *ByteDance, Inc., et al v. Triller, Inc.*, Case No. 3:20-cv-07572 (N.D. Cal.) as another related matter. Paper 5, 2.

C. The ’429 Patent

The application for the ’429 patent was filed May 11, 2015. Ex. 1001, code (22).

1. Technology

The ’429 patent discloses that mobile devices have capabilities that allow almost any individual to record and edit music, and capture video, via that single device. Ex. 1001, 1:18–23. Individuals are now able to create their own music videos with mobile devices, including music videos based on one’s favorite song or a popular song. *Id.* at 1:23–28.

According to the ’429 patent, music videos created by most of the conventional video applications, however, have drawbacks. Ex. 1001, 1:28–30. A music video created by playing an audio track in the background of a single video has extremely poor quality because there are not visual transitions between parts of an audio track. *Id.* at 1:31–35. A music video created by a linear application of a video and audio track is extremely limited because it does not allow the use of multiple videos and requires videos to be taken in chronological order, no matter their location. *Id.* at 1:42–51. Other applications may capture video of an individual within a silhouette but the latter restricts the location and movement of the individual. *Id.* at 1:58–67. In addition, music videos have been made by using only a small portion of an audio track with a single video for that small audio track

portion. *Id.* at 2:3–6. According to the '429 patent, however, this creates short, dull, unprofessional music videos. *Id.* at 2:8–10.

In view of the above, the '429 patent states that “it would be beneficial for there to be systems, methods, and non-transitory computer readable mediums that allow a user to create a professional style music video using portions of multiple videos [] taken at different times and at different locations, that are automatically synchronized to a selected audio track.” *Id.* at 2:11–17.

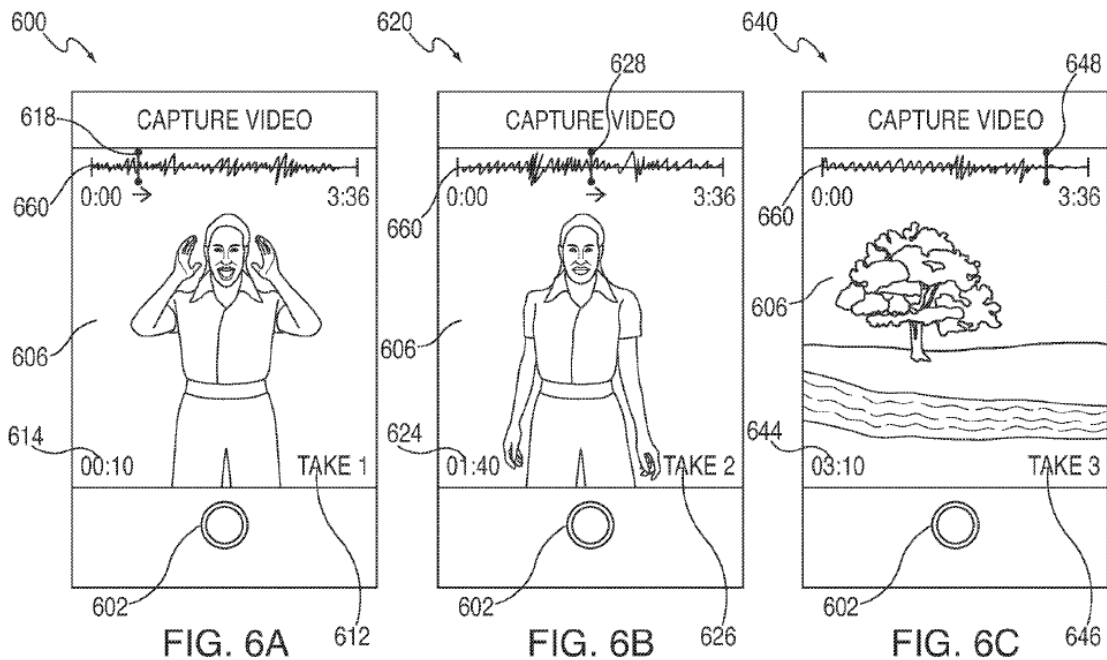
2. '429 Patent Overview

The '429 patent describes “systems, methods, and non-transitory computer readable mediums for creating music videos that are synchronized to an audio track.” Ex. 1001, 2:26–28. The '429 patent discloses that its process includes selecting an audio track. *Id.* at 2:31–32. A plurality of video takes may be captured via a user’s device and, while the plurality of video takes are being captured, they may be synchronized with the audio track. *Id.* at 2:34–37. The '429 patent states that the synchronization permits the video takes to be aesthetically and/or musically synchronized with an appropriate audio track section. *Id.* at 2:37–40. A music video may then be created that includes the audio track and at least a subset of the video takes already synchronized to that audio track. *Id.* at 2:40–43.

The '429 patent discloses that a selected audio track may begin to play when a user begins recording video and an image capturing process may capture images until the audio track, or a selection portion, has completed. Ex. 1001, 9:18–21, 9:25–29, 14:49–51. For example, the audio track may play through the speakers of a user device while the user device’s camera captures a video take. *Id.* at 14:62–64. The '429 patent describes that “[i]n some embodiments, by playing the selected audio track while an video take

is captured, that video take may be synchronized with the audio track automatically.” *Id.* at 14:53–56. For instance, the ’429 patent explains that “each moment of the captured video take may be synchronized to a corresponding section of the selected audio track, as the video take is captured in time with the audio track as it plays.” *Id.* at 14:56–59.

Figures 6A–6C of the ’429 patent are reproduced below.



Figures 6A–6C depict user interfaces that display video takes captured by a user device for a music video.

Ex. 1001, 3:46–49. Figures 6A, 6B, and 6C respectively show user interfaces 600, 620, and 640. *Id.* at 9:54–58. The ’429 patent discloses that user interface 600 may include video take indicator 612, which may indicate which video take a user is currently on. *Id.* at 10:27–28, 10:40–42. For example, video take indicator 612 in Figure 6A may indicate a first video take, video take indicator 626 in Figure 6B may indicate a second video take, and video take indicator 646 in Figure 6C may indicate a third video take. *Id.* at 10:40–55.

Figure 7B of the '429 patent is reproduced below.

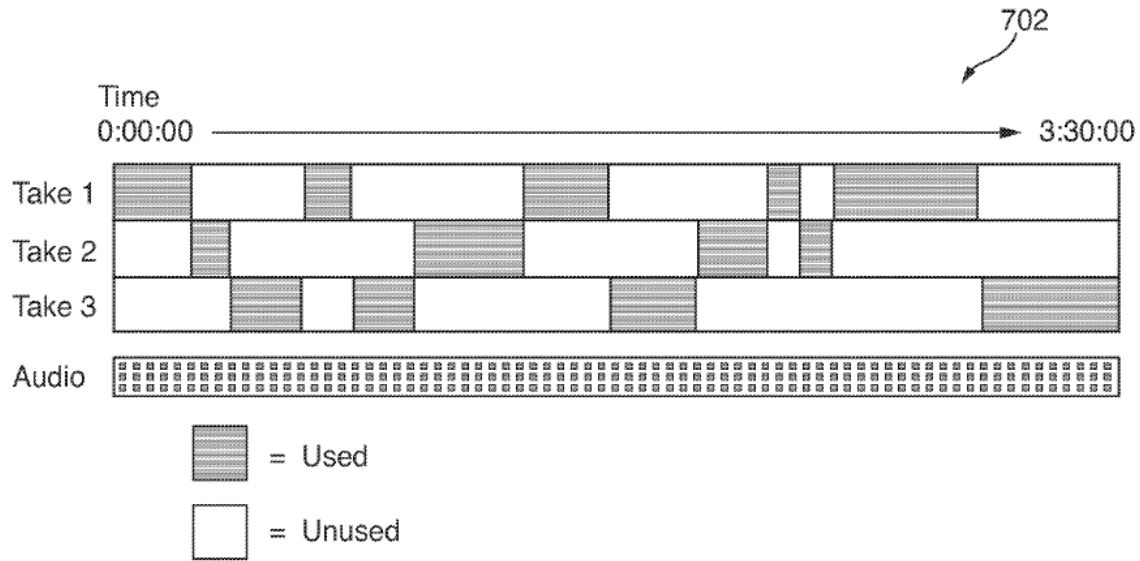


FIG. 7B

Figure 7B shows a diagram of a created music video that includes a plurality of synchronized video takes.

Ex. 1001, 3:50–53. Figure 7B depicts block diagram 702 of a music video. *Id.* at 13:36. As shown in Figure 7B, a video may include three video takes: “Take 1,” “Take 2,” and “Take 3,” as depicted in Figures 6A–6B above, which may be captured at different locations and contain different images. *Id.* at 13:38–41. The '429 patent states that “each video take may also be of equal duration as an audio track,” such as the audio track shown in Figure 7B. *Id.* at 13:41–44. The darkened portions of block diagram 702 correspond to video take portions used to make the music video, whereas white or empty portions of block diagram 702 correspond to unused video portions. *Id.* at 13:45–49.

The '429 patent discloses that “[t]he music video, in one embodiment, combines the various video takes and the selected audio track into one synchronized item that may be enjoyed by the user, shared by the user, published by the user, and/or modified by the user.” Ex. 1001, 22:20–24.

D. Illustrative Claim

Petitioner challenges claims 1–10 of the ’429 patent. Pet. 1. Of those, claim 1 is the sole independent claim and claims 2–10 depend directly or indirectly from claim 1. All claims are directed to “[a] method for creating a music video.” Ex. 1001, 26:55. Claim 1 is reproduced below as illustrative of the claimed subject matter.

[1.0]¹ A method for creating a music video in which a plurality of video takes is synchronized to an audio track, the method comprising:

[1.1] selecting an audio track;

[1.2] capturing a plurality of video takes;

[1.3] synchronizing each video take of the plurality of captured video takes with the selected audio track while each video take of the plurality of video takes is being captured, wherein synchronizing further comprises playing, from a first beginning, the selected audio track at substantially the same time as a second beginning of capturing each video take of the plurality of video takes; and

[1.4] creating a music video comprising:

the selected audio track; and

at least a subset of the plurality of video takes comprising at least two video takes of the plurality of video takes synchronized with the selected audio track.

Ex. 1001, 26:55–27:6.

¹ We adopt Petitioner’s format for labeling the claim limitations, i.e., the claim number followed by numbers for each limitation. *See, e.g.*, Pet. v, 10–20 (claim 1).

E. Evidence of Record

Petitioner relies on the following prior art references:

Crosland (Ex. 1004): Crosland et al., US 2013/0163963 A1, filed Dec. 21, 2011, published June 27, 2013;

Hozumi (Ex. 1005): Hozumi, US 2012/0148208 A1, filed Dec. 7, 2011, published June 14, 2012; and

Beauregard (Ex. 1006): Beauregard et al., US 2010/0183280 A1, filed Dec. 10, 2009, published July 22, 2010.

Petitioner also relies on the Declaration of Dr. Jeremy Cooperstock (“Cooperstock Declaration,” Ex. 1003). Dr. Cooperstock’s deposition (“Cooperstock Deposition,” Ex. 2010) was taken by Patent Owner.

Patent Owner relies on the Declaration of Michael I. Shamos, Ph.D., J.D. (“Shamos Declaration,” Ex. 2009). Dr. Shamos’ deposition (“Shamos Deposition,” Ex. 1022) was taken by Petitioner.

F. Prior Art and Asserted Challenges to Patentability

Petitioner asserts that claims 1–10 would have been obvious based on the following challenges (Pet. 2, 9–75):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 3–10	102	Crosland
1, 3–10	103	Crosland
1, 3, 4, 6, 7	102	Hozumi
1, 3–10	103	Hozumi, Crosland
1–10	103	Beauregard, Hozumi

III. ANALYSIS

A. Introduction

We instituted trial based on all challenges presented in the Petition, finding a reasonable likelihood of unpatentability was shown based on the

Beauregard and Hozumi combination. Inst. Dec. 45–46; *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1356 (2018); 37 C.F.R. § 42.108(a). The Institution Decision analyzed the challenge based on the Beauregard and Hozumi combination first, and found it the most persuasive. *Id.* at 22, n. 9, 32–36. As analyzed in Section III.E below, we find this challenge supports our final decision that claims 1–10 are unpatentable. *See SAS*, 138 S. Ct. at 1359 (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”). For the reasons explained below, we determine that the remaining challenges do not sufficiently show unpatentability.

B. Claim Construction

In an *inter partes* review for petitions filed on or after November 13, 2018, a claim shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100 (2019); *see Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). The Petition was accorded a filing date of October 28, 2020, and these claim construction considerations guide our analysis. Paper 3.

The “specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess.” *Phillips*, 415 F.3d at 1316. “[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

No claim construction order has been entered in the '5300 Lawsuit. In the Institution Decision, we addressed the terms “synchronizing” and “video take.” Inst. Dec. 16–20. Petitioner argued preliminarily that “synchronizing” “include[s] establishing a relationship between each of a plurality of video takes and an audio track.” Pet. 7. Observing that “synchronizing” was not in dispute at the institution phase, we preliminarily determined express construction was not required, so we proceeded on the plain and ordinary meaning. *Id.* at 17–18.

Petitioner did not propose a construction for the meaning of “video take,” while Patent Owner’s proposed meaning was “a segment of recorded video that was *continuously recorded*, i.e., recorded without stopping and restarting the recording.” *See* Pet. 6–7; PO Resp. 13–14 (emphasis added). On that record, we preliminarily determined that the plain and ordinary meaning of “video take” should be applied, which includes a video clip or video segment, declining to add “continuously recorded.” Inst. Dec. 20.

I. “synchronizing”

“Synchronizing” or “synchronized” appear three times in two limitations of claim 1, limitations 1.3 (twice) and 1.4. Each is reproduced below.

[1.3 (“capture synchronization”)] *synchronizing* each video take of the plurality of captured video takes with the selected audio track while each video take of the plurality of video takes is being captured

[1.3 (“beginning-beginning synchronization”)] wherein *synchronizing* further comprises playing, from a first beginning, the selected audio track at substantially the same time as a second beginning of capturing each video take of the plurality of video takes; and

[1.4] at least two video takes of the plurality of video takes
synchronized with the selected audio track

Petitioner provides examples of “synchronizing” based on the usage in the asserted prior art, as well as other references. Pet. 7–8 (citations omitted). By way of example, Petitioner points to the references relied on in the Petition (Exs. 1005 and 1006) and other references teaching “mouth movements [in a video take] are coordinated with the singing [in an audio track].” *Id.* at 7 (quoting Ex. 1006 ¶ 8; *also citing* Ex. 1005 ¶ 78; Ex. 1013;² Ex. 1014,³ 7:36–43; Ex. 1015⁴ ¶ 6). Petitioner argues a person of ordinary skill “would have understood the term ‘synchronizing’ to include establishing a relationship between each of a plurality of video takes and an audio track.” *Id.* at 7 (citing Ex. 1003 ¶ 16).

Patent Owner argues “the ‘synchronizing’ must take place ‘while each video take of the plurality of video takes is being captured,’ and not at some later time.” PO Resp. 12 (citing Ex. 2009 ¶ 30). Petitioner argues Patent Owner’s construction is too limiting and unnecessary. Reply 1. Petitioner then agrees with the Institution Decision that no express construction is required because “the cited references satisfy the claimed ‘synchronizing’ feature” even under Patent Owner’s proposed construction. *Id.*

With respect to “capture synchronization,” the claim language of claim 1 recites, in part, “synchronizing each video take of the plurality of captured video takes with the selected audio track while each video take of the plurality of video takes is being captured.” The cited language is consistent with Petitioner’s “established relationship” argument, and is

² Greene, US 2016/0134785 A1, published May 12, 2016.

³ MacLeod, US 8,185,297 B2, issued May 22, 2012.

⁴ Beauregard, US 2008/0016114 A1, published Jan. 17, 2008.

consistent with the plain and ordinary meaning of “synchronizing.” Beyond requiring the capture synchronization to take place “while each video take is being captured,” this claim language does not specify when the first synchronization must occur. Stated another way, the video take is synchronized with the “selected audio track” at the same time the audio track is playing. Other than observing this plain meaning of the claim language, we determine no further construction of the first appearance of “synchronizing” term is necessary because, as discussed below, the patentability determination in this proceeding does not turn on any express construction of this term.

In the second appearance of synchronizing, claim 1 recites “synchronizing . . . from a first beginning, the selected audio track at substantially the same time as a second beginning of capturing each video take of the plurality of video takes.” Patent Owner characterizes this term and the “beginning-beginning synchronization requirement.” PO Resp. 24 (emphasis omitted). Petitioner argues that this element “does not require ‘a first beginning’ and ‘a second beginning’ to be at the beginning of the audio track, but rather are a matching point between the audio track and the video clip.” Pet. 17. Patent Owner agrees with what was preliminarily determined in the Institution Decision, i.e., the “beginning-beginning requirement means that the ‘beginning’ of the audio track and the video take occur at the same time.” PO Resp. 18 (citing Inst. Dec. 19 (citing Ex. 1001, 26:63–67, Figs. 6A–6C, Fig. 7A)). Thus, according to Patent Owner “the audio track must be playing while the video take is being captured.” *Id.* at 12 (citing Ex. 2009 ¶ 30).

Petitioner argues that applying the plain meaning or Patent Owner’s proposed construction does not change the result and construction is not

required. Reply 1 (citing *Wellman v. Eastman Chem.*, 642 F.3d 1355 ,1361 (Fed. Cir. 2011) (“claim terms need only be construed to the extent necessary to resolve the controversy.”)). We agree with Petitioner, and because applying either the plain and ordinary meaning or Patent Owner’s proposal, which we find is consistent with the plain and ordinary meaning, does not affect our final decision below, no express construction of this term is necessary.

The third appearance is for “synchronized” and recites “at least two video takes of the plurality of video takes synchronized with the selected audio track.” Neither party argues any construction for this appearance and we apply the plain and ordinary meaning of “synchronized” as it appears in limitation 1.4.

2. “video take”

Patent Owner’s proposed construction for “video take” is “a segment of recorded video that was continuously recorded, i.e., recorded without stopping and restarting the recording.” PO Resp. 13–14. Petitioner argues Patent Owner’s proposal does not exclude a “‘video take’ from being the same as or including a ‘video clip’ or ‘video segment.’” Reply 2. As stated by Patent Owner, the dispute raised by the papers is “that while a video clip/segment may constitute a video take, a video clip/segment does **not** constitute a video take when it was **not** continuously recorded.” Sur-Reply 2.

Initially, the claim language for the “beginning-beginning synchronizing” limitation 1.3—“synchronizing further comprises playing, from a first beginning, the selected audio track at substantially the same time as a second beginning of capturing each video take of the plurality of video takes”—is consistent with Patent Owner’s proposed construction of “video

take.” This claim language was added during prosecution of the application for the ’429 patent. Ex. 1002,⁵ 161 (showing amendments to original claim 1). The Specification supports that the “video take” is continuous but comprised of segments. *See* Ex. 1001, Figs. 6A–6C, 7A (all showing that the three video takes depicted run for the entirety of the audio track for which a music video is to be made).

We are not persuaded that the term “video take” excludes a “video clip” or a “video segment.” For example, the Beauregard reference uses both “video clip” and “take” to describe synonymously the video being synchronized with the selected audio track. Ex. 1006 ¶¶ 40 (“video clip”), 58 (“The input video file 501 contains multiple shots, each of which corresponds to a single performance or ‘take’ of a work.”).

We have reviewed the various dictionary definitions of “take” cited by Patent Owner. PO Resp. 15–16 (citations omitted). The proffered extrinsic evidence is less reliable in general than intrinsic evidence in determining how to interpret the claim. *Phillips*, 415 F.3d at 1318 (listing reasons extrinsic evidence lacks reliability of the patent and its prosecution history). Regardless, nothing about the definitions of record for “take” are inconsistent with a “video clip” or other piece of video from being a “video take.”

Patent Owner argues the terms “video clip” and “video segment,” used in the prior art references, are broader than the term “video take” because they “refer generically to sections of video, including sections of video that may have been selected and pieced together after capture.” PO Resp. 17 (citing Ex. 2009 ¶¶ 34–40). Dr. Shamos’ testimony on “video

⁵ Excerpts from the prosecution history of the ’429 patent.

take” does not persuade us that a video “clip” or “segment” is not a “video take.” Dr. Shamos testifies “the term ‘clip’ can refer to segments manipulated during an editing process and that the term ‘clip’ *does not necessarily* refer to a ‘take.’” Ex. 2009 ¶ 36 (citing Ex. 1001, 7:19–30 (emphasis added) (“*Preview window may present a clip or sample of the created music video*”)) (emphasis added).

Consistent with the preceding, nothing in the Specification precludes a “video take” from being the same as or including a “video clip” or other piece of video. The Specification states that “each video take, whether it begins at the beginning of the audio track or at some other point of the audio track, will be synchronized to the audio track.” Ex. 1001, 10:24–26 (“each video take, whether it begins at the beginning of the audio track or at some other point of the audio track, will be synchronized to the audio track”). A “video take” is described as “a plurality of captured video takes synchronized to a selected audio track.” *Id.* at 11:4–6. Based on this, we find that a person of ordinary skill would have understood the Specification as describing a “video take” as sometimes the equivalent video clip or segment of video. *See* Ex. 1001, 10:24–26.

We agree with Patent Owner that a “video take” is a continuous recording. Petitioner agreed during the ’663 Lawsuit claim construction process that a video take is “continuous.” PO Resp. 14–15 (citing Ex. 2011,⁶ 8 (“agree any stoppages of recording (e.g., pausing) and restarting is not allowed”); Ex. 2012,⁷ 4). Accordingly, we determine that “video take”

⁶ Petitioner’s District Court “Responsive Claim Construction Brief.”

⁷ Petitioner’s District Court “Sur-Reply Claim Construction Brief.”

means continuously recording a “video,” which may be a video clip or video segment.

C. Person of Ordinary Skill in the Art

Petitioner alleges:

A person of ordinary skill in the art as of the Critical Date of the '429 Patent (“POSITA”) would have been a person with a working knowledge of digital video and audio technologies. The person would have had a Bachelor of Science, a Bachelor of Applied Science, or a Bachelor of Engineering degree in an academic discipline emphasizing the design of electrical, computer, or software technologies, in combination with training or at least one to two years of related work experience with capture and processing of data or information, including but not limited to digital video and audio technologies. TIKTOK-1003, ¶12. Alternatively, the person could have also had a Master of Science, Master of Applied Science, or Master of Engineering degree in a relevant academic discipline with less than a year of related work experience in the same discipline. *Id.*

Pet. 6.

Patent Owner does not comment on Petitioner’s proposal or propose an alternative. On this record, we adopt Petitioner’s proposed description of a person of ordinary skill, which is consistent with the disclosure in the '429 patent and the cited prior art.

D. Legal Standard for Obviousness

A patent claim is invalid as obvious if the differences between the claimed invention and the prior art are “such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” *See* 35 U.S.C. § 103.

“The ultimate determination of obviousness is a question of law, but that determination is based on underlying factual findings.” *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381 (Fed. Cir. 2016). The underlying factual findings include: (1) “the scope and content of the prior art”; (2) “differences between the prior art and the claims at issue”; (3) “the level of ordinary skill in the pertinent art”; and (4) the presence of secondary considerations of nonobviousness such “as commercial success, long felt but unsolved needs, failure of others,” and unexpected results. *Id.* (citing, *inter alia*, *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)).

“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Furthermore, in assessing the prior art, the Board must consider whether a person of ordinary skill would have been motivated to combine the prior art to achieve the claimed invention. *Nuvasive*, 842 F.3d at 1381. As the Federal Circuit has noted, in quoting from the Supreme Court’s decision in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418–419 (2007), “‘because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known,’ ‘it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.’” *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991–992 (Fed. Cir. 2017).

E. Alleged Obviousness of Claims 1–10 over Beauregard and Hozumi

Petitioner alleges claims 1–10 would have been obvious over Beauregard and Hozumi. Pet. 2, 50–75. The Petition is supported by the Cooperstock Declaration. Ex. 1003 ¶¶ 78–106. Patent Owner opposes cancellation of claims 1–10 on this challenge, relying in part on the Shamos Declaration. PO Resp. 55–69; Ex. 2009 ¶¶ 98–118.

1. Beauregard (Ex. 1006)

Beauregard discloses “automated editing of multiple video clips into a single video production synchronized to a substantially common audio track.” Ex. 1006 ¶ 1. The “audio track is identical, or substantially similar, for every input video clip (or for at least some part of each clip) in order to establish synchronization between them.” *Id.* ¶ 16.

Beauregard describes a “Lip-Sync Scenario” in which “a number of distinct visual performances is performed each one in synchronization with a common soundtrack.” *Id.* ¶ 11. In the Lip-Sync Scenario, “there is no need for the different people involved to coordinate with each other in any way, nor indeed to even know of the existence of the other performances.” *Id.* ¶ 21. The people may be in different locations at different times, create video clips in which they perform in sync with a pre-recorded audio track. *Id.* ¶ 79.

Figure 2 of Beauregard is reproduced below.

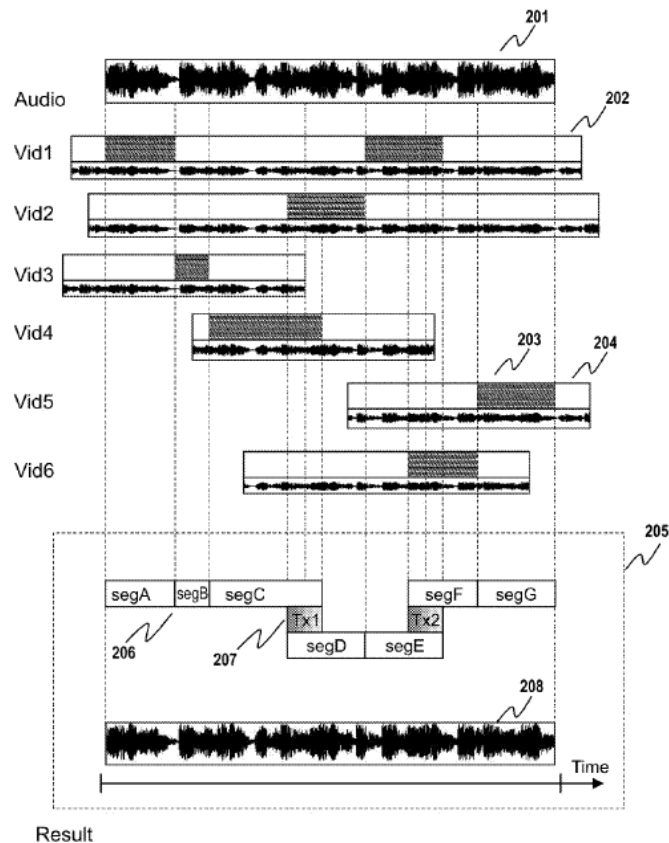


Fig. 2

Figure 2 is a construction diagram illustrating alignment of multiple video clips to a single separately-specified reference audio track, and intercutting of those video clips to create a new production.

Ex. 1006 ¶ 24. Referring to Figure 2, “[t]he reference audio track 201 may be, for example, a recording of a song taken from CD or mp3.” *Id.* ¶ 39. “The video clips (‘Vid1’, ‘Vid2’, ‘Vid3’, ‘Vid4’, [‘Vid5’, ‘Vid6’]) themselves each have their own audio tracks” which “video clips are time-aligned to the reference audio track 201.” *Id.* ¶ 40.

Beauregard discloses an example in which a person plays a pre-recorded audio track via a home stereo system at a first location and a video camera captures the performance and also captures the pre-recorded audio

track via the camera's microphone. Ex. 1006 ¶ 80. People may record similar performances at other locations in this example but use other audio systems to play the pre-recorded audio track, which is captured by a video camera at each location. *Id.* ¶ 81. Beauregard discloses that the performances are then transmitted to a central location where they are synchronized due to their common audio tracks and edited to form a single coherent production. *Id.* ¶ 82.

2. *Hozumi (Ex. 1005)*

Hozumi discloses “a video-audio processing apparatus and a video-audio processing method for synchronizing video data and audio data acquired at different times.” Ex. 1005 ¶ 3. Hozumi describes a first embodiment in which a stream is formed by multiplexing audio and video data and audio data is extracted from the stream. *Id.* ¶ 87. Hozumi also describes a second embodiment in which a plurality of video data is synchronized with each other on the basis of audio data. *Id.*

In the first embodiment, three different modes are disclosed. Ex. 1005 ¶ 25. The first two modes are relevant here. In the normal video capture mode, “normal captured video data” and “audio data based on the sounds inputted in parallel with the capturing of the video image.” *Id.* ¶ 26. A second mode is the “practice video capture mode” which uses the stream of the normal video capture mode or an external recording medium. *Id.* ¶ 28. “The captured video data . . . and the audio data in the referred-to stream are encoded and multiplexed to create a stream.” *Id.* ¶ 27.

In the practice video capture mode, “when video-capture unit 112 starts capturing video images of an object” that causes normal audio data to be outputted. Ex. 1005 ¶ 77. Time stamps are assigned at the time of

encoding to the practice captured video data. *Id.* Figure 6C of Hozumi is reproduced below.

FIG. 6C

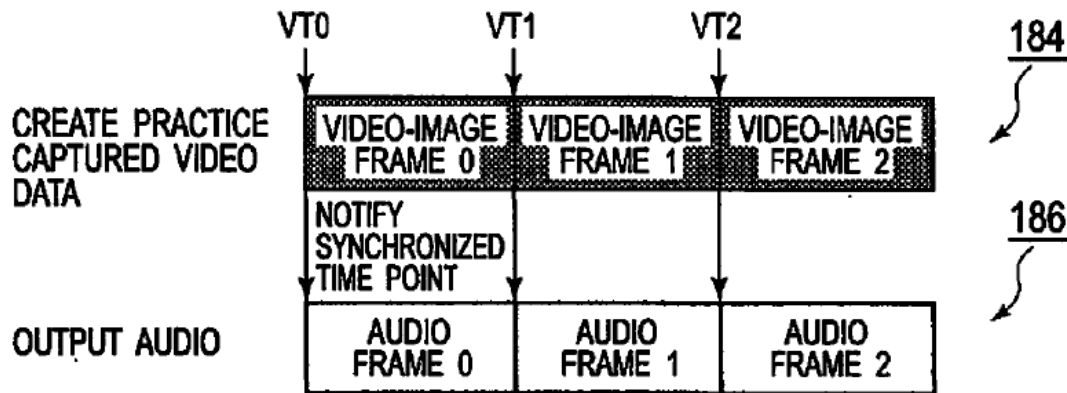


Figure 6C shows the capture of video images and audio data.

Id. As shown in Figure 6C, the time stamps are denoted VT0 to VT2. *Id.*

[T]he output of the normal audio data 186 is synchronized with the points time indicated by the time stamps assigned at the time of encoding practice captured video data 184. Then, as shown in FIG. 6D, multiplexer 120 multiplexes newly created encoded practice captured video data and existing encoded normal audio data 182, thereby creating encoded practice captured video/audio data 188.

Id. In the second embodiment, “video-audio processing apparatus 300 [is] capable of synchronizing plural video data with each other only on the basis of the audio data.” *Id.* ¶ 87. Encoded audio data can be acquired from an external recording medium (e.g., a DVD or a flash memory) or, if a video-audio processing apparatus only creates encoded audio data by using sounds collected by an audio input unit, from encoded audio data created by the video-audio processing device. *Id.* ¶ 89.

In the context of the practice video capture mode, Hozumi discloses that “if video data are created plural or multiple times in the practice video

capture mode, it is possible to create plural pieces of video data synchronized with a single piece of audio data.” Ex. 1005 ¶ 90. Hozumi further explains that “even in the case where there is no video data of the exemplary performance but audio data to be referred to is determined, plural pieces of video data can be created in synchronization with each other on the basis of the audio data.” *Id.* Hozumi also describes that once audio data has been acquired, an audio output unit can output the audio data when a user gives an instruction to start capturing video images. *Id.* ¶ 92.

3. Claim 1

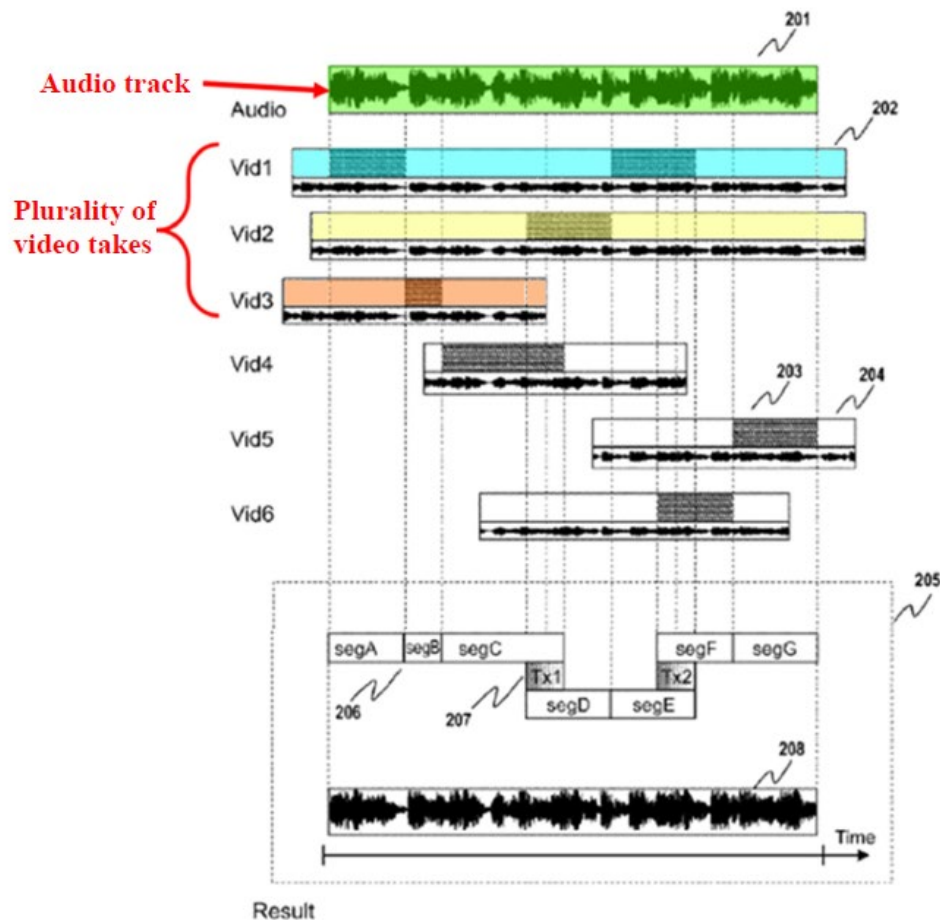
Petitioner contends that the combination of Beauregard and Hozumi teaches, suggests, or renders obvious all recitations of claim 1. Pet. 57–68. Petitioner also asserts that a person of ordinary skill in the art would have had several reasons to combine Beauregard and Hozumi with a reasonable expectation of success. *Id.* at 53–56.

Patent Owner makes three arguments in support of patentability. As to whether or not the Beauregard and Hozumi combination teaches the claimed subject matter, Patent Owner argues the combination “does not teach ‘a plurality of video takes’ that utilize beginning-beginning while-capturing synchronization with ‘the selected audio track.’” PO Resp. 61–67. Thus, Patent Owner disputes Petitioner’s showing for limitation 1.3 (“capture synchronization” and “beginning-beginning synchronization”). Patent Owner also argues “a [person of ordinary skill in the art] would not have been motivated to combine the teachings of Beauregard and Hozumi.” *Id.* at 67–69.

In what follows, we discuss the disputed limitations of claim 1 first and address to the remaining limitations next. We then discuss the reasons to combine Beauregard and Hozumi.

- a. “synchronizing each video take of the plurality of captured video takes with the selected audio track while each video take of the plurality of video takes is being captured” Limitation 1.3 (“capture synchronization”)

Petitioner relies on an annotation of Figure 2 of Beauregard to illustrate its showing on this limitation. Petitioner’s annotation of Figure 2 of Beauregard is reproduced below.



TIKTOK-1006, Detail of FIG. 2 (annotated)

Petitioner’s first annotation of Beauregard Figure 2.

Pet. 62. Petitioner argues its first annotation of Figure 2 shows a “Plurality of video takes,” as bracketed and highlighted in red as Vid1, Vid2, and Vid3. *Id.* Petitioner argues that

Because the video recordings are all made to the same reference audio track and include a capture of the same reference audio track, it would have been at least obvious to a [person of ordinary skill in the art] that the plurality of video takes are each aligned and/or synchronized with the reference audio track while the video is being captured; indeed, Beauregard even suggests the existence of “inherent synchronization” between them.

Id. at 63 (citing Ex. 1006 ¶¶ 56, 63, 79–86; Ex. 1003 ¶ 88).

Patent Owner argues that the “capture synchronization” limitation has not been shown because Beauregard’s video clips that are shown in annotated Figure 2 above are not “video takes.” PO Resp. 61. We rejected this argument in construing “video takes,” finding the term is broad enough to include both “video clips” and “video segments.” *See* Section III.B.2 above. Patent Owner argues alternatively that the “beginning-beginning synchronization” limitation is not shown because “Beauregard does not disclose that the recording of at least two of those video clips *began* at substantially the same time as the playing of the *beginning* of audio track 201/208, as claim 1 requires.” PO Resp. 62 (citing Ex. 2009 ¶ 107). This argument is addressed in Section III.E.3.b below.

We find Beauregard teaches the “capture synchronization” limitation. As Beauregard discloses, in the Lip-Sync scenario, “a number of distinct visual performances is performed each one in synchronization with a common soundtrack.” Ex. 1006 ¶ 11. Referencing Figure 2, Beauregard discloses that

The video clips (“Vid1”, “Vid2”, “Vid3”, “Vid4”, “Vid5”, “Vid6”) themselves each have their own audio tracks. Using well-known audio signal processing methods, some of which are discussed below, the *video clips are time-aligned to the reference audio track* 201.

Ex. 1006 ¶¶ 39 (referencing Fig. 2), 40 (quotation) (emphasis added).

The video clips of Beauregard are captured with the selected audio track, as shown in Figure 2 of Beauregard and its teaching that “all the input video material has some inherent synchronization with some common audio source.” Ex. 1006 ¶ 56. Furthermore, Dr. Cooperstock testifies a person of ordinary skill would have found “capture synchronization” obvious “[b]ecause the video recordings are all made to the same reference audio track and include a capture of the same reference audio track, it would have been at least obvious to a [person of ordinary skill in the art] that the plurality of video takes are each aligned and/or synchronized with the reference audio track while the video is being captured.” Ex. 1003 ¶ 88.

Our construction of “video take” determined the meaning of the term is “continuously recording a ‘video,’ which may be a video clip or video segment.” *See* Section III.B.2 above. The Beauregard “clips” are recorded continuously without interruption. Ex. 2009 ¶ 103 (citing Ex. 1006 ¶ 58 (“each take would start when the user presses the record button on the camcorder and end when the user presses the pause or stop button.”)). Beauregard’s Vid1 and Vid2 are video clips shown in Annotated Figure 2 above to extend continuously for the full length of the selected audio track 201. Vid1 and Vid2 are “continuous” as Patent Owner’s construction, which we adopted above, asserts in that they are created “without stopping and restarting the recording.” PO Resp. 16. Thus, even if continuous under the plain meaning of “video take” means recording video over the full length of the selected audio track, Beauregard’s Vid1 and Vid2 are “continuous.” Furthermore, Patent Owner agrees that the claim language places “no constraint” as to whether the selected audio track and the “plurality of

captured video takes” are required “to have the same endpoint or be coterminous.” *Id.* at 17.

Based on the complete record, Petitioner has shown sufficiently that Beauregard teaches the “capture synchronization” element of limitation 1.3.

b. “wherein synchronizing further comprises playing, from a first beginning, the selected audio track at substantially the same time as a second beginning of capturing each video take of the plurality of video takes” Limitation 1.3 (“beginning-beginning synchronization”)

Petitioner relies on the combined teachings of Beauregard and Hozumi to teach the “beginning-beginning synchronizing” element of limitation 1.3. Pet. 62–65; Ex. 1003 ¶¶ 83–93. Beauregard is relied on for its teaching of pre-recorded song with separate video recordings, including the Lip-Sync Scenario, where several people, who may be in different locations at different times, create video clips in which they perform in sync with a pre-recorded audio track. Pet. 62–63 (citing Ex. 1006 ¶¶ 11, 37, 45, 56, 79–86, Figs. 2, 7 (“Lip-Sync Scenario”); Ex. 1003 ¶ 88).

Petitioner argues Beauregard describes “well-known audio cross-correlation techniques” where the only difference is the audio playback system. Pet. 63 (citing Ex. 1006 ¶ 81). Other correlations relied on include multiple performances “synchronized on the basis of their substantially common audio tracks, and edited to form a single coherent production.” *Id.* (citing Ex. 1006 ¶ 82). Petitioner argues Beauregard suggests “inherent synchronization” between “video takes” and an “audio track.” *Id.* (citing Ex. 1006 ¶¶ 56 (“all the input video material has some inherent synchronization with some common audio source”), 63, 79–86; Ex. 1003 ¶ 88).

Petitioner quotes from Hozumi that the disclosed video camera “acquires encoded audio data recorded in external recording medium”

(Ex. 1005 ¶ 89) and “captur[es] a video image of an object in synchronization with an output of . . . audio data by [an] audio output unit” (Ex. 1005 ¶ 11) of the video camera. Pet. 64. Petitioner cites Hozumi’s teaching that “‘if the user gives an instruction to start capturing video images’ (e.g., by interacting with a user interface), the ‘video-image capture unit 112 captures video images of the object in synchronization with the output of the normal audio data’ that has been buffered and thereafter played when video capture begins.” *Id.* (citing Ex. 1005 ¶¶ 67–68, 87–92). Petitioner emphasizes the teaching of Hozumi that “when video-image capture unit 112 starts capturing video images of an object, audio controller 132 causes audio output unit 110 to output normal audio data 186.” *Id.* (citing Ex. 1005 ¶ 77, Fig. 3 (S228, S230, S232); Ex. 1003 ¶ 89).

Petitioner contends “Beauregard’s system would receive video clips captured under such recording scenarios provided by Hozumi.” Pet. 64 (citing Ex. 1006 ¶¶ 1, 11, 16, 80–83; Ex. 1003 ¶ 89). Petitioner relies on teachings from Hozumi to teach “a video-image capture unit to capture a video image of an object in synchronization with an output of the audio data.” *Id.* (citing Ex. 1005 ¶ 11). Petitioner argues “[t]he received video clips captured under Hozumi’s recording scenarios would be ‘synchronized on the basis of their substantially common audio tracks, and edited to form a single coherent production’ by Beauregard’s system in the same manner as video clips recorded according to the scenarios expressly described in Beauregard.” *Id.* at 64–65.

Relying on the Cooperstock Declaration, Petitioner alleges that, even if not expressly taught by Beauregard and Hozumi combination, “the combination of Beauregard and Hozumi renders obvious this

‘synchronizing’ step.” Pet. 65 (citing Ex. 1003 ¶ 90). We credit the cited Cooperstock Declaration testimony that “[a person of ordinary skill in the art] would have viewed the term ‘synchronizing’ as covering the many examples found in the prior art and would have found Beauregard and Hozumi’s use of the term ‘synchronizing’ to include these examples.” Ex. 1003 ¶ 90.

Patent Owner argues that “Beauregard does not disclose that the recording of at least two of those video clips *began* at substantially the same time as the playing of the *beginning* of audio track 201/208, as claim 1 requires.” PO Resp. 62 (citing Ex. 2009 ¶ 107). Patent Owner also contends that Beauregard’s “‘cross-correlation techniques’ are *indisputably* used after capture of the video.” *Id.* at 63–64 (citing Pet. 63; Ex. 2009 ¶ 110). However, Petitioner relies on the *combination* of Beauregard with Hozumi to teach beginning-beginning synchronization. *See* Pet. 64–65; Reply 24.

We are not persuaded that Beauregard captures video clips *after* and not during capture, as Patent Owner alleges is the case. PO Resp. 63 (citing Ex. 2009 ¶ 110). The Shamos Declaration does not cite anything from Beauregard that suggests video capture is anything but “synchronized to a substantially common audio track.” Ex. 1006 ¶ 1. Petitioner cites several instances in Beauregard supporting inherent synchronization between the audio track and the video clips and the audio track. Pet. 63 (citing Ex. 1006 ¶¶ 56, 63, 79–86; Ex. 1003 ¶ 88). Conversely, paragraph 110 of the Shamos Declaration acknowledges there may be “inherent synchronization” in Beauregard but contends the beginning-beginning synchronization is not shown. Ex. 2009 ¶ 110. For reasons already stated, we find Beauregard teaches capturing “video takes with the selected audio track.” *See* Section

III.E.3a above. Also, as already noted, Petitioner relies on combining Hozumi with Beauregard for beginning-beginning synchronization.

Turning to Hozumi, Patent Owner argues Petitioner “conflates the different audio tracks to which the Hozumi videos would be synchronized in Petitioners’ Hozumi-Beauregard combination and ignores the synchronization-while-capturing requirement in step 1.3 of claim 1.” PO Resp. 64–65. Patent Owner contends that “synchronization (while capturing) would be *with Hozumi’s audio data*.” *Id.* at 65 (citing Ex. 2009 ¶ 111). Patent Owner relies on the Shamos Declaration to contend that “the required beginning-beginning while-capturing synchronization must be synchronization with Beauregard’s reference audio track.” Ex. 2009 ¶ 111. Patent Owner argues “Petitioners have presented no evidence or argument establishing that a [person of ordinary skill in the art] would have used Beauregard’s reference audio track while capturing videos using the system of Hozumi.” PO Resp. 65–66 (quoting Ex. 2010, 124:20–125:8; Ex. 2009 ¶ 112). This argument is not responsive to the challenge. Petitioner relies on Beauregard, not Hozumi, for the capture synchronization. *See* Section III.E.3.a above; *see also Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (“A finding of obviousness . . . cannot be overcome ‘by attacking references individually where the rejection is based upon the teachings of a combination of references.’” (quoting *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986))).

Patent Owner’s argument, which it purports as being supported by the Cooperstock Deposition testimony, that the combination requires Hozumi’s scenarios relevance, is not persuasive. PO Resp. 65 (citing Ex. 2010, 124:20–125:8; Ex. 2009 ¶ 112). Dr. Cooperstock’s testimony is edited to presumably clarify Patent Owner’s argument by adding “[Vid1, Vid2, etc. in

Beauregard's Fig. 2].” *Id.* The edit does not clarify the argument and does not explain Dr. Cooperstock's testimony that it is the combination of Beauregard's system with Hozumi's teachings which synchronizes the audio and video. *Id.* at 66 (quoting Ex. 2010, 124:24–125:8). Indeed, Dr. Cooperstock, immediately following the quote relied on by Patent Owner, states both confusion about and contradiction to the argument presented.

Q. So is it correct that, in your opinion, a [person of ordinary skill in the art] would have taken the recording scenarios taught in Hozumi and imported the teachings of those recording scenarios into the Beauregard system?

A. I'm not sure I understand the question. Are you saying that a -- are you asking me if I believe that a [person of ordinary skill in the art] would be able to apply the teachings of Hozumi's recording system to Beauregard's overall disclosure?

Ex. 2010, 125:9–18.

Q. So is it correct that it is your opinion that, for example, Vid1 could be a video clip that was recorded using the scenarios taught by Hozumi?

A. Not as shown here.

Id. at 126:6–10.

Ultimately, Patent Owner's own declarant, Dr. Shamos, acknowledges that the beginning-beginning synchronization relied on in the challenge is synchronization with Beauregard's audio track. Ex. 2009 ¶ 111.

As we found above in Section III.E.3.a, Beauregard teaches “capture synchronization” of “video takes” with the selected audio track. We also find that the beginning-beginning synchronization step would have been

obvious to a person of ordinary skill from the combination of Hozumi with Beauregard.

Beginning-beginning synchronization is the only step of claim 1 missing from Beauregard alone. Beauregard's system would receive video clips captured under such recording scenarios provided by Hozumi, and the received video clips would be "synchronized on the basis of their substantially common audio tracks, and edited to form a single coherent production" by Beauregard's system just as it does for video clips recorded according to the scenarios expressly described in Beauregard. Ex. 1003 ¶ 89; *see also* Pet. 63–64 (Petitioner's showing for limitation 1.3).

We credit Dr. Cooperstock explanation that "[a]ccounting for Hozumi, Beauregard's system would support recording scenarios in which a video camera acquires the pre-recorded audio track based on user selection prior to video clip capture and starts audio track playback and video capture at substantially the same time." Ex. 1003 ¶ 89 (citing Ex. 1006 ¶¶ 80–86; Ex. 1005 ¶¶ 3, 11, 59, 77, 87–92). We find that Hozumi does teach generally synchronizing at least one video frame with one audio frame in a beginning-beginning synchronization. Ex. 1005, Fig. 6C ("VIDEO-IMAGE FRAME 0 (VTO)" "NOTIFY SYNCHRONIZED TIME POINT" "AUDIO FRAME 0").

A person of ordinary skill would have understood that Beauregard shows a "plurality of video takes" which are synchronized over the entire length of the audio track 201. Ex. 1006, Fig. 2 (audio track 201 and Vid1 and Vid2). Patent Owner and Dr. Shamos both agree Hozumi's Figure 6C shows that "the beginning of a set of video frames is synchronized with the beginning of a set of audio frames." Reply 17 (quoting PO Resp. 50);

Ex. 2009 ¶ 80). In relying on the combined teachings, Petitioner cites to both Beauregard's Figure 2 and Hozumi's description of Figure 6C in asserting that the beginning-beginning synchronization requirement would have been obvious to a person of ordinary skill over the combined teachings of Beauregard and Hozumi. *See* Pet. 51–52 (citing Ex. 1006, Fig. 2), 63–64 (citing *inter alia* Ex. 1005 ¶ 77 (describing Fig. 6C); Ex. 1003 ¶ 89). For these reasons, we find the beginning-beginning synchronization requirement would have been obvious to a person of ordinary skill.

Based on the complete record, Petitioner has sufficiently shown that Beauregard combined with Hozumi teaches the “beginning-beginning synchronization” element of limitation 1.3.

c. Remaining Recitations of Claim 1

Other than as is present in the arguments addressed above, Patent Owner does not dispute Petitioner's showing on the remaining limitations of claim 1, including limitation 1.0,⁸ 1.1, 1.2 and 1.4. PO Resp. 61–69; Tr. 42:8–11. For the reasons discussed below, Petitioner has sufficiently shown these remaining limitations of claim 1 would have been obvious to a person of ordinary skill in the art at the time of the alleged invention.

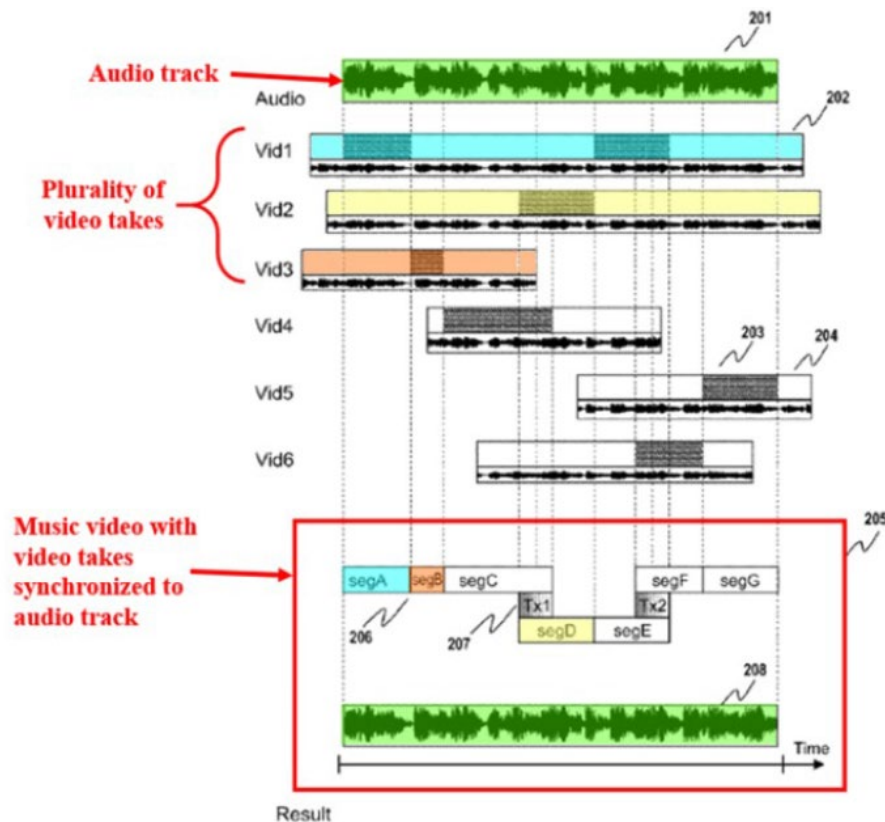
Limitation 1.1 recites “selecting an audio track.” Petitioner cites Beauregard's teaching of a “reference audio track” which can be “pre-recorded . . . music for example a commercially recorded pop song.” Pet. 59 (citing Ex. 1006 ¶¶ 39, 79–80; Ex. 1003 ¶ 85); *see also id.* at 59–60 (citing Ex. 1005 ¶¶ 89, 92, Fig. 9).

⁸ Limitation 1.0 is the claim preamble. Even if the preamble is a limitation, Petitioner has shown Beauregard teaches it. Pet. 57–59.

Petitioner has sufficiently shown limitation 1.2, “capturing a plurality of video takes,” because our construction of “video take” includes a “video clip” as described in Beauregard. Pet. 61–62; Ex. 1006 ¶ 79; Section III.B.2 above (construing “video take”). In addition, “the plural pieces of video data” described in Hozumi are also “video takes.” Ex. 1005 ¶ 90; Ex. 1003 ¶¶ 43–45, 78, 83–93.

Patent Owner argues that because we have construed, as Patent Owner argues, a “video take” as a continuous recording, then a “‘video clip’ or ‘video segment’ *does not necessarily* qualify as a ‘video take.’” PO Resp. 17 (citing Ex. 2009 ¶¶ 34–39) (emphasis added). As noted above, Beauregard’s Vid1 and Vid2 are “continuous” inasmuch as they both extend the entire length of the “selected audio track.” Even if Beauregard’s “video clips” are not always “video takes,” as Patent Owner concedes above, sometimes they are, that is sufficient. *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003) (“a prior art product that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention.”); *see* PO Resp. 17. Patent Owner does not make any additional arguments that neither Beauregard nor Hozumi teaches limitation 1.2.

Limitation 1.4 recites, in pertinent part, “creating a music video.” Ex. 1001, 27:1. Petitioner relies on a second annotation of Figure 2 of Beauregard to show this limitation. Patent Owner does not dispute Petitioner’s showing regarding limitation 1.4. *See generally* PO Resp. 55–69. Petitioner’s second annotation of Figure 2 of Beauregard is reproduced below.



Petitioner's second annotation of Beauregard Figure 2.

Pet. 67; *see also* Ex. 1003 ¶ 78 (reproducing the same annotation).

Petitioner has sufficiently shown that Beauregard creates a music video. *See* Ex. 1006 ¶ 42.

We have reviewed Petitioner's arguments and the underlying evidence cited in support and are persuaded that Petitioner sufficiently establishes that the combination of Beauregard and Hozumi teaches, suggests, or renders obvious the preamble and limitations 1.1, 1.2 and 1.4 of claim 1.

d. Combining Beauregard and Hozumi

Petitioner provides several reasons to combine Hozumi with Beauregard as well as motivation to do so. *See* Pet. 53–56. We find a person of ordinary skill would have had reason to combine Hozumi's teaching of synchronizing an audio track with at least one video track in

beginning-beginning synchronization with Beauregard's teaching of multiple "video takes" combined to make a music video in final production 205 beginning--beginning synchronization. We give weight to the Cooperstock Declaration testimony, which also relies on Figure 2 of Beauregard and Hozumi. Ex. 1003 ¶¶ 86 (Hozumi), 87 (Beauregard).

Petitioner then alleges applying Hozumi's teaching to Beauregard's system also would reduce the need for adjustments otherwise needed to eliminate a time offset between the reference audio track and the captured video clip when a user attempts to capture a video clip that starts at the beginning of the reference audio track. Pet. 54. Furthermore, and consistent with the teaching of Hozumi, Petitioner contends this combination offers the promise of producing a video clip that requires no alignment to achieve intended synchronization with a reference audio track. *Id.* at 54 (citing Ex. 1003 ¶ 80; Ex. 1006 ¶¶ 95–100; Ex. 1005 ¶¶ 3, 8–9 ("without requiring the user to perform any troublesome timing adjustment operation"), 12, 86–92).

Petitioner argues a person of ordinary skill in the art "would have found it obvious to combine Beauregard with Hozumi because doing so would have involved the mere combination of prior art elements according to known methods to yield predictable results." Pet. 55 (citing Ex. 1003 ¶ 81; Ex. 1006 ¶¶ 1, 11, 16; Ex. 1005 ¶¶ 3, 12, 87–92). Petitioner cites *KSR* for the proposition that "[w]hen a patent 'simply arranges old elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement, the combination is obvious." *Id.* (citing *KSR*, 550 U.S. at 417). Furthermore, Petitioner contends a person of ordinary skill in the art "would have recognized that applying Hozumi's teachings to Beauregard's system would have led to

predictable results without significantly altering or hindering the functions performed by the combined system.” *Id.* (citing Ex. 1003 ¶ 81; Ex. 1006 ¶¶ 1, 11, 16; Ex. 1005 ¶¶ 3, 12, 87–92). Petitioner argues a person of ordinary skill “would have been motivated to provide the well-known technique of (1) acquiring a pre-recorded reference audio track based on user selection and (2) automatically starting the prerecorded reference audio track when capturing video” with a reasonable expectation of success. *Id.* at 55–56 (citing Ex. 1003 ¶ 81; Ex. 1005 ¶¶ 3, 12, 87–92).

Patent Owner concedes both references “are in the same field of art and relate to capturing video data that is synchronized to an audio track.” PO Resp. 67 (citing Pet. 53). However, Patent Owner disputes that alone is sufficient. *Id.*

Patent Owner argues that “using Hozumi’s recordings in the Beauregard system would not be necessary or practical and would run counter to Beauregard’s principle of operation.” PO Resp. 68 (citing Ex. 2009 ¶ 115). Patent Owner argues “[t]he purpose of Beauregard is to take video clips recorded on a variety of different systems and then use cross-correlation to synchronize those video clips with a single reference audio track to make a final coherent production.” *Id.* (citing Ex. 1006 ¶¶ 82–83, 21; Ex. 2009 ¶ 115).

Patent Owner points out that “it would not make sense to tell the users (who are unaware of each other’s existence) that they all have to record their performances using the reference audio track at Beauregard’s central system, using Hozumi’s system for capturing videos, to start recording at substantially the same time as they start playing that audio track.” PO Resp. 68 (citing Ex. 2009 ¶ 115). Furthermore, according to Patent Owner, Beauregard’s use of different equipment sources for video recording would

be “frustrated if users were required to use Hozumi’s system and beginning-beginning synchronization.” *Id.* at 69 (citing Ex. 2009 ¶ 115). Patent Owner concludes the only reason for the combination is hindsight. *Id.* at 69.

Petitioner responds that the Shamos Declaration is a copy of the Patent Owner Response and is absent legal authority. Reply 25. Petitioner argues that “introducing Hozumi would require no more communication with and among users than already required by Beauregard’s system alone.” *Id.* at 27 (citing PO Resp. 69). Patent Owner responds by repeating its user arguments and arguing that Beauregard synchronizes the audio track and video “after the fact cross correlation techniques” which are allegedly “*different* (but ‘substantially common’) audio tracks.” Sur-Reply 23.

The record does not support that the audio tracks of Beauregard’s Figure 2, relied on in the Petition, are “different” tracks. As was discussed at the hearing, we find the audio tracks of Beauregard are all the same audio track, i.e., the same music to which different video is synchronized. Tr. 58:17–59:12, 75:8–20 (Patent Owner argues “the audio tracks” are “different but similar” to the reference audio); Ex. 1006, Fig. 2.

As to the reasons supporting the combination, Patent Owner focuses narrowly on the users of the Beauregard system and not what a person of ordinary skill in the art would have understood from the combination of Beauregard and Hozumi. Patent Owner cites no authority for its argument that a lack of “coordination and communication” between Beauregard’s users is required for a person of ordinary skill in the art to have had reason to make the proposed combination. *Cf. In re Etter*, 756 F.2d 852, 859–60 (Fed. Cir. 1985) (Patent Owner’s arguments regarding use are “basically irrelevant, the criterion being not whether the references could be physically combined but whether the claimed inventions are rendered obvious by the

teachings of the prior art as a whole.”) (citations omitted). The opinions stated in the Shamos Declaration are unsupported by facts and thus entitled to little or no weight. *See* Ex. 2009 ¶ 115; 37 C.F.R. § 42.65(a).

Although the references being in the same field of art is not conclusively a reason for a person of ordinary skill to make the combination, it is a factor. *KSR*, 550 U.S. 401 (“When a work is available in one field, design incentives and other market forces can prompt variations of it, either in the same field or in another. If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, § 103 likely bars its patentability.”).

As for Patent Owner’s argument about hindsight reasoning (PO Resp. 69), “[a]ny judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.” *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971). Here, Petitioner provides persuasive evidence that a person of ordinary skill in the art at the time of the invention would have been motivated to combine Hozumi with Beauregard based on the disclosures of Hozumi and Beauregard and the evidence of the knowledge of a person of ordinary skill in the art at the time of the ’429 patent’s filing date. *See, e.g.*, Pet. 53–56; Ex. 1003 ¶¶ 80–82. This is not evidence of hindsight bias. Patent Owner does not identify, and we do not discern, any particular knowledge used by Petitioner in its combination of Beauregard and Hozumi that was gleaned only from the ’429 patent’s disclosure and was not within the level of ordinary skill in the art at the time of the invention.

Based on the complete record, we find Petitioner’s showing of reasons and motivation for combining the teachings of Hozumi with Beauregard is sufficient. *See* Pet. 53–56.

4. Claims 2–10

Claims 2–10 depend directly or indirectly from claim 1. Patent Owner does not separately argue any dependent claim’s patentability over the cited references. *See, generally*, PO Resp. 55–67.

We have reviewed Petitioner’s arguments and the underlying evidence cited in support and are persuaded that Petitioner sufficiently establishes that the combination of Beauregard and Hozumi teaches, suggests, or renders obvious the additionally recited limitations of claims 2–10. *See* Pet. 68–75.

5. Summary of Obviousness of Claims 1–10 Over Beauregard and Hozumi

On this record, Petitioner has shown by a preponderance of the evidence that the combination of Hozumi with Beauregard would have rendered the subject matter of claims 1–10 obvious.

F. Alleged Obviousness of Claims 1 and 3–10 over Hozumi and Crosland

For the reasons summarized below, this challenge has not been shown to establish unpatentability by a preponderance of the evidence.

Petitioner alleges claims 1 and 3–10 would have been obvious over Hozumi and Crosland. Pet. 2, 40–50. The Petition is supported by the Cooperstock Declaration. Ex. 1003 ¶¶ 63–77.

1. Hozumi (Ex. 1005)

Hozumi was described in Section III.E.2 above.

2. Crosland (Ex. 1004)

Crosland discloses “systems, methods and computer program products that allows users to record and synchronize a short video clip against a

segment of an audio track for insertion into a master music video comprised of a plurality of short video clips in synch against an entire audio track.”

Ex. 1004 ¶ 2. Crosland describes dividing an audio track into a plurality of segments and selecting a user-recorded video for each of the segments, where each video includes a video and an audio clip of one of the segments. *Id.* ¶ 5. The videos are each synchronized with an audio track segment in the master music video against the entire audio track, or in a sequence, so the videos correspond to an original sequence of the audio track. *Id.*

A video clip database “may store video clip recordings from users for a plurality of audio tracks and audio track segments.” Ex. 1004 ¶ 23. A “user may record or upload a video clip recording for an entire track and content server 110 may divide the video clip recording up into segments based on the audio track segments or based on user-rating and other browsing options.” *Id.*

3. Analysis of Claim 1

Petitioner relies on Hozumi’s teaching that “plural pieces of video data are created in synchronization with the audio data.” Pet. 47 (citing Ex. 1005, Abstract, ¶¶ 77–78, 87–92; Ex. 1003 ¶ 69). As discussed in the Beauregard and Hozumi ground, Petitioner relies on Hozumi’s teaching that “plural pieces of video data synchronized with a single piece of audio data.” *Id.* at 47 (citing Ex. 1005 ¶ 90). Petitioner further alleges a person of ordinary skill “would have found obvious that the capture of each of the plural pieces of video data would include starting output of the audio data (i.e., playing, from a first beginning, the selected audio track) when starting capture of the video data (i.e., at substantially the same time as a second beginning of capturing a video take).” *Id.* (citing Ex. 1003 ¶ 69).

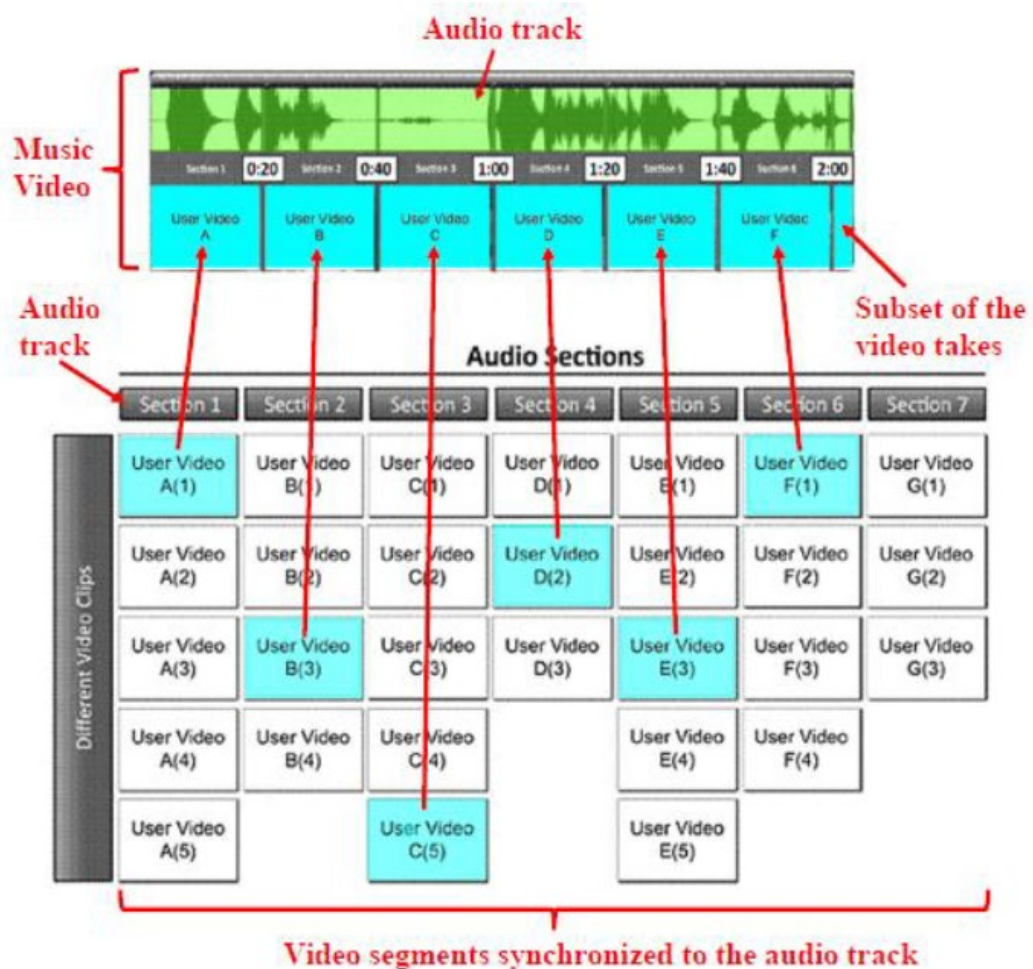
In its contentions regarding anticipation by Hozumi, Petitioner points to Figure 6C and contends Hozumi describes “starting sequential output of the audio data (*i.e.*, playing, from a first beginning, the selected audio track) when starting a video capture (*i.e.*, at substantially the same time as a second beginning of capturing a video take).” Pet. 36 (citing Ex. 1003 ¶ 53; Ex. 1005 ¶¶ 87–92). Petitioner also argues that plural videos are synchronized by adding the teachings of Crosland that “[s]egments of the takes can be played interchangeably, sequenced interchangeably, and dispersed throughout the music video.” *Id.* at 48–49 (citing Ex. 1004 ¶¶ 39–41). Petitioner argues “[a] music video is created including the selected audio track and a subset of the ‘plural pieces of video data’ that are synchronized to the audio track.” *Id.* at 49 (citing Ex. 1004 ¶¶ 13–14, 37–40).

Lastly, Petitioner contends that the beginning-beginning synchronization requirement would have been obvious based upon the combination of Hozumi and Crosland. Pet. 49 (citing Ex. 1003 ¶ 72). Petitioner relies in part on the understanding of the term “synchronizing” to “include establishing a relationship between each of a plurality of video takes and an audio track.” *Id.* (citing Ex. 1003 ¶ 72). Patent Owner relies on its arguments in opposition to anticipation challenges based on Crosland and by Hozumi. *See* PO Resp. 19–39, *see also id.* at 40–54 (Crosland does not anticipate claim 1), 24–37 (Hozumi does not anticipate claim 1).

To summarize Patent Owner’s applicable anticipation arguments, Patent Owner argues that Crosland’s Figure 3B does not anticipate claim 1 because “User Videos A through F were not taken from a single video corresponding to the entire audio track.” Reply 21 (citing Ex. 2009 ¶ 50). With respect to Hozumi, Patent Owner agreed with the preliminary finding

in the Institution Decision that “there is no disclosure that those ‘plural pieces of video data’ constitute at least two video takes for which recording *began* at substantially the same time as the playing of the *beginning* of the selected audio track.” *Id.* at 48 (quoting Inst. Dec. 41 (Prelim. Resp., 35–36)).

Petitioner’s annotation of Crosland Figures 4B and 4C is reproduced below.



Petitioner’s annotation of Figures 4B and 4C of Crosland.

Pet. 20.

The beginning-beginning synchronization requirement is not shown by Crosland's Figures 4B and 4C because there is not a "*plurality of video takes*" beginning in a synchronized relationship and continuous with the audio track. Above we construed "video take" to mean "continuously recording a 'video,' which may be a video clip or video segment." See Section III.B.2. For example, User Video A(1) is synchronized with Section 1 of the Audio sections but not "continuous" with the audio as our construction requires. As a result, Crosland does not teach "synchronizing each video take of the plurality of captured video takes with the selected audio track," as claim 1, as we have construed it, requires.

Neither do other citations to Crosland relied on in the Petition show synchronization of a "*plurality of video takes*" to an audio track. For example, the Petition alleges "'[*each of the plurality of video clips*]' (captured video takes) is '*synchronized against* a segment of *a given audio track*.'" Pet. 15 (citing Ex. 1004 ¶¶ 26, 23, 33–34, 37; Ex. 1003 ¶ 25). As noted above, Crosland does not teach recording a synchronizing a video "continuous with the audio track."

Neither are we persuaded that "alternative" User Videos shown in annotated Figure 4C of Crosland meet the recited "synchronization" of a beginning of an audio track with a beginning of at least two, a plurality, of video takes. See Pet. 17–18. Petitioner's annotation of Crosland Figure 4C is reproduced below.

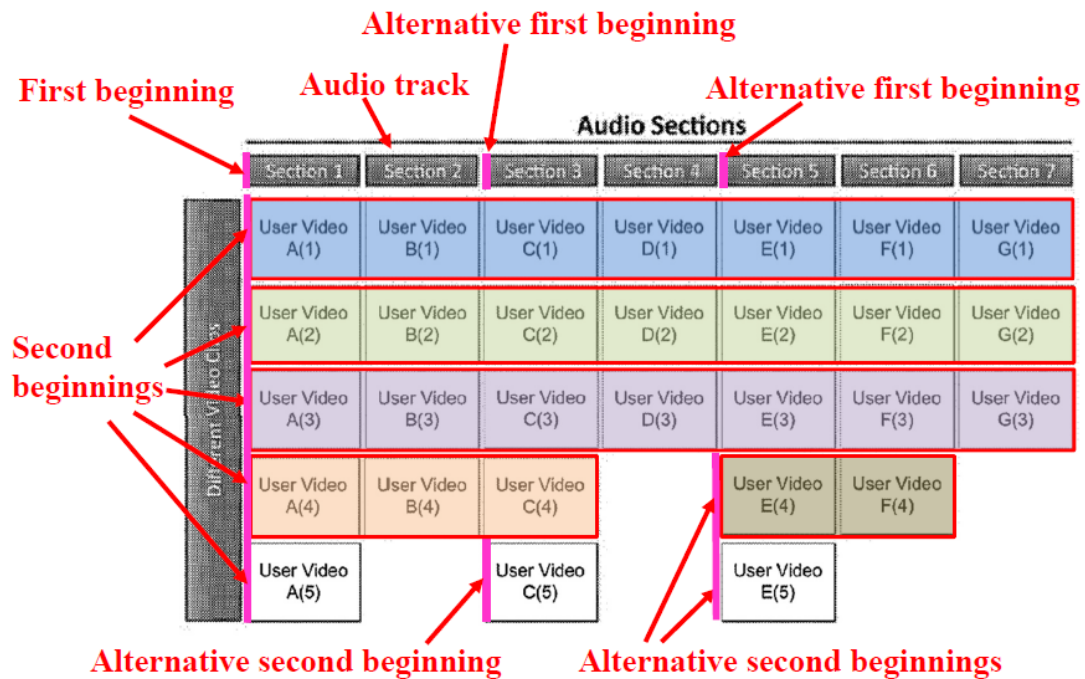


Fig. 4C

TIKTOK-1004, Detail of FIG. 4C (annotated)

Petitioner's annotation of Figure 4C of Crosland.

Pet. 18. That all of User Video A(1) through A(5) all start at the same beginning as Section 1 of the Audio Sections and can be sequenced interchangeably is not persuasive because only one of the video takes, not a “plurality of video takes” claimed, can be used at any given time in order to create a music video. We do not agree that the term “beginning-beginning synchronization” is broad enough that the beginning can be “a matching point between the audio track and the video clip.” Pet. 17 (citing Ex. 1003 ¶ 27). Under our construction of “video take,” continuous video recording over the length of the “selected audio track” is required.

We also do not agree that Hozumi alone teaches the beginning-beginning synchronization requirement. Like Crosland, Figure 6C of Hozumi fails to show a “plurality of video takes” synchronized with an

“audio track.” Rather, we agree with Patent Owner that “claim 1 requires a music video that comprises *at least two video takes* for which recording *began* at substantially the same time as the playing of the *beginning* of the selected audio track.” PO Resp. 26. There is no disclosure in Hozumi or Crosland that “‘plural pieces of video data’ constitute at least two video takes for which recording *began* at substantially the same time as the playing of the *beginning* of the selected audio track.” *Id.* at 48 (citing Inst. Dec. 41). As we found in the Institution Decision, we also agree with Patent Owner that that “while User Video A(1) in Figure 4C is synchronized with Section 1 of the audio track, ‘no other video is synchronized with that Section 1 and thus the recited synchronization of ‘each video take of the plurality of video takes’ is not disclosed.’” *Id.*

Paragraph 90 of Hozumi teaching that the creation of “plural pieces of video data synchronized with a single piece of audio data acquired by stream acquisition unit 304” is relevant to the Beauregard combination as already discussed. But the Hozumi citation is silent regarding synchronizing “the plurality of captured video takes with the selected audio track.” As noted above in Section III.E.3, Beauregard does show a plurality of “video takes.” The Cooperstock Declaration is conclusory on this issue and does not remedy this shortcoming of Hozumi and Crosland. *See, e.g.,* Ex. 1003 ¶¶ 46, 48–49, 54, 56, 63, 65.

We have reviewed Petitioner’s Reply and are not persuaded to reach a different conclusion than stated above. Petitioner does not present any different arguments relevant to teaching “synchronizing each video take of the plurality of captured video tacks with the selected audio track” over those it presents on its challenge based on anticipation by Hozumi and Crosland. Reply 23, 5–14 (Crosland anticipates claim 1), 14–22 (Hozumi

anticipates claim 1). Based on the complete record, we determine that Petitioner has failed to show by a preponderance of the evidence that claim 1 would have been obvious over the teachings of Hozumi and Crosland.

In summary of Petitioner's arguments, Crosland Figure 3B is alleged to show "using of plurality of video clip recordings" to "generate a music video." Reply 7–8 (citing Ex. 1004, Fig. 3B). With respect to Hozumi, Petitioner argues "it is possible to *create plural pieces of video data synchronized with a single piece of audio data.*" Reply 18 (citing Ex. 1005 ¶ 90; Pet. 33–35). For reasons discussed above, we find these arguments unpersuasive.

4. Claims 3–10

Claims 3–10 depend directly or indirectly from claim 1. Having found that Petitioner has not shown that claim 1 would have been obvious in view of Hozumi and Crosland, we also find that Petitioner has not made a sufficient showing for claims 3–10. *See In re Fine*, 837 F.2d 1071, 1076 (Fed. Cir. 1988) ("Dependent claims are nonobvious under section 103 if the independent claims from which they depend are nonobvious.").

5. Summary of Alleged Obviousness of Claims 1 and 3–10 Over Crosland and Hozumi

Petitioner has failed to show by a preponderance of the evidence that claims 1 and 3–10 would have been obvious over Hozumi and Crosland.

G. Alleged Obviousness of Claims 1 and 3–10 over Crosland

For the reasons summarized below, this challenge has not been shown to establish unpatentability by a preponderance of the evidence.

Petitioner alleges claims 1 and 3–10 would have been obvious over Crosland. Pet. 2, 27–30. The Petition is supported by the Cooperstock Declaration. Ex. 1003 ¶¶ 17–42.

1. Crosland (Ex. 1004)

Crosland was described in Section III.F.2 above.

2. Analysis of Claim 1

Petitioner argues “[a person of ordinary skill in the art] would have understood that a video clip that is synchronized to a portion of the audio track is also synchronized to the whole audio track because the audio track does not speed up or slow down in time.” Pet. 28 (citing Ex. 1003 ¶ 20). Petitioner contends a person of ordinary skill would understand that various segments of audio can have different lengths of time and the “music video has a duration equal to the determined amount of time of the selected audio track.” *Id.* at 29 (citing Ex. 1003 ¶¶ 37, 39).

The Petitioner does not address sufficiently how the beginning-beginning synchronization requirement would have been obvious based on Crosland’s teachings. Neither are the other deficiencies in Crosland noted in Section III.F above addressed. We also give little weight to the Cooperstock Declaration, which is conclusory in this instance. *See* Ex. 1003 ¶ 20.

No arguments or evidence in the Reply cause us to change our determination above. Based on the complete record, we determine that Petitioner has not shown that claim 1 would have been obvious over Crosland.

3. Claims 3–10

Claims 3–10 depend directly or indirectly from claim 1. For the same reasons as to claim 1, we determine Petitioner has not shown that claims 3–10 would have been obvious over Crosland.

4. Summary of Obviousness of Claims 1 and 3–10 Over Crosland

Petitioner has failed to show by a preponderance of the evidence that claims 1 and 3–10 would have been obvious over Crosland.

H. Legal Standard for Anticipation

Anticipation “requires that every element and limitation of the claim was previously described in a single prior art reference, either expressly or inherently, so as to place a person of ordinary skill in possession of the invention.” *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1082 (Fed. Cir. 2008) (citing *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1379 (Fed. Cir. 2003); *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1267–69 (Fed. Cir. 1991)).

“[U]nless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). Whether a claim is invalid as anticipated is a two-step inquiry. *See Power Mosfet Tech., L.L.C. v. Siemens AG*, 378 F.3d 1396, 1406 (Fed. Cir. 2004). The first step requires construction of the claim. *Id.* The second step in the analysis requires a comparison of the properly construed claim to the prior art. *Id.*

I. Alleged Anticipation of Claims 1 and 3–10 by Crosland

For the reasons summarized below, this challenge has not been shown to establish unpatentability by a preponderance of the evidence.

Petitioner alleges claims 1 and 3–10 are anticipated by Crosland. Pet. 2, 9–27. The Petition is supported by the Cooperstock Declaration. Ex. 1003 ¶¶ 17–42.

1. Crosland (Ex. 1004)

Crosland was described in Section III.F.2 above.

2. Analysis of Claim 1

Our analysis of Crosland's deficiencies is provided in Section III.F above, e.g., there is no persuasive showing of a "plurality of video takes" beginning in a synchronized relationship and continuous with the audio track. Based on that analysis, Crosland does not anticipate claim 1.

3. Claims 3–10

Claims 3–10 depend directly or indirectly from claim 1. Having found that claim 1 has not been shown to be anticipated by Crosland, claims 3–10 have not been shown to be anticipated.

4. Summary of Anticipation of Claims 1 and 3–10 Over Crosland

Based on the complete record, Petitioner has failed to show by a preponderance of the evidence that claims 1 and 3–10 are anticipated by Crosland.

J. Alleged Anticipation of Claims 1, 3, 4, 6, and 7 by Hozumi

For the reasons summarized below, this challenge has not been shown to establish unpatentability by a preponderance of the evidence.

Petitioner alleges claims 1, 3, 4, 6, and 7 are anticipated by Hozumi. Pet. 2, 30–40. The Petition is supported by the Cooperstock Declaration. Ex. 1003 ¶¶ 43–62.

1. Hozumi (Ex. 1005)

Hozumi was described in Section III.E.2 above.

2. Analysis of Claim 1

Our analysis of Hozumi's deficiencies is provided in Section III.F above. Based on that analysis, Hozumi does not anticipate claim 1.

3. *Claims 3, 4, 6, and 7*

Claims 3, 4, 6, and 7 depend directly or indirectly from claim 1. Having found that claim 1 has not been shown to be anticipated by Hozumi, claims 3–10 have not been shown to be anticipated.

4. *Summary of Anticipation of Claims 1, 3, 4, 6, and 7 Over Hozumi*

Based on the complete record, Petitioner has failed to show by a preponderance of the evidence that claims 1, 3, 4, 6, and 7 are anticipated by Hozumi.

IV. CONCLUSION⁹

For the reasons discussed above, Petitioner has shown by a preponderance of the evidence that claims 1–10 would have been obvious over Beauregard and Hozumi. Petitioner has not shown by a preponderance of the evidence that claims 1 and 3–10 would have either been anticipated by or obvious over Crosland. Petitioner has not shown by a preponderance of the evidence that Hozumi anticipates claims 1, 3–4, and 6–7. Petitioner has not shown by a preponderance of the evidence that claims 1 and 3–10 would have been obvious over Hozumi and Crosland.

⁹ 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).

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–10 of the '429 patent are determined to be unpatentable; and

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

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–10	103	Beauregard, Hozumi	1–10	
1, 3–10	102	Crosland		1, 3–10
1, 3–10	103	Crosland		1, 3–10
1, 3, 4, 6, 7	102	Hozumi		1, 3, 4, 6, 7
1, 3–10	103	Hozumi, Crosland		1, 3–10
Overall Outcome			1–10	

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