

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TIKTOK, INC.,
Petitioner,

v.

ADVANCED CODING TECHNOLOGIES, LLC,
Patent Owner.

IPR2022-01548
Patent 9,445,041 B2

Before BART A. GERSTENBLITH, NATHAN A. ENGELS, and
RUSSEL E. CASS, *Administrative Patent Judges*.

ENGELS, *Administrative Patent Judge*.

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

I. INTRODUCTION

TikTok Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–6 of U.S. Patent No. 9,445,041 B2 (Ex. 1001, “the ’041 patent”). Patent Owner Advanced Coding Technologies, LLC filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

Under 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition and any response thereto shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” Upon consideration of the Petition and the evidence of record, we determine Petitioner has demonstrated a reasonable likelihood of prevailing in establishing unpatentability of at least one claim of the ’041 patent. Accordingly, we institute *inter partes* review.

A. *Real Parties-in-Interest*

Petitioner identifies ByteDance Ltd., ByteDance Inc., and TikTok Inc. as real parties-in-interest. Pet. 57. Patent Owner identifies Advanced Coding Technologies, LLC as the real party-in-interest. Paper 4, 2.

B. *Related Matters*

The parties state that the ’041 patent is the subject of *Advanced Coding Technologies LLC v. ByteDance, Ltd.*, No. 2-22-cv-00129-JRG (E.D. Tex.). Pet. 58; Paper 4, 2.

C. *The Challenged Patent*

The ’041 patent relates to methods and systems for processing moving image data “to easily play back moving image data generated at various frame rates at a predetermined frame rate and playback speed.” Ex. 1001, 1:21–24. The patent states that general frame rates such as 30 or 60 frames

per second (“fps”) are used to capture video images of travel scenes and birthday parties, that high frame rates of 300 or 600 fps are used for scenes with quick movements such as sporting events, and that low frame rates such as 1/20 or 1/80 fps are used for subtle changes over long periods of time such as plant growth. Ex. 1001, 1:32–49. “[I]t is desirable that imaging data generated at various frame rates at the image capturing can be played back at various frame rates and playback speeds” Ex. 1001, 1:50–53.

Some playback devices can display only a limited frame rate, such as 60 fps. Ex. 1001, 1:65–67. To account for such display devices or other considerations such as playback speed and playback time, the ’041 patent describes a frame rate conversion unit that “changes the frame rate of the moving image data to be output by changing the total number of frames of the input moving image data by a known decimation or interpolation method.” Ex. 1001, 14:28–31; *accord* 1:67–2:2, 9:20–23 (“conversion of the frame rate is performed based on a known method such as interpolation in addition to decimation”), 15:57–62. For example, the ’041 patent describes processing image data that was captured at 600 fps over 10 minutes by decimating the total number of frames by 1/10 (one frame for every 10 frames) so that a playback speed and playback time remains the same as the original captured image data and a display device can play back the processed image data at 60 fps. Ex. 1001, 1:65–2:5.

D. Illustrative Claim

Of the challenged claims, claims 1 and 6 are independent claims. Claim 1, reproduced below, is illustrative of the challenged claims.

1. A moving image data processing apparatus comprising:
a moving image data input unit configured to be input of first
moving image data generated at a first frame rate and

- second image data generated at a second frame rate that is different from the first frame rate;
- an input frame rate specification unit configured to specify the first frame rate of the first moving image data and the second frame rate of the second moving image data, the first and second moving image data having been input into the moving image data input unit;
- an output frame rate specification unit configured to specify output frame rate of the first moving image data and output frame rate of the second moving image data that have been input into the moving image data input unit;
- a playback speed specification unit configured to specify a same playback speed for the first moving image data and the second moving image data;
- a frame rate conversion unit configured to
 - change a frame rate of the first moving image data based on the first frame rate, the output frame rate, and the playback speed, and
 - change a frame rate of the second moving image data based on the second frame rate, the output frame rate, and the playback speed; and
- a moving image data output unit that outputs the first and second moving image data whose frame rates have been converted by the frame rate conversion unit.

Ex. 1001, 19:52–20:13.

E. Alleged Grounds of Unpatentability

Petitioner asserts that claims 1–6 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1, 2, 4, 6	103(a) ¹	Morikawa ²
3	103(a)	Morikawa, Takabe ³
5	103(a)	Morikawa, Walpole ⁴
1, 6	103(a)	Suzuki ⁵
3	103(a)	Suzuki, Takabe
4	103(a)	Suzuki, Sekiguchi ⁶
5	103(a)	Suzuki, Walpole

Pet. 1. Petitioner also supports its challenge with a Declaration of David B. Lett.⁷ Ex. 1003.

¹ The Leahy-Smith America Invents Act (“AIA”) included revisions to 35 U.S.C. § 103 that became effective on March 16, 2013. The ’041 patent claims priority to an application filed prior to the effective date of the AIA. On the present record, the priority date of the ’041 patent is not challenged and, thus, we assume (without deciding) that the ’041 patent is entitled to its claimed priority date. Therefore, we apply the pre-AIA version of § 103; however, our analysis would be the same under the current version of the statute.

² US 2010/0226622 A1; published Sept. 9, 2010. Ex. 1004.

³ WO 2004/090703 A1; published Oct. 10, 2004. Ex. 1005 (certified translation).

⁴ Jonathan Walpole et al., *A Player for Adaptive MPEG Video Streaming Over the Internet*, Proc. SPIE 3240, 26th AIPR Workshop: Exploiting New Image Sources and Sensors, 270 (Mar. 1, 1998).

⁵ US 2012/0314967 A1, published Dec. 13, 2012. Ex. 1007.

⁶ US 2011/0097059 A1, published Apr. 28, 2011. Ex. 1008. Petitioner refers to “Sekiguchi” as “Seikiguchi.” See, e.g., Pet. 3.

⁷ Patent Owner contends that the Petition and Mr. Lett’s Declaration are substantively identical and that Mr. Lett “does not provide any independent analysis aside from copying the attorney arguments in the Petition and does not disclose the underlying facts or data upon which his opinions are based,” and, therefore, “his opinion should be entitled to no weight.” Prelim.

II. ANALYSIS

A. *Level of Ordinary Skill in the Art*

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner contends a person of ordinary skill in the art at the time of the invention would have had “at least a [b]achelor’s degree in computer science, electrical engineering, computer engineering, or a related field, with 2–3 years of experience in digital video processing, or a related field, or equivalent research or professional experience.” Pet. 7 (citing Ex. 1003 ¶ 26). Patent Owner states that it applies Petitioner’s proposed level of ordinary skill for the purposes of its Preliminary Response. Prelim. Resp. 7.

Resp. 34–35. First, Mr. Lett’s Declaration constitutes evidence cited to and relied on in the Petition. Thus, to the extent there is repetition, it is more reasonable to infer that the Petition repeats Mr. Lett’s testimony (not the other way around). Second, that a petition repeats the analysis of an expert declarant is not a reason, in and of itself, to give that expert’s opinion little to no weight. Rather, the critical inquiries are whether the declaration testimony “is conclusory and unsupported” and whether it “disclose[s] the underlying facts or data on which the opinion is based.” *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential) (quoting 37 C.F.R. § 42.65(a)). Additionally, a similar important inquiry is whether the declaration testimony supports the arguments made in the Petition. If these conditions are satisfied, we do not give little to no weight to declaration testimony simply because it is repeated in a petition, just as we do not give little to no weight to teachings of the prior art that are repeated in a petition.

For the purposes of this Decision, we apply Petitioner’s level of ordinary skill.

B. Claim Construction

We construe claims using the principles set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc) and related cases. See 37 C.F.R. § 42.100(b) (2021). Under that precedent, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips*, 415 F.3d at 1312–13.

Both parties state that no express claim constructions are necessary at this stage. Pet. 7; Prelim. Resp. 6. Notably, though, Patent Owner contends the claims are limited by arguments made during prosecution of the application that issued as the ’041 patent. Prelim. Resp. 2–4; see Prelim. Resp. 8–9, 15–16. Patent Owner argues that during prosecution, the applicant overcame an anticipation rejection by arguing that the then-cited prior art (Iwata⁸) disclosed selectable playback speeds but fixed output frame rates. Prelim. Resp. 3–4 (citing Ex. 2001 ¶¶ 31, 39; Ex. 1002, 71). According to Patent Owner, “[a]s is clear from the prosecution history, *the output frame rate cannot be fixed.*” Prelim. Resp. 8, 15.

It is not clear, however, whether Patent Owner contends the prosecution history gives rise to prosecution history disclaimer. Nor is it clear whether Patent Owner contends that the intrinsic evidence requires reading any particular claim language to require a variable output frame rate. See Prelim. Resp. 4 (citing Ex. 1001, 8:49–53) (arguing “the specification

⁸ US 2010/0210229 A1; published Dec. 9, 2010. Ex. 2001.

describes that even when the output frame rate is set based upon the requirements of an external device, that frame rate is still *variable* based on the specific external device”).

At this stage, we determine it is unnecessary to determine whether the challenged claims are limited as argued by Patent Owner because, as explained below, we determine Petitioner has shown that both Morikawa and Suzuki teach or reasonably suggest each limitation of the challenged independent claims even under Patent Owner’s proposed requirement of a variable output frame rate. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). To any extent that the parties disagree regarding this issue or the scope of the challenged claims, including whether prosecution history disclaimer applies and/or whether the claims are otherwise limited to variable output frame rates, the parties are encouraged to address such issues more directly in future briefing. We note for a statement made during prosecution to qualify as a disavowal of claim scope, the statement “must be ‘so clear as to show reasonable clarity and deliberateness,’ and ‘so unmistakable as to be unambiguous evidence of disclaimer.’” *Genuine Enabling Tech. LLC v. Nintendo Co.*, 29 F.4th 1365, 1374 (Fed. Cir. 2022) (quoting *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325 (Fed. Cir. 2003)). “The party seeking to invoke prosecution history disclaimer bears the burden of proving the existence of a clear and unmistakable disclaimer that would have been evident to one skilled in the

art.” *Id.* (quoting *Mass. Inst. of Tech. v. Shire Pharms., Inc.*, 839 F.3d 1111, 1119 (Fed. Cir. 2016)).

C. Ground 1A – Morikawa

1. Claim 1

[1.0] “A moving image data processing apparatus comprising:”

Petitioner states that it does not believe the preamble is limiting. Pet. 9. Petitioner also states, however, that Morikawa discloses a video playing apparatus that satisfies the language of the preamble. Pet. 9 (citing Ex. 1004 ¶¶ 9, 22, Fig. 1).

Patent Owner does not address the preamble, and on this record, Petitioner has made a sufficient showing for the preamble.

[1.1]: “a moving image data input unit configured to be input of first moving image data generated at a first frame rate and second image data generated at a second frame rate that is different from the first frame rate;”

Petitioner contends Morikawa teaches that its video player apparatus includes an input unit that is an input interface of video contents. Pet. 9–10 (citing Ex. 1004 ¶¶ 9, 23, Fig. 1). Petitioner also states that Morikawa describes “multi-frame rate contents” as video contents composed of at least a first ordinary-frame-rate portion and a second high-frame-rate portion, citing examples of contents having multiple frame rates such as 60 fps, 120 fps, and 300 fps. Pet. 10–13 (citing Ex. 1004 ¶¶ 5, 23, 28, 29, Figs. 2, 8).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.2]: “an input frame rate specification unit configured to specify the first frame rate of the first moving image data and the second frame rate of the second moving image data, the first and second moving image data having been input into the moving image data input unit;”

Petitioner contends Morikawa provides that its video playing apparatus includes a rate analysis unit for calculating playback time in respective playback modes by analyzing frame rates of multi-frame-rate contents. Pet. 13–14 (citing Ex. 1004 ¶ 23, Fig. 1, code (57)). More specifically, Petitioner contends Morikawa describes that its rate analysis unit analyzes video data based on metadata and frame rate information attached to video data as header information. Pet. 14–15 (citing Ex. 1004 ¶¶ 23, 25, 26, 28, 29, 36, Figs. 2, 3, 8).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.3]: “an output frame rate specification unit configured to specify output frame rate of the first moving image data and output frame rate of the second moving image data that have been input into the moving image data input unit;”

Petitioner contends that Morikawa provides that its rate analysis unit calculates a first playback time when the entire video contents are played back by applying a first frame decimating process to video in a second portion of inputted video contents having a higher frame rate than video in a first portion of the contents based on a predetermined playback frame rate. Pet. 16. According to Petitioner, Morikawa explains that its “playback frame rate is set based on a display frame rate of a display device.” Pet. 16 (quoting Ex. 1004 ¶ 25) (citing Ex. 1004 ¶¶ 9, 25, 26; Ex. 1001, 8:40–58).

Patent Owner contends “Morikawa, like the prior art distinguished during prosecution, discloses a fixed output frame rate.” Prelim. Resp. 7. According to Patent Owner, “[a]s is clear from the prosecution history, *the output frame rate cannot be fixed*,” but the output frame rate of Morikawa is always set to 60 Hz, “regardless of the required display frame rate.” Prelim. Resp. 8–9. According to Patent Owner, “[n]owhere does Morikawa disclose setting the output frame rate to any other value other than 60, even when the required display frame rate is a multiple of 60. Thus, like Iwata, Morikawa’s output frame rate is *fixed* rather than variable.” Prelim. Resp. 9.

Patent Owner acknowledges that Morikawa “states that the output frame rate is ‘set based on a display frame rate of a display device,’” but Patent Owner argues that Morikawa does not explain how or why multiple output frame rates are possible or necessary when the next sentence of Morikawa states that “when the display frame rate is 60 Hz, 120 Hz, 240 Hz, the p[l]ayback frame rate is set to 60 Hz.” Prelim. Resp. 9 (quoting Ex. 1004 ¶¶ 25, 26).

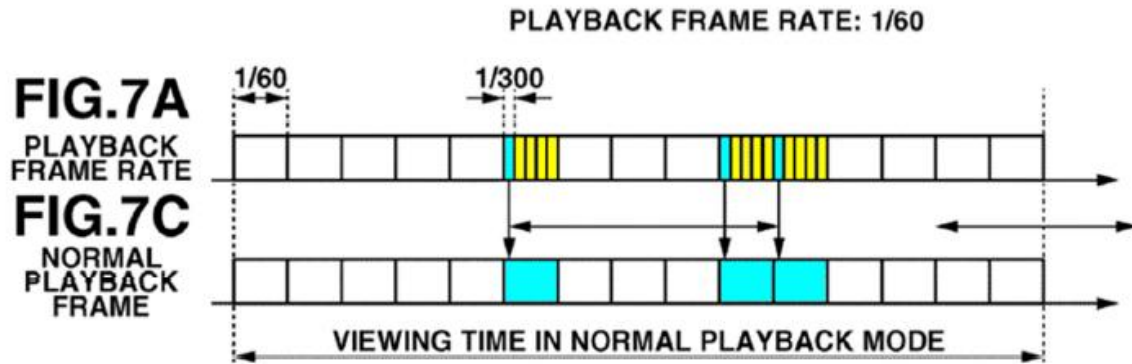
We consider the prior art for all that it teaches, and Morikawa expressly states that “[t]he playback frame rate *is set based on* a display frame rate of a display device.” Ex. 1004 ¶ 25 (emphasis added). Even the language highlighted by Patent Owner—“when the display frame rate is 60 Hz, 120 Hz, 240 Hz, the playback frame rate is set to 60 Hz”—refers to *setting* the playback frame rate to 60 Hz in certain circumstances, i.e., when the display frame rate is 60 Hz, 120 Hz, 240 Hz. Ex. 1004 ¶ 26. Although Morikawa does not explicitly provide other examples of setting the playback frame rate based on a display frame rate of a display device, Morikawa need not do so since it already discloses that the playback frame rate is set *based*

on a display frame rate of a display device. Thus, even if we were to construe this clause of claim 1 as requiring a variable output frame rate, as argued by Patent Owner, on the current record we find that Morikawa satisfies this requirement by disclosing that its playback frame rate is set based on a display frame rate of a display device.

On this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.4]: “a playback speed specification unit configured to specify a same playback speed for the first moving image data and the second moving image data;”

Petitioner contends that Morikawa provides that its video playing apparatus includes an operation unit that allows a user to select different playback modes, such as a normal playback mode or a slow playback mode, and that the control unit adjusts the playback time accordingly. Pet. 17–18 (citing Ex. 1004 ¶¶ 6, 27, 33, 34, 36). Petitioner contends Morikawa describes an example in which a user selects normal playback mode for multi-frame rate contents and that playback time is adjusted by decimating out frames in the high frame-rate portion of the video contents such that the entire contents can be played back at a normal speed. Pet. 17–20 (citing Ex. 1004 ¶¶ 6, 25, 27, 36, Figs. 7A, 7C). Copied below is Petitioner’s annotated version of Morikawa’s Figures 7A and 7C that Petitioner contends illustrate such an example.



Morikawa's Figures 7A and 7C depict multi-frame rate content with frames of 1/60th of a second (60 fps) and 1/300th of a second (300 fps) to be played back in the normal playback mode at a frame rate of 1/60 (60 fps or 60 Hz). Ex. 1004 ¶ 30. According to Petitioner, Morikawa teaches that portions of the high frame-rate content are decimated out or skipped (depicted by the yellow frames in Petitioner's annotated version of Figure 7A) so that only one out of every five frames is displayed (depicted in teal), thereby making the playback time in the normal mode the same as the time over which the video content was captured. Pet. 19 (citing Ex. 1004 ¶¶ 28–30, 43). According to Petitioner, if the decimation process is not performed and each of the 300 fps-encoded frames is displayed at the 60 fps playback frame rate, the displayed video data for the 300 fps frames would appear to be in slow motion. Pet. 20 (citing Ex. 1004 ¶¶ 4, 5, 27, 29, 40, Figs. 7A, 7B).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.5]: “a frame rate conversion unit configured to change a frame rate of the first moving image data based on the first frame rate, the output frame rate, and the playback speed, and change a frame rate of

the second moving image data based on the second frame rate, the output frame rate, and the playback speed; and”

Petitioner contends Morikawa provides that its video playing apparatus includes an image processing unit that selectively provides a frame decimating process to video data based on a predetermined playback frame rate, the selected playback speed, and the content’s encoded frame rate. Pet. 20–24 (citing Ex. 1004 ¶¶ 9, 25–29, 32–34, 39, 44). According to Petitioner:

Morikawa describes “applying a first frame decimating process to video in the second portion [of the video contents during normal playback mode] . . . based on a predetermined playback frame rate” and avoiding the “frame decimating process or . . . applying a second frame decimating process having a smaller number of frames to be decimated out than the first frame decimating process [during slow playback mode] . . . based on [the] predetermined playback frame rate.”

Pet. 21 (alterations by Petitioner) (emphasis omitted) (quoting Ex. 1004 ¶ 9). Further, Petitioner quotes Mr. Lett’s testimony regarding Morikawa’s decimation process as follows:

The extent to which the image processing unit 107 changes the frame rate of the different scenes in the video contents is based on the initial frame rate of the respective scene, the set output frame rate of the second scene (e.g., which may be set to the same output frame rate based on the display frame rate), and the playback speed set for the video contents, e.g., the operation mode. . . .

. . . .
. . . [a] POSITA would have understood or at least found it obvious to apply the decimation technique described in Morikawa to video data encoded at other frame rates, such as ‘Scene 4’ of ‘content A’ shown in FIGS. 2 and 8, which has an input frame rate of 120 fps.

Pet. 21–23 (quoting Ex. 1003 ¶¶ 46, 49) (citations omitted).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.6]: “a moving image data output unit that outputs the first and second moving image data whose frame rates have been converted by the frame rate conversion unit.”

Petitioner contends Morikawa provides that its video playing apparatus includes an image processing unit that transmits video data that has been processed to a display device. Pet. 24 (citing Ex. 1004 ¶¶ 32–34). Petitioner also states that Morikawa’s rate analysis unit provides the functionality of the claimed frame rate conversion unit and the claimed moving image data output unit. Pet. 24 (citing Ex. 1004 ¶¶ 32–34, Fig. 1).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

2. Conclusion Regarding Claim 1

Although we make no final determinations, based on our review of the current record, we determine Petitioner has sufficiently shown that Morikawa satisfies each limitation of claim 1 at this stage of the proceeding. Thus, we determine for the purposes of institution that Petitioner has demonstrated a reasonable likelihood that it will prevail in showing the unpatentability of at least one challenged claim.

3. Claims 2, 4, and 6

Independent claim 6 includes limitations substantially similar to independent claim 1, and Petitioner’s contentions regarding claim 6 refer to Petitioner’s contentions regarding claim 1. Pet. 27–28. Regarding claim 2’s requirement of an operating unit configured to accept an input to specify the

playback speed, Petitioner contends Morikawa satisfies this limitation with its teachings of a video playing apparatus that accepts playback instructions from a user, including the user's selection of a normal playback or a slow playback. Pet. 25–26 (citing Ex. 1004 ¶¶ 6, 33, 34, 39, Figs. 1, 4; Ex. 1003 ¶¶ 52–53). Regarding claim 4's requirement of an output frame rate that is specified based on information of an external device receiving the moving image data, Petitioner contends Morikawa satisfies this limitation with its teachings that the output frame rate is set based on a display frame rate of a display device. Pet. 26–27 (citing Ex. 1004 ¶¶ 25, 26; Ex. 1003 ¶¶ 54–55).

Patent Owner does not separately address Petitioner's contentions for claims 2, 4, and 6, and on the current record, Petitioner has made a sufficient showing for these claims for the purposes of institution.

D. Ground 1B – Morikawa & Takabe

1. Claim 3

[3.0]: “The moving image data processing apparatus according to claim 1, further comprising a display unit, wherein the operating unit accepts the inputs continuously, and the moving image data output unit makes the display unit display the first frame rate, second frame rate, or the playback speed thereon arranged in a circular ring shape, makes the display unit display the circular ring shape of the first frame rate, second frame rate, or the playback speed in a rotating manner in accordance with the input of the operating unit, and specifies the first frame rate, the second frame rate, or the playback speed.”

In relevant part, Takabe describes a digital camera that superimposes an interface of various settings in a circle or ring over captured images on the camera's display. Ex. 1005, 1:10–13. In addition to its showings for claim 1, Petitioner contends it would have been obvious to a person of ordinary skill to use the circular ring shape interface component to display

and enable a user to specify the moving image data parameters described in the apparatus of Morikawa, such as the frame rates and playback speeds.

Pet. 29 (citing Ex. 1005, 4:1–3, 5:13–17, 7:17–22, 9:14–15, Fig. 11; Ex. 1003 ¶ 65). Among other things, Petitioner cites Takabe’s teachings that its circular ring shape interface component is “easy to understand” and makes it easy to determine “where within the selectable range the selected value is.” Pet. 29 (quoting Ex. 1005, 4:1–3, 7:17–22) (citing Ex. 1005, 5:13–17, 9:14–15).

Patent Owner contends Petitioner’s proposed combination relies entirely on hindsight and scattered statements throughout Takabe discussing ease of use. Prelim. Resp. 10, 12. Further, Patent Owner contends “[t]here is no motivation to place Takabe’s circular display of two imaging parameters into the apparatus of Morikawa because Morikawa only allows the user to specify one parameter: a ‘slow playback mode’ or a ‘normal playback mode.’” Prelim. Resp. 12 (quoting Ex. 1004 ¶ 39). According to Patent Owner, there is no motivation to provide a circular display in Morikawa for a binary selection of two playback speeds. Prelim. Resp. 13.

On the current record, Petitioner’s reliance on Takabe’s teachings of the benefits of an “easy to understand” user interface appears sufficient to support Petitioner’s proposed combination of Morikawa and Takabe. Even if Morikawa’s express disclosures are limited to a binary selection of two playback speeds (*cf.* Ex. 1004 ¶ 40 (describing “Slow,” “Slow x2,” and “Slow x3”)), on the current record, Petitioner persuasively argues that the proposed combination of Morikawa and Takabe amounts to incorporation of known techniques to achieve the predictable benefits described in Takabe (*see* Pet. 30).

E. Ground 1C – Morikawa & Walpole

1. *Claim 5*

[5.0]: “The moving image data processing apparatus according to claim 1, wherein the output frame rate specification unit is configured to specify the output frame rate based on network band information of an external device receiving the moving image data output by the moving image data output unit.”

Walpole describes a video streaming player that provides dynamic adaptation in response to factors such as available bandwidth, latency, quality of service requirements, and content complexity. Ex. 1006, 270. In particular, Walpole states that “when available network bandwidth becomes scarce, an adaptive video player could reduce presentation quality in the frame rate dimension . . . in order to preserve real-time play out at a given spatial resolution.” Ex. 1006, 270.

Petitioner contends that it would have been obvious to a person of ordinary skill “to modify Morikawa to specify the output frame rate based on currently available network bandwidth, as taught by Walpole.” Pet. 32–33. According to Petitioner, Walpole’s adaptive scheme would provide a better user experience by maintaining full motion video at a lower frame rate instead of lagging or providing choppy video at a higher frame rate. Pet. 33 (citing Ex. 1006, 270, 276; Ex. 1003 ¶ 72). Further, Petitioner contends Walpole’s approach would reduce the number of packets sent over the network during times of network congestion. Pet. 33 (citing Ex. 1006, 276–79; Ex. 1003 ¶ 72). Petitioner contends the combination would entail applying the known solutions of Walpole to improve similar systems and methods in Morikawa and that the combination would have been a simple arrangement of old elements performing their known functions to yield predictable results. Pet. 33–34 (citing Ex. 1003 ¶¶ 73–74).

Patent Owner argues that Morikawa only describes that its system is network-enabled on the input side. Prelim. Resp. 14 (citing Ex. 1004 ¶ 23). “Because there is no disclosure of the system in Morikawa outputting information over a network, there would have been no need for [a person of ordinary skill] to look to the rate-limiting disclosure in Walpole to solve the non-existent problem of fluctuating network bandwidth, except through application of impermissible hindsight.” Prelim. Resp. 15.

We note that the ’041 patent’s earliest possible priority date is December 28, 2012 (Ex. 1001, code (30)), and Morikawa expressly discloses providing video content from a server over a network. Ex. 1004 ¶ 23 (“Input sources include . . . a contents server via a network.”). On the current record, we understand a person of ordinary skill reading Morikawa and Walpole would have recognized Petitioner’s proposed combination as an adaptation of known techniques with predictable results and with the benefits stated in Walpole. *See Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1326–27 (Fed. Cir. 2008) (recognizing that it was commonplace to incorporate Internet technology in existing electronic processes). The parties can further develop this issue during trial.

F. Ground 2A – Suzuki

1. Claim 1

[1.0] “*A moving image data processing apparatus comprising:*”

Petitioner states that Suzuki discloses an imaging apparatus that performs processing to change the frame rate of moving image data. Pet. 37 (citing Ex. 1007 ¶¶ 24, 25, 27, 34, 45, Fig. 3).

Patent Owner does not address the preamble, and on this record, Petitioner has made a sufficient showing for the preamble.

[1.1]: “a moving image data input unit configured to be input of first moving image data generated at a first frame rate and second image data generated at a second frame rate that is different from the first frame rate;”

Petitioner contends Suzuki describes an image capturing unit that generates and outputs moving image data that is stored to a memory. Pet. 37 (citing Ex. 1007 ¶¶ 25, 26). According to Petitioner, Suzuki teaches that its image capturing unit can capture moving image data at different frame rates, including 60 fps, 120 fps, and 240 fps. Pet. 37–39 (citing Ex. 1007 ¶¶ 5, 24, 44, Fig. 8).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.2]: “an input frame rate specification unit configured to specify the first frame rate of the first moving image data and the second frame rate of the second moving image data, the first and second moving image data having been input into the moving image data input unit;”

Petitioner contends Suzuki teaches that, in addition to capturing moving image data at different frame rates, a control unit instructs a recording and reproduction unit to generate information on the frame rate of the moving image data capturing moving image data having different frame rates. Pet. 39 (citing Ex. 1007 ¶¶ 24, 42, Fig. 8).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.3]: “an output frame rate specification unit configured to specify output frame rate of the first moving image data and output frame rate

of the second moving image data that have been input into the moving image data input unit;”

Petitioner contends Suzuki describes setting the output frame rate for display of moving image data at 60 fps or “at other frame rates.” Pet. 39–40 (quoting Ex. 1007 ¶ 96) (citing Ex. 1007 ¶¶ 51, 52, 86, 97–98). Petitioner also contends Suzuki explains how its system operates when the output frame rate is specified to be a value other than 60 fps. Pet. 40 (citing Ex. 1007 ¶¶ 96–98; Ex. 1003 ¶ 86).

Patent Owner again contends, “[a]s is clear from the prosecution history, *the output frame rate cannot be fixed*” (Prelim. Resp. 15), and Patent Owner argues that “Suzuki discloses only a fixed output frame rate” and “fails to disclose an output frame rate which is specified . . . [or] changed as required by the claims” (Prelim. Resp. 17). Patent Owner notes that Suzuki states that the output frame rate can be “set to a natural number,” but according to Patent Owner, Suzuki does not explain how the output frame rate is specified, changed, or varied. Prelim. Resp. 17 (citing Ex. 1007 ¶¶ 96–98).

Patent Owner also argues the Petition fails to specify a structure for the output frame rate specification unit. Prelim. Resp. 18. According to Patent Owner, the Petition “only describes what it contends is the functionality of ‘reproducing captured moving images at 60 fps,’ it never states what structure it contends forms the ‘output frame rate specification unit,’” as claimed. Prelim. Resp. 18 (quoting Pet. 40) (citing 37 C.F.R. § 41.104(a)).

Contrary to Patent Owner’s arguments, Suzuki expressly states that exemplary embodiments reproduce video data at 60 fps, “[h]owever, moving images may be reproduced at other frame rates.” Ex. 1007 ¶ 96. Further,

Suzuki states that the frame rate for reproduction can be a natural number that is less than or equal to the frame rate at which the moving image is captured. Ex. 1007 ¶ 96. On the current record, there is no evidence that Suzuki's teachings are limited to output frame rates of 60 fps, and Patent Owner's arguments to the contrary amount to unsupported attorney argument on the current record. Thus, even if we were to construe this clause of claim 1 as requiring a variable output frame rate, as argued by Patent Owner, on the current record we find that Suzuki satisfies this requirement by teaching moving images can be reproduced as different frame rates.

Regarding Patent Owner's argument that the Petition fails to disclose a structure in Suzuki that performs the functions cited by Petitioner, at this stage, Petitioner adequately alleges that Suzuki's system performs the cited functions, but the parties are welcome to address this issue further at trial. *See Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1007 (Fed. Cir. 2018); *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015).

On this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.4]: "a playback speed specification unit configured to specify a same playback speed for the first moving image data and the second moving image data;"

Petitioner contends Suzuki describes setting a reproduction speed when playing back video image data. Pet. 40 (citing Ex. 1007 ¶ 89). According to Petitioner, Suzuki teaches setting the reproduction speed to multiples of a normal reproduction, such as a three-fold speed. Pet. 40–41 (citing Ex. 1007 ¶¶ 87, 89, 94, Fig. 8).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.5]: “a frame rate conversion unit configured to change a frame rate of the first moving image data based on the first frame rate, the output frame rate, and the playback speed, and change a frame rate of the second moving image data based on the second frame rate, the output frame rate, and the playback speed; and”

Petitioner contends Suzuki teaches specifying an output frame rate of first and second moving image data and specifying the same playback speed for the first and second moving image data. Pet. 41. Petitioner further contends that Suzuki teaches that, during high-speed reproduction, the control unit sets the interval of frames to be displayed based on the frame rate of the moving image data, the output frame rate, and the reproduction speed. Pet. 41–45 (citing Ex. 1007 ¶¶ 51, 52, 87, 89, 96–98, Figs. 7, 8).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

[1.6]: “a moving image data output unit that outputs the first and second moving image data whose frame rates have been converted by the frame rate conversion unit.”

Petitioner contends Suzuki describes that its control unit instructs a display control unit to select frames to be displayed and output the selected frames to a display unit. Pet. 45 (citing Ex. 1007 ¶ 88). Further, Petitioner states that the display control unit selecting the frames to be displayed is a frame rate conversion. Pet. 45 (citing Ex. 1007 ¶¶ 87–89, Figs. 7–8).

Patent Owner does not address this limitation, and on this record, Petitioner has made a sufficient showing for this limitation for the purposes of institution.

2. *Conclusion Regarding Claim 1*

Although we make no final determinations, based on our review of the current record, we determine Petitioner has sufficiently shown that Suzuki satisfies each limitation of claim 1 at this stage of the proceeding. Thus, we determine for the purposes of institution that Petitioner has demonstrated a reasonable likelihood that it will prevail in showing the unpatentability of at least one challenged claim.

3. *Claim 6*

For each limitation of claim 6, Petitioner refers to its showings for the related limitations of claim 1. Pet. 45–47. Patent Owner does not separately address claim 6.

G. *Ground 2B – Suzuki & Takabe*

1. *Claim 3*

The parties address the combination of Suzuki and Takabe with arguments similar to those discussed above regarding the combination of Morikawa and Takabe. Pet. 47–50; Prelim. Resp. 19–20. At this stage, we refer to our discussion above regarding the combination of Morikawa and Takabe for guidance applicable to the proposed combination of Suzuki and Takabe.

H. *Ground 2C – Suzuki & Sekiguchi*

1. *Claim 4*

[4.0]: “*The moving image data processing apparatus according to claim 1, wherein the output frame rate specification unit is configured to specify the output frame rate based on information*

of an external device receiving the moving image data output by the moving image data output unit.”

Sekiguchi describes a video playback apparatus that synchronizes the frame rate with the refresh rate of a display panel. Ex. 1008 ¶ 31. Petitioner contends it would have been obvious to modify Suzuki with the teachings of Sekiguchi to set the output frame rate based on the supported frame rate of a display device. Pet. 50. According to Petitioner, a person of ordinary skill would have had a reason to combine the references to avoid playback anomalies as described in Sekiguchi. Pet. 50 (citing Ex. 1008 ¶¶ 8–13, 31; Ex. 1003 ¶ 111). Further, Petitioner contends the combination would have entailed using known solutions to improve similar systems in the same way and with predictable results. Pet. 51 (citing Ex. 1003 ¶¶ 112, 113).

Patent Owner again contends that Suzuki only discloses a fixed output rate of 60 fps and that the combination of Suzuki and Sekiguchi is therefore not technically possible. Prelim. Resp. 20. Patent Owner also argues the Petition fails to adequately explain how modifying Suzuki would have avoided anomalies. Prelim. Resp. 21.

As explained above, on the current record, Suzuki is not limited to a fixed rate of 60 fps. Further, on the current record, Petitioner has adequately explained that a person of ordinary skill would have had a reason to modify Suzuki by setting its output frame rate based on the display device in order to avoid the problems recognized by Sekiguchi.

I. Ground 2D – Suzuki & Walpole

1. Claim 5

The parties address the combination of Suzuki and Walpole with arguments similar to those discussed above regarding the combination of Morikawa and Walpole. Pet. 53–55; Prelim. Resp. 21–22. At this stage, we

refer to our discussion above regarding the combination of Morikawa and Walpole for guidance applicable to the proposed combination of Suzuki and Walpole.

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood that it will prevail with respect to at least one claim of the '041 patent. Accordingly, we institute an *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review is instituted as to claims 1–6 of the '041 patent on each of the grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the '041 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

IPR2022-01548
Patent 9,445,041 B2

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