

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.

Petitioner,

v.

ADVANCED CODING TECHNOLOGIES, LLC

Patent Owner.

Patent No. 9,445,041

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Inventor: Akiyoshi Jin

Title: MOVING IMAGE DATA PROCESSING APPARATUS AND MOVING
IMAGE DATA PROCESSING METHOD

PATENT OWNER'S PRELIMINARY RESPONSE

Case No. IPR2023-00910

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<i>Welker Bearing Co., v. PHD, Inc.</i> , 550 F.3d 1090 (Fed. Cir. 2008)	<i>passim</i>

Statutes

35 U.S.C. § 112 ¶ 6	<i>passim</i>
35 U.S.C. § 102(b)	13
35 U.S.C. § 112 ¶ 6	5
35 U.S.C. § 314(A)	59, 60

EXHIBIT LIST

Exhibit No.	Description of Document
2001	U.S. Patent Application Publication No. 2010/0310229 (“Iwata”)
2002	Defendants’ Joint Patent L.R. 3-3 Invalidity Contentions and Subject Matter Ineligibility Contentions in <i>Advanced Coding Technologies LLC v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.</i> , No. 2:22-cv-00499-JRG, served August 8, 2023
2003	Declaration of Dr. Hari Kalva (“Kalva Decl.”), dated July 5, 2023 and Exhibit A, Curriculum Vitae of Hari Kalva, Ph.D. in <i>TikTok Inc. v. Advanced Coding Technologies LLC</i> , Case No. IPR2022-01548
2004	Transcript of the Deposition of David Lett, taken in <i>TikTok Inc. v. Advanced Coding Technologies, LLC</i> , Case No. IPR2022-01548 on June 16, 2023. (“Lett Depo.”)

I. INTRODUCTION

On May 12, 2023, Samsung Electronics Co., Ltd. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1-6 (“Challenged Claims”) of U.S. Patent No. 9,445,041 (“the ’041 Patent”) (Ex. 1001). Paper 3 (“Petition” or “Pet.”).

The Board should deny institution of the Petition because none of Petitioner’s grounds of obviousness are directed to receiving multiple moving image data inputs that are then continuously or sequentially output at a same playback speed, despite having possibly different specified input frame rates and possibly different specified output frame rates. Petitioner’s proposed motivations to combine references are also entirely based on impermissible hindsight and unsupported by sufficient reasoning.

II. CLAIM CONSTRUCTION

Patent Owner proposes the following claim constructions:

<u>Claim Term</u>	<u>Patent / Claim(s)</u>	<u>Patent Owner’s Proposed Construction</u>
“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”	’041 Patent Claim 1	Subject to 112 ¶ 6 Structure: Software algorithm that performs the steps of: • Receiving input moving image data • Specifying input frame rate • Transmitting specified input frame rate to frame rate conversion unit

<u>Claim Term</u>	<u>Patent / Claim(s)</u>	<u>Patent Owner's Proposed Construction</u>
		Function: 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 '041 Patent, 7:12-8:10; 13:63-15:19, FIGS. 1, 3, 4A, 4B, 4C, 5, 6, 9
“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”	'041 Patent Claim 1	Subject to 112 ¶ 6 Structure: Software algorithm that performs the steps of: • Specifying variable frame rates for each of different moving image data • Transmitting specified output frame rates to frame rate conversion unit Function: specify variable output frame rate of the first moving image data and variable output frame rate of the second moving image data that have been input into the moving image data input unit '041 Patent, 8:11-57, 11:46-12:60, 14:32-15:50, 16:65-17:14, FIGS. 1, 6, 7A, 7B, 9

<u>Claim Term</u>	<u>Patent / Claim(s)</u>	<u>Patent Owner's Proposed Construction</u>
“specify[ing] [the] output frame rate”	'041 Patent Claims 1 and 4-6	“specify[ing] [the] variable output frame rate”
“a playback speed specification unit configured to specify a same playback speed for the first moving image data and the second moving image data”	'041 Patent Claim 1	Subject to 112 ¶ 6 Structure: Software algorithm that performs the steps of: • Specifying a same playback speed for the first moving image data and the second moving image data • Transmitting the specified playback speed to the frame rate conversion unit Function: specify a same playback speed for the first moving image data and the second moving image data '041 Patent, 8:58-9:17, 13:4-62, 14:24-15:26, 17:15-48, 18:36-19:43, FIGS. 1, 6, 8, 9
“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	'041 Patent Claim 1	Subject to 112 ¶ 6 Structure: Software algorithm that performs the steps of: • Receiving specified input frame rate and specified output frame rate for each of the first and second moving image data and receiving

<u>Claim Term</u>	<u>Patent / Claim(s)</u>	<u>Patent Owner's Proposed Construction</u>
image data based on the second frame rate, the output frame rate, and the playback speed”		specified playback speed for both the first and second moving image data • Converting input frame rate to a frame rate that is output, for each of the first moving image data and second moving image data, based on the received specified input frame rates, specified output frame rates, and specified playback speed • Transmitting converted frame rate(s) to the moving image data output unit, for each of the first moving image data and second moving image data, to be output at the converted frame rate(s) Function: 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 ’041 Patent, 9:18-26, 13:4-30, 14:23-15:26, FIGS. 1, 6

<u>Claim Term</u>	<u>Patent / Claim(s)</u>	<u>Patent Owner's Proposed Construction</u>
"operating unit"	'041 Patent Claim 2	Subject to 112 ¶ 6 Structure: Buttons, dials, or equivalents thereof for accepting various inputs related to the moving image data Function: accept [an] input[s] '041 Patent, 6:20-44, 8:20-39, 9:38-10:53, 11:3-38, 11:61-12:29, 13:31-62, 15:11-50, 17:24-19:5, FIGS. 1-4C, 6

A. "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"

The claimed "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" should be subject to 35 U.S.C. 112 ¶ 6. While this term does not include "means" or "step" language, it nonetheless recites a "unit configured to" which is a non-structural generic placeholder in the claim that invokes 35 U.S.C. 112 ¶ 6. *Welker Bearing Co., v. PHD, Inc.*, 550 F.3d 1090, 1096 (Fed. Cir. 2008); *Mass. Inst. of Tech. & Elecs. For Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006); *Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 704 (Fed. Cir. 1998); *Mas-Hamilton Grp. v. LaGard*,

Inc., 156 F.3d 1206, 1214-15 (Fed. Cir. 1998).

There is no specific structure disclosed in this claim limitation or the rest of the claim, but rather a number of different ways that a POSITA would understand to build the functionality that is disclosed in this claim limitation. Ex. 2004, at 34:11-23 (“There’s a number of different ways to build this functionality, and a [POSITA] would understand those.”); Ex. 2003, ¶ 37.

A POSITA would understand this term to have the following Structure and Function in view of what is disclosed in the ’041 Patent specification:

Structure: Software algorithm that performs the steps of:

- Receiving input moving image data
- Specifying input frame rate
- Transmitting specified input frame rate to frame rate conversion unit

Function: 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

See ’041 Patent, 7:12-8:10, 13:63-15:19; FIGS. 1, 3, 4A, 4B, 4C, 5, 6, 9; Ex. 2003, ¶ 38.

1. Structure

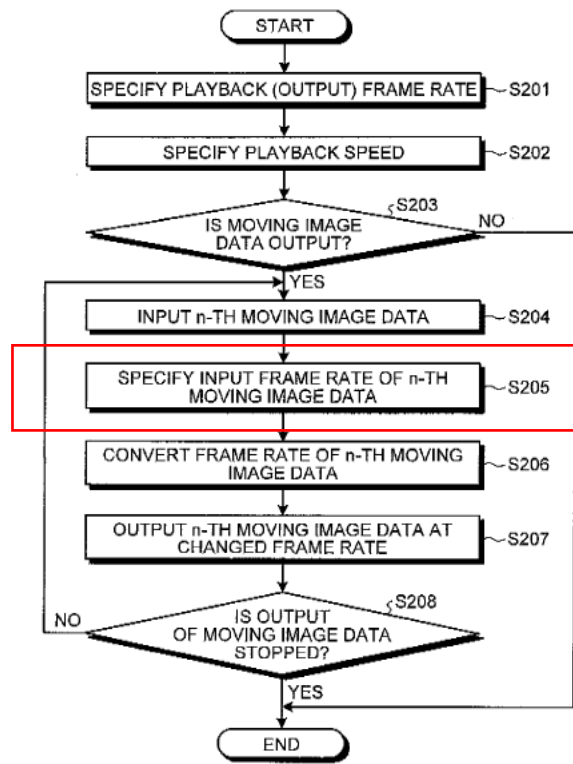
A POSITA would understand the structure of the input frame rate specification unit to be a software algorithm. Ex. 2003, ¶ 39. The patent specification describes such a software algorithm as a “method.” ’041 Patent, 7:66-8:2

(“Moreover, a *method performed* based on the image capture frame rate information, a *method performed* by analyzing input moving image data, and the like are conceivable as a *method for specifying* the input frame rate.”)¹, 14:7-15.

Each of the algorithm steps is disclosed explicitly in FIG. 6 of the '041 Patent which shows receiving “INPUT n-TH MOVING IMAGE DATA” from Step 204, “SPECIFY INPUT FRAME RATE OF n-TH MOVING IMAGE DATA” in Step 205, and transmitting the specified input frame rate of Step 205 to the frame rate conversion unit to “CONVERT FRAME RATE OF n-TH MOVING IMAGE DATA” in Step 206. Ex. 2003, ¶ 40.

¹ Emphasis added unless otherwise noted.

FIG.6



'041 Patent , FIG. 6.

A POSITA would further understand that the specifying step of the algorithm can be programmed in several ways to specify, such as based on the image capture frame rate information, analyzing moving image data to be input, analyzing the frame configuration of moving image data, “and the like.” Ex. 2003, ¶ 41; *see* '041 Patent , 8:2-10; 14:7-23 (“If first moving image data of the plurality of moving image data is input in Step S204, the input frame rate specification unit 303 specifies a frame rate of the moving image data input first (Step S205). The method performed based on the image capture frame rate information, the method performed by

analyzing moving image data to be input, and the like are conceivable as the method for specifying the input frame rate.”).

A POSITA would also understand that the specified input frame rates for each of the first and second moving image data would be transmitted to the frame rate conversion unit because “the frame rate conversion unit 306 changes the frame rate of the input moving image data based on the input frame rate, the output frame rate, and the playback speed.” Ex. 2003, ¶ 42; ’041 Patent , at 14:32-60 (“***Assuming the specified input frame rate is F_{in} , . . . the input frame rate of the first moving image data input in Step S204 as 600 fps, the frame rate conversion unit 306 sets the total number of frames of moving image data to be output as one tenth of the total number of frames of the input moving image data. . . .*** In other words, the ***frame rate conversion unit 306 changes the frame rate*** of the input moving image data ***based on the input frame rate***, the output frame rate, and the playback speed.”).

2. Function

A POSITA would find the function of the “input frame rate specification unit” to be apparent from the claim language of Claim 1, which states that the “an input frame rate specification unit [is] 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.***” ’041 Patent , Claim 1; Ex. 2003, ¶ 43.

B. “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”

The claimed “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” should be subject to 35 U.S.C. 112 ¶ 6. While this term does not include “means” or “step” language, it nonetheless recites a “unit configured to” which is a non-structural generic placeholder in the claim that invokes 35 U.S.C. 112 ¶ 6. *Welker Bearing Co.*, 550 F.3d 1090, 1096; *Mass. Inst. of Tech.*, 462 F.3d 1344, 1354; *Personalized Media Commc’ns, LLC*, 161 F. 3d 696, 704; *Mas-Hamilton Grp.*, 156 F.3d 1206, 1214-15.

There is no specific structure disclosed in this claim limitation or the rest of the claim, but rather a number of different ways that a POSITA would understand to build the functionality that is disclosed in this claim limitation. Ex. 2003, ¶ 44; Ex. 2004, at 34:24-36:4 (“[A] person of ordinary skill in the art would understand how to build the functionality that’s described. . . . [T]hey would know, you know, how to build it, and multiple ways on how to build it. . . . I would say there’s multiple ways to – multiple components, multiple ways to build this functionality.”).

A POSITA would understand this term to have the following Structure and

Function in view of what is disclosed in the '041 Patent specification:

Structure: Software algorithm that performs the steps of:

- Specifying variable frame rates for each of different moving image data
- Transmitting specified output frame rates to frame rate conversion unit

Function: specify variable output frame rate of the first moving image data and variable output frame rate of the second moving image data that have been input into the moving image data input unit

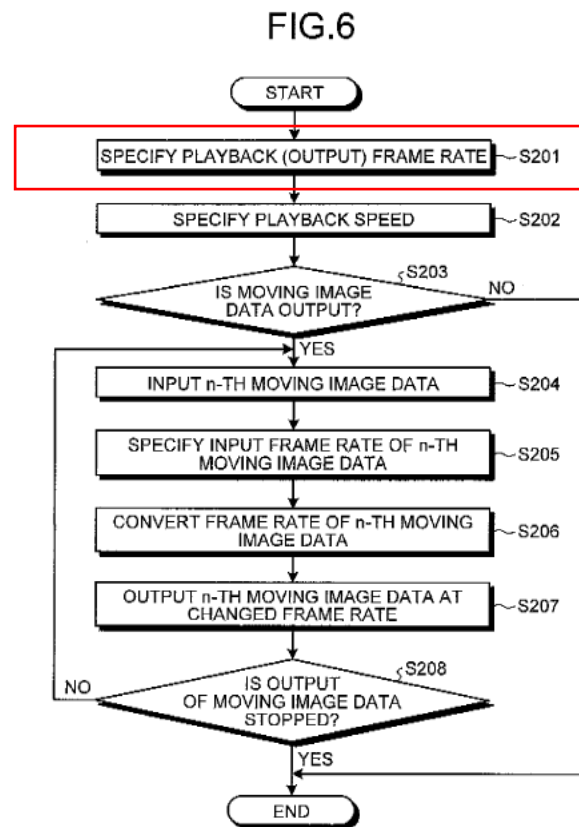
'041 Patent, 8:11-57, 11:46-12:60, 14:32-15:50, 16:65-17:14, Figs. 1, 6, 7A, 7B, 9; Ex. 2003, ¶ 45.

1. Structure

A POSITA would understand the structure of the output frame rate specification unit to be a software algorithm. Ex. 2003, ¶ 46. The patent specification describes such a software algorithm as a “method.” *Id.*; '041 Patent, 8:15-8:19 (“A **method** based on selection by the user, a **method** based on the setting of an external device being an output destination, and the like are conceivable as a **method** for specifying the output frame rate.”), 11:46-53.

Each of the algorithm steps is disclosed explicitly in FIG. 6 of the '041 Patent which shows “SPECIFY PLAYBACK (OUTPUT) FRAME RATE” in Step 201 and transmitting the specified output frame rate of Step 201 to the frame rate conversion unit to “CONVERT FRAME RATE OF n-TH MOVING IMAGE DATA” in Step

206. Ex. 2003, ¶ 47.



'041 Patent , FIG. 6.

A POSITA would further understand based on the '041 Patent specification, that the specifying step of the algorithm can be programmed in several ways to specify, such as “based on selection by the user, [] based on the setting of an external device being an output destination, and the like.” *See id.*, 8:11-57; 11:46-12:55; Ex. 2003, ¶ 48.

A POSITA would also understand that the specified output frame rate would be transmitted to the frame rate conversion unit because “the frame rate conversion

unit 306 changes the frame rate of the input moving image data based on the input frame rate, the output frame rate, and the playback speed.” Ex. 2003, ¶ 49; ’041 Patent at 14:32-60 (“*Assuming* the specified input frame rate is F_{in} , *the output frame rate is F_{out} , . . . if the output frame rate is specified as 60 fps in Step S201, . . . the frame rate conversion unit 306 sets the total number of frames of moving image data to be output as one tenth of the total number of frames of the input moving image data. . . .* In other words, *the frame rate conversion unit 306 changes the frame rate* of the input moving image data *based on the* input frame rate, the *output frame rate*, and the playback speed.”).

The prosecution history of the ’041 Patent confirms (1) that the output specification unit’s structure is an algorithm that includes the step of specifying *variable* frame rates for each of the different moving image data; and (2) that the function of specifying an output frame rate involves specifying a variable output frame rate. Ex. 2003, ¶ 50.

During prosecution, the pending claims of the ’041 Patent were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2010/0310229 to Iwata (“Iwata,” Ex. 2001). Ex. 2003, ¶ 51. While Iwata disclosed variable output *speeds*, Iwata did not disclose variable output *frame rates*. Ex. 2001, [0031] (“a playback frame rate is fixed at 60 fps”); [0039] (“the playback frame rate is fixed (60 fps)”). Applicant distinguished the pending claims over Iwata, noting

that “Iwata fails to disclose ‘an output frame rate specification unit configured to specify output frame rate of the first moving data and output frame rate of the second moving image data that have been input into the moving image data input unit.” Ex. 1002 at 71 (emphases in original); Ex. 2003, ¶ 52.

The Examiner issued a Notice of Allowance, noting that “[t]he closest prior art Iwata [] either singularly or in combination, fail[s] to anticipate or render the above underlined limitation obvious.” Ex. 1002 at 14; Ex. 2003, ¶ 53. Thus, a prior art reference disclosing selectable playback speeds but fixed output frame rates does not render the claims anticipated or obvious. *Id.*

Petitioner improperly states that the arguments made in prosecution “appear to contradict the specification of the ’041 patent” which states that “the output frame rate can be specified based on a ‘based setting of an external device being an output destination.” Pet. at 6 (citing Ex. 1001, 8:16-17). But this is incorrect, as the specification 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. ’041 Patent, 8:49-53; Ex. 2003, ¶ 54. The frame rate for the external device is acquired by the central control unit, which then uses this as one factor to specify the output frame rate. *Id.*

2. Function

A POSITA would find the function of the “output frame rate specification

unit” to be apparent from the claim language of Claim 1, which states that “an output frame rate specification unit [is] 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.*” ’041 Patent, Claim 1; Ex. 2003, ¶ 55. Based on the prosecution history of the ’041 Patent, the specified output frame rate is a specified variable output frame rate. *Id.*

C. “specify[ing] [the] output frame rate”

A POSITA would understand “specify[ing] [the] output frame rate” to be construed as “specify[ing] [the] variable output frame rate.” Ex. 2003, ¶ 56; *see supra* Section IV.B (showing the output specification unit is specifying a variable output frame rate for both the first and second moving image data that have been input into the moving image data input unit).

D. “a playback speed specification unit configured to specify a same playback speed for the first moving image data and the second moving image data”

The claimed “playback speed specification unit configured to specify a same playback speed for the first moving image data and the second moving image data” should be subject to 35 U.S.C. 112 ¶ 6. While this term does not include “means” or “step” language, it nonetheless recites a “unit configured to” which is a non-structural generic placeholder in the claim that invokes 35 U.S.C. 112 ¶ 6. *Welker Bearing Co.*, 550 F.3d at 1096; *Mass. Inst. of Tech.*, 462 F.3d at 1354; *Personalized*

Media Commc'ns, LLC, 161 F. 3d at 704; *Mas-Hamilton Grp.*, 156 F.3d at 1214-15.

There is no specific structure disclosed in this claim limitation or the rest of the claim, but rather, there are a number of different ways that a POSITA would understand to build the functionality that is disclosed in this claim limitation. Ex. 2003, ¶ 57; Ex. 2004 at 36:5-24 (“There are multiple ways to build this functionality of a playback speed specification unit that a POSITA would understand. . . . As I stated, I believe that a POSITA would understand multiple ways to build this functionality.”).

A POSITA would understand this term to have the following Structure and Function in view of what is disclosed in the '041 Patent specification:

Structure: Software algorithm that performs the steps of:

- Specifying a same playback speed for the first moving image data and the second moving image data
- Transmitting the specified playback speed to the frame rate conversion unit

Function: specify a same playback speed for the first moving image data and the second moving image data

'041 Patent, 8:58-9:17, 13:4-62, 14:24-15:26, 17:15-48, 18:36-19:43, FIGS. 1, 6, 8, 9; Ex. 2003, ¶ 58.

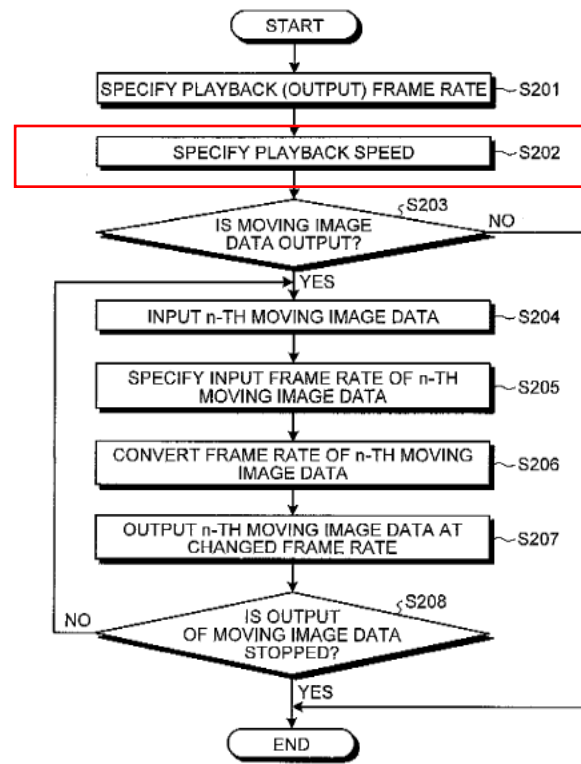
1. Structure

A POSITA would understand the structure of the playback speed specification unit to be a software algorithm. The patent specification describes an exemplary

embodiment where the playback speed specification unit can specify the playback speed based on selection by the user through generating an “instruction” to the user to select a playback speed. Ex. 2003, ¶ 59; ’041 Patent , 13:31-38 (“The playback speed specification unit 305 can specify the playback speed based on selection by the user from the high speed, equal speed, and low speed. When *an instruction* to the effect to select the playback speed of the moving image data to be output is input via the operating unit 209, the audio/image processing unit 204 generates such an image G81 that prompts the user to select the playback speed as illustrated in FIG. 8.”). A POSITA would recognize a generated instruction to the user as part of a software algorithm. *Id.*

Each of the algorithm steps is disclosed explicitly in FIG. 6 of the ’041 Patent which shows receiving “SPECIFY PLAYBACK SPEED” from Step 202 and transmitting the specified playback speed of Step 202 to the frame rate conversion unit to “CONVERT FRAME RATE OF n-TH MOVING IMAGE DATA” in Step 206. Ex. 2003, ¶ 60.

FIG.6



'041 Patent , FIG. 6.

A POSITA would further understand that the specifying step of the algorithm can be programmed in several ways to specify, such as based on user selection or a predetermined playback speed. Ex. 2003, ¶ 61; *see* '041 Patent , 8:58-9:31 (“The user can select/set the playback speed using the button 209b and the dial 209d which are illustrated in FIG. 2A. In other words, if the user presses button 209b, an image for selecting the playback speed is displayed on the monitor 207. The user rotates the dial 209d to move a cursor image contained in the image and selects and sets a desired playback speed. The playback speed specification unit 305 specifies the

playback speed of the moving image data to be output based on this setting. Moreover, a predetermined playback speed (for example, only the equal speed), for example, only equal-speed playback, may be used. In this case, the playback speed specification unit 305 specifies the predetermined playback speed as the playback speed of the moving image data to be output.”).

A POSITA would also understand that the specified playback speed would be transmitted to the frame rate conversion unit because “the frame rate conversion unit 306 changes the frame rate of the input moving image data based on the input frame rate, the output frame rate, and the playback speed.” Ex. 2003, ¶ 62. ’041 Patent , at 14:32-60 (“*Assuming . . . the multiplier of the playback speed relative to the equal speed is M, . . . the playback speed as the equal speed in Step S202, . . . the frame rate conversion unit 306 sets the total number of frames of moving image data to be output as one tenth of the total number of frames of the input moving image data. . . . In other words, the frame rate conversion unit 306 changes the frame rate of the input moving image data based on the input frame rate, the output frame rate, and the playback speed.*”).

2. Function

A POSITA would find the function of the “playback speed specification unit” to be apparent from the claim language of Claim 2, which states that “a playback speed specification unit [is] configured to *specify a same playback speed for the*

first moving image data and the second moving image data.” ’041 Patent , Claim 1; Ex. 2003, ¶ 63.

- E. “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”**

The claimed “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” should be subject to 35 U.S.C. 112 ¶ 6. While this term does not include “means” or “step” language, it nonetheless recites a “unit configured to” which is a non-structural generic placeholder in the claim that invokes 35 U.S.C. 112 ¶ 6. *Welker Bearing Co.*, 550 F.3d at 1096; *Mass. Inst. of Tech.*, 462 F.3d at 1354; *Personalized Media Commc’ns, LLC*, 161 F. 3d at 704; *Mas-Hamilton Grp.*, 156 F.3d at 1214-15.

There is no specific structure disclosed in this claim limitation or the rest of the claim, but rather a number of different ways that a POSITA would understand to build the functionality that is disclosed in this claim limitation. Ex. 2003, ¶ 64; Ex. 2004, at 37:1-11 (“A person of normally -- of ordinary skill in the art would understand multiple ways to build this functionality.”).

A POSITA would understand this term to have the following Structure and Function in view of what is disclosed in the '041 Patent specification:

Subject to 112 ¶. 6

Structure: Software algorithm that performs the steps of:

- Receiving specified input frame rate and specified output frame rate for each of the first and second moving image data and receiving specified playback speed for both the first and second moving image data
- Converting input frame rate to a frame rate that is output, for each of the first moving image data and second moving image data, based on the received specified input frame rates, specified output frame rates, and specified playback speed
- Transmitting converted frame rate(s) to the moving image data output unit, for each of the first moving image data and second moving image data, to be output at the converted frame rate(s)

Function: 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

'041 Patent, 9:18-26, 13:4-30, 14:23-15:26, FIGS. 1, 6; Ex. 2003, ¶ 65.

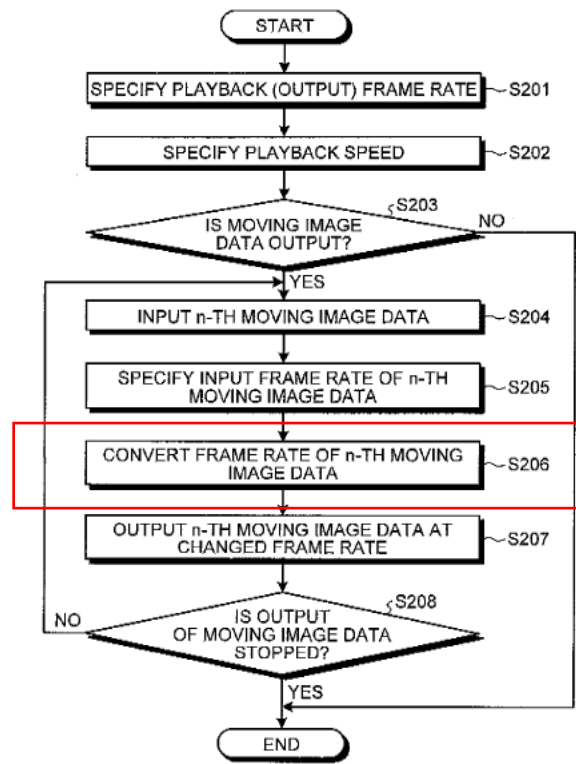
1. Structure

A POSITA would understand the structure of the frame rate conversion unit to be a software algorithm. The patent specification describes such a software algorithm as a “method” based on various inputs. Ex. 2003, ¶ 66; '041 Patent, 9:18-27 (“The frame rate conversion unit 305 converts the frame rate of the input moving image data based on the specified output frame rate and playback speed. The

conversion of the frame rate is performed based on a known *method* such as interpolation in addition to decimation described in the above-mentioned example.”)

Each of the algorithm steps is disclosed explicitly in FIG. 6 of the '041 Patent which shows receiving “SPECIF[IED] PLAYBACK (OUTPUT) FRAME RATE” from Step 201, “SPECIFY PLAYBACK SPEED” from Step 202, and “SPECIFY INPUT FRAME RATE OF n-TH MOVING IMAGE DATA” from Step 205, performing the “CONVERT FRAME RATE OF n-TH MOVING IMAGE DATA” in Step 206, and transmitting the converted frame rates of Step 206 to the moving image data output unit to “OUTPUT n-TH MOVIN IMAGE DATA AT CHANGED FRAME RATE” in Step 207. Ex. 2003, ¶ 67.

FIG.6



'041 Patent, FIG. 6.

A POSITA would also understand that the specified output frame rate, specified input frame rate, and the specified playback speed would be received by the frame rate conversion unit because “the frame rate conversion unit 306 changes the frame rate of the input moving image data based on the input frame rate, the output frame rate, and the playback speed.” Ex. 2003, ¶ 68; '041 Patent at 14:32-60 (“The frame rate conversion unit 306 sets the total number of frames of moving image data to be output as one tenth of the total number of frames of the input moving image data. . . . In other words, the frame rate conversion unit 306 changes

the frame rate of the input moving image data based on the input frame rate, the output frame rate, and the playback speed.”).

A POSITA would further understand based on the '041 Patent specification, that the converting step of the algorithm can be programmed in several ways, such as based on decimation and interpolation to adjust the total number of frames for each of the first moving image data and second moving image data. Ex. 2003, ¶ 69; '041 Patent, 9:18-27 (“The conversion of the frame rate is performed based on a known method such as interpolation in addition to decimation described in the above-mentioned example.”); 13:14-30 (“In contrast, a speed, at which the imaging data generated spending 10 minutes from the start time to the end time is played back for five minutes, is the high speed. In this case, the decimation process described below is performed by the frame rate conversion unit 306 in a manner of reducing the total number of frames of the imaging data to a half. For example, the moving image data whose frame rate has been converted to 30 fps is output/played back at an output frame rate of 60 fps for five minutes. Moreover, the imaging data generated spending 10 minutes from the start time to the end time is played back at a speed spending 20 minutes, of which speed is a low-speed frame; and in this case, the total number of frames of the imaging data is interpolated to be doubled by the frame rate conversion unit. For example, the moving image data whose frame rate has been converted to 120 fps is output/played back at the output frame rate of 60

fps for 20 minutes.”); 15:57-62 (“As described above, with the imaging apparatus 1 according to the present invention, the frame rates of a plurality of moving images generated at different frame rates are respectively converted to output the plurality of moving images. Moreover, at this point, frame decimation and interpolation are performed based on a preset playback speed.”).

A POSITA would also understand that the algorithm for the frame rate conversion unit would include transmitting converted frame rates, to the moving image data output unit, for each of the first moving image data and second moving image data, to be output at the converted frame rate(s). Ex. 2003, ¶ 70; ’041 Patent, at 3:39-42 (“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.”); Fig. 6 (“OUTPUT n-TH MOVING IMAGE DATA AT CHANGED FRAME RATE”).

Because the converted output frame rates of the first and second moving image data are based, at least in part, on the specified output frame rates of the first and second moving image data, a POSITA would understand that the converted output frame rates are not necessarily the same as the specified output frame rates. *See Id.* at Claim 1 (“**change a frame rate** of the first moving image data **based on** the first frame rate, **the output frame rate**, and the playback speed.”), 9:18-26, 13:4-30, 14:23-15:26; Ex. 2003, ¶ 71. A POSITA would understand this distinction

through the mathematical relationship provided in the patent specification:

$$x = F_{out} / M * F_{in}$$

'041 Patent, 14:36-38; Ex. 2003, ¶ 71. The “specified input frame rate is F_{in} , the [specified] output frame rate is F_{out} , and the multiplier of the playback speed relative to the equal speed is M .” The “equal speed” is the specified playback speed from the playback specification unit that is desired to be “equal” or “same” for both the first and second moving image data while the “playback speed” is the moving image data input’s original playback speed. '041 Patent at 14:32-60; Ex. 2003, ¶ 72. “ x ” is a “change multiplier” of the total number of frames of the input moving image data, which is what the frame conversion unit uses to decimate or interpolate frames for each of the first and second moving image data. *Id.* A POSITA would understand that such decimation or interpolation of frames would result in a changed output frame rate, distinct from the specified output frame rate from the output specification unit. *Id.*

2. Function

A POSITA would find the function of the “frame rate conversion unit” to be apparent from the claim language of Claim 1, which states that the “a frame rate conversion unit [is] 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.” ’041 Patent, Claim 1; Ex. 2003, ¶ 73.

F. “operating unit”

The claimed “operating unit” should be subject to 35 U.S.C. 112 ¶ 6. While this term does not include “means” or “step” language, it nonetheless recites a “unit” which is a non-structural generic placeholder in the claim that invokes 35 U.S.C. 112 ¶ 6. *Welker Bearing Co.*, 550 F.3d at 1096; *Mass. Inst. of Tech.*, 462 F.3d at 1354; *Personalized Media Commc’ns, LLC*, 161 F. 3d at 704; *Mas-Hamilton Grp.*, 156 F.3d at 1214-15.

There is no specific structure disclosed in this claim limitation or the rest of the claim, but rather a number of different ways that a POSITA would understand to build the functionality that is disclosed in this claim limitation. Ex. 2003, ¶ 74.

A POSITA would understand this term to have the following Structure and Function in view of what is disclosed in the ’041 Patent specification:

Structure: Buttons, dials, or equivalents thereof for accepting various inputs related to the moving image data

Function: accept [an] input[s]

See ’041 Patent, 6:20-44, 8:20-39, 9:38-10:53, 11:3-38, 11:61-12:29, 13:31-62, 15:11-50, 17:24-19:5, FIGS. 1-4C, 6; Ex. 2003, ¶ 75.

1. Structure

A POSITA would understand the structure of the “operating unit” to be “buttons, dials, or equivalents thereof for accepting various inputs related to the moving image data.” Ex. 2003, ¶ 76.

The '041 Patent describes that the “operating unit 209 is constituted by a release button 209a, buttons 209b and 209c, and dials 209d and 209e which are illustrated in the exterior view of FIGS. 2A and 2B; and an unillustrated operation key, cross key, lever, or touch panel superimposed on the monitor 207, and the like.” '041 Patent, at 6:32-38; Ex. 2003, ¶ 77. A POSITA would understand “equivalents thereof” in the proposed construction to include any equivalent physical interface from which to receive a user input, such as the disclosed “operation key, cross key, lever, or touch panel superimposed on the monitor 207, and the like.” *Id.*

2. Function

A POSITA would find the function of the “operating unit” to be apparent from the claim language of Claim 2, which states that the “operating unit” is configured to “***accept an input*** to specify the playback speed.” '041 Patent, Claim 2; Ex. 2003, ¶ 78. As noted elsewhere in the '041 Patent specification, the operating unit can accept multiple inputs other than the playback speed, which is why the function should not be improperly narrowed to only accepting playback speed inputs: “The operating unit 209 accepts the user’s various operation inputs into the imaging

apparatus 1, including the start and end of image capture, inputs related to the settings, or the like. The user can change/set the frame rate and the like of moving image data upon image capture and playback at the imaging apparatus 1, using the button 209b and the dial 209d forming the operating unit 209.” ’041 Patent, at 6:36-43; Ex. 2003, ¶ 78.

III. LEVEL OF ORDINARY SKILL IN THE ART

Patent Owner utilizes Petitioner’s proposed level of skill in the art. Pet. at 6-7; Ex. 2003, ¶ 26.

IV. PETITIONER HAS NOT DEMONSTRATED A REASONABLE LIKELIHOOD OF SUCCESS

The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) so-called secondary considerations where in evidence. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983).

The Board has held that a failure to identify the differences between the claimed subject matter and the prior art is fatal to an obviousness challenge. *See*,

Apple, Inc. v. Contentguard Holdings, Inc., IPR2015-00355, Decision Denying Institution of *Inter Partes* Review, Paper 9 at 9-10 (P.T.A.B. June 26, 2015) (denying institution for failure to identify the differences between the claimed subject matter and the prior art).

In arriving at an obviousness determination, the Board must sufficiently explain and support the conclusions that the prior-art references disclose all the elements recited in the Challenged Claims and a relevant, skilled artisan not only could have made, but would have been motivated to combine all the prior art references in the way the patent claims and reasonably expected success. *Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017). That is, even if all the claim elements are found across a number of references, an obviousness determination must consider whether a person of ordinary skill in the art would have the motivation to combine those references. *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1368 (Fed. Cir. 2016); *Los Angeles Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr. v. Eli Lilly & Co.*, 849 F.3d 1049, 1067 (Fed. Cir. 2017) (vacating and remanding an obviousness determination, in part, because the Board did not make factual finding as to whether there was an apparent reason to combine all three prior art references to achieve the claimed invention and whether a person of skill in the art would have had a reasonable expectation of success from such a combination). This combinability determination, as supported by an

articulated motivation to combine, requires a plausible rationale as to why those prior art references would have worked together. *Broadcom Corp. v. Emulex Corp.*, 732 F.3d 1325, 1335 (Fed. Cir. 2013). Absent some articulated rationale, a “common sense” finding is no different than the conclusory statement “would have been obvious.” *In re Van Os*, 844 F.3d 1359, 1361 (Fed. Cir. 2017). Of additional importance, “knowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references. . . .” *Innogenetics, N.V. v. Abbott Lab’ys.*, 512 F.3d 1363, 1373 (Fed. Cir. 2008).

A. Ground 1A: Morikawa Does Not Render Claims 1-6 Obvious

1. Morikawa Does Not Disclose “a moving image data input unit ...,” as Required by Claim 1 or “inputting 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,” as Required by Claim 6

Petitioner incorrectly cites Morikawa’s multi-frame rate contents as disclosing this limitation. Ex. 2003, ¶ 79. However, a POSITA would not understand a multi-frame rate content to be multiple moving image data inputs. Morikawa explains that a multi-frame rate content is one piece of content where a certain portion of the content is one frame rate and another portion of the same content is another frame rate. *Id.*; Ex. 1004, at [0024] (“The multi-frame rate contents are composed of a high frame-rate portion (second portion) of a high frame rate (second

frame rate) and an ordinary frame rate portion (first portion) of an ordinary frame rate (first frame rate”), Fig. 5 (“START PLAYBACK OF *CONTENT*” and “HAS PLAYBACK OF *CONTENT* ENDED?”). That there is only one piece of content renders Morikawa inapposite to the teachings of the ’041 Patent. *Id.*

2. Morikawa Does Not Disclose “an input frame rate specification unit ...,” as Required by Claim 1 or “specifying the first frame rate of the first moving image data and the second frame rate of the second moving image data,” as Required by Claim 6

Morikawa cannot disclose the “input frame rate specification unit” claim limitation or “specifying the first frame rate of the first moving image data and the second frame rate of the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 80; *see supra* Section V.A.1.

Morikawa also does not disclose “transmitting specified input frame rate to frame rate conversion unit” or the “frame rate conversion unit,” which is required by the software algorithm structure of the “input frame rate specification unit.” Ex. 2003, ¶ 81; *see infra* Section V.A.5.

3. Morikawa Does Not Disclose “an output frame rate specification unit ...,” as required by Claims 1 and 4 or “specifying output frame rate of the first moving image data and output frame rate of the second moving image data that have been input,” as Required by Claim 6

Morikawa cannot disclose the “output frame rate specification unit” claim

limitation or “specifying output frame rate of the first moving image data and output frame rate of the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 82; *see supra* Section V.A.1.

For the reasons further described in Section V.A.5, Morikawa also does not disclose “transmitting specified output frame rates to frame rate conversion unit,” which is required by the software algorithm structure of the “output frame rate specification unit.” Ex. 2003, ¶ 83.

Claims 1 and 6 of the '041 Patent require the specification of the output frame rate of the moving image data, either by a user or other means. Ex. 2003, ¶ 84.

The Petition states that Morikawa’s “rate analysis unit” calculates a “first playback time . . . based on a predetermined playback frame rate” and that Morikawa explains that the “playback frame rate is set based on the display frame rate of the display device.” Pet. at 16; Ex. 2003, ¶ 85. Disingenuously, Petitioner uses ellipses to remove the full quote where Morikawa discloses that, regardless of the required display frame rate, *the output frame rate is always set to 60 Hz*. The full quotation from Morikawa is:

[W]hen the display frame rate is 60 Hz, 120 Hz, 240 Hz,
the payback [sic] frame rate is set to 60 Hz.

Ex. 1004, [0026]. Nowhere 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. Ex. 2003, ¶ 85. Thus, like Iwata, Morikawa's output frame rate is *fixed* rather than variable. *Id.*

The Petition does not cite to any output frame rate other than 60 Hz, and no other output frame rate is disclosed or rendered obvious by Morikawa. Ex. 1003, ¶¶ 37-38; Ex. 2003, ¶ 86. Morikawa states that the output frame rate is “set based on a display frame rate of a display device,” (Ex. 1004, [0025]), but does not explain how, or why, multiple output frame rates are possible or necessary when the very next sentence notes that the playback frame rate is set to 60 Hz regardless of the frame rate required by the display. Ex. 1001, at [0026]; Ex. 2003, ¶ 86. Therefore, the Petition fails to show that Morikawa renders obvious the specification of a playback frame rate for the output video data as required by the claims. *Id.*

4. Morikawa Does Not Disclose “a playback speed specification unit ...,” as required by Claims 1 and 2 or “specifying a same playback speed for the first moving image data and the second moving image data,” as required by Claim 6

Morikawa cannot disclose the “playback speed specification unit” claim limitation or “specifying a same playback speed for the first moving image data and the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 87; *see supra* Section V.A.1.

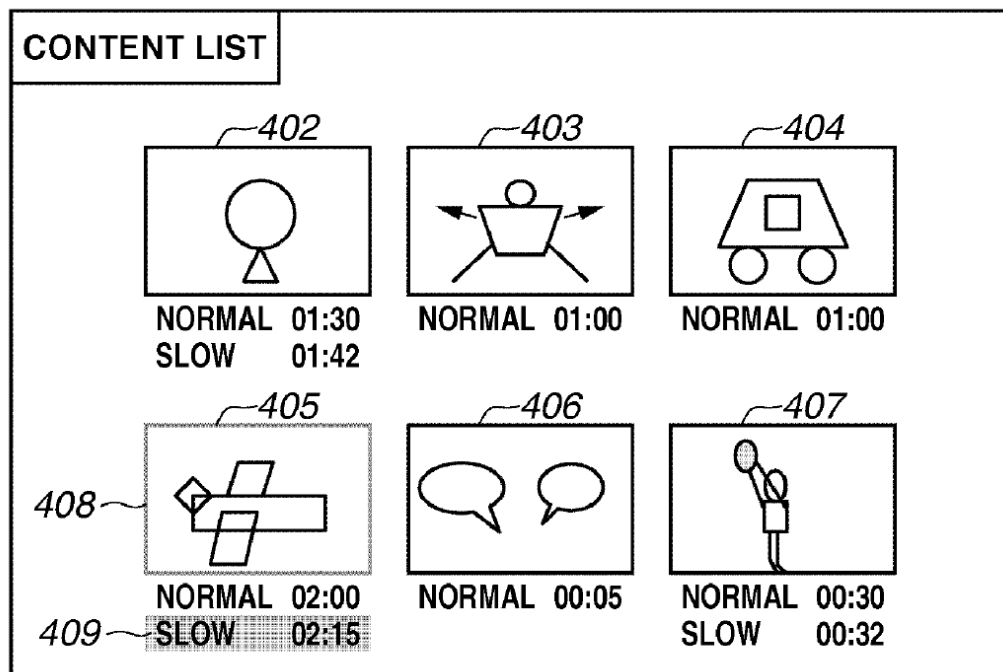
Morikawa cannot teach this software algorithm, particularly the step of “transmitting the specified playback speed to the frame rate conversion unit,”

because it is directed toward offering the user the choice to specify the playback speed of a singular multi-frame rate content *after* any alleged frame rate conversion occurs. Ex. 1004, [0036]-[0038], Fig. 4; Ex. 2003, ¶ 88.

The benefit to which the '041 Patent is directed is sequentially or continuously playing back multiple moving image data so as to have a same playback speed between the first and second moving image data, despite being generated at different frame rates. Ex. 2003, ¶ 89; '041 Patent, 15:11-19 (“[I]f the moving image data generated at different frame rates . . . are sequentially/continuously played back, the frame rate conversion unit can convert the frame rate of each piece of the moving image data so as to have a predetermined output frame rate and the same playback speed between the first and second moving image data.”). Contrast this with Morikawa, where, because there is only one content, the end result is a choice provided to the user: a “Normal” playback time applied to the entire content based on the normal or slower frame rate portion of the content or a “Slow” playback time applied to the entire content based on the faster or “high frame-rate portion.” Ex. 2003, ¶ 89; Ex. 1004, [0036]-[0038] (“In Step S304, *when there is the high frame-rate portion, a total playback time in a case where the entire contents are played back at a slow speed is calculated.* Further, in Step S305, the total playback time in a case where the entire contents are played back at a normal speed is calculated. In Step S305, *when there is not the high frame-rate portion, only the normal playback*

time is calculated. . . . As to the multi-frame rate contents, a normal playback time is displayed on a right side of 'Normal' and a slow playback time is displayed on the right side of 'Slow'. These playback times are displayed in parallel or side by side on a screen.”). Fig. 4 of Morikawa also demonstrates how for each piece of multi-frame rate content, there are two options for playback speed: “Normal” and “Slow.”

FIG.4



'041 Patent, Fig. 4; Ex. 2003, ¶ 89.

Moreover, for the reasons further described in Section V.A.5, Morikawa also does not disclose a “frame rate conversion unit,” which is required by the software

algorithm structure of the “playback speed specification unit.” Ex. 2003, ¶ 90.

5. Morikawa Does Not Disclose “a frame rate conversion unit ...,” as Required by Claim 1 or “changing a frame rate of the first moving image data based on the first frame rate, the output frame rate, and the playback speed, and changing a frame rate of the second moving image data based on the second frame rate, the output frame rate, and the playback speed,” as Required by Claim 6

Morikawa cannot disclose the “frame rate conversion unit” claim limitation or “changing a frame rate of the first moving image data ...and changing a frame rate of the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 91; *see infra* Section V.A.1.

Moreover, neither the software algorithm structure of the “frame rate conversion unit” which requires “receiving specified playback speed for both the first and second moving image data” and “converting input frame rate to a frame rate that is output, for each of the first moving image data and second moving image data, based on the . . . specified playback speed” nor the corresponding function of “changing a frame rate . . . based on the . . . playback speed” is disclosed by Morikawa. Ex. 2003, ¶ 92. As described above in Section V.A.4, any alleged specification of the playback speed in Morikawa is made *after* Petitioner’s alleged frame rate conversion. *Id.*

As noted in Section IV.E.1, the changed frame rates of the first and second

moving image data in the Challenged Claims are based, at least in part, on the specified output frame rates of the first and second moving image data. Ex. 2003, ¶ 93. Therefore, a POSITA would understand that the changed output frame rates are not necessarily the same as the specified output frame rates. *See* '041 Patent, Claim 1 (“*change a frame rate* of the first moving image data *based on* the first frame rate, *the output frame rate*, and the playback speed.”). No such distinction is present in Morikawa, which merely states: “the playback frame rate is set based on a display frame rate of a display device. More specifically, when the display frame rate is 60 Hz, 120 Hz, 240 Hz, the payback frame rate is set to 60 Hz.” Ex. 1004, [0025]-[0026]; Ex. 2003, ¶ 93. As a result these claim limitations cannot be obviated by Morikawa which, at best, just changes the multiple input frame rates of a single piece of content into changed output frame rates. *Id.*

B. Ground 1B: Morikawa, Alone or in Combination with Takabe, Does Not Render Claim 3 Obvious

- 1. Takabe Does Not Disclose “... 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,” as Required by Claim 3**

Takabe is silent regarding displaying input frame rates, output frame rates, or playback speeds on its circular display. Ex. 2003, ¶ 94.

Claim 3 also requires a “first frame rate” and a “second frame rate” along with a “playback speed” for both the first and second moving image data. Ex. 2003, ¶ 95. Takabe is merely directed towards “set values for the shutter speed and aperture on a digital camera” to capture input and therefore cannot disclose a circular display for features like frame rate and playback speed. *Id.*; Ex. 1005, 1:4-7. Moreover, a POSITA would understand that Takabe is only directed to, at best, set values for a given image or video, whereas the claimed limitation requires “the playback speed” which is shared between two moving image data inputs. *Id.*

- 2. Petitioner Does Not Show That a POSITA Would Be Motivated to Combine Morikawa with Takabe**

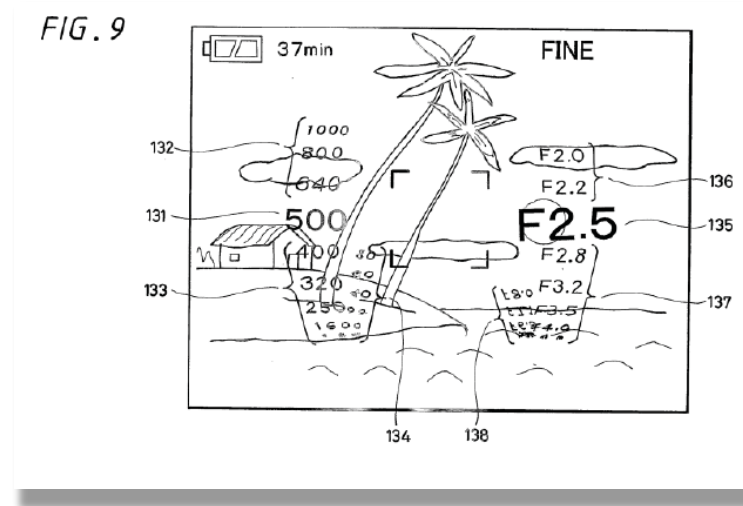
The Petitioner argues that Claim 3 is rendered obvious over a combination of

Morikawa with Takabe’s circular digital camera display. Pet. at 29-31. Petitioner’s obviousness arguments are predicated on the idea that “[i]t would have been obvious [] to use Takabe’s circular ring shape interface component to display and enable a user to specify the moving image parameters described in the apparatus of Morikawa, such as the first frame rate [], second frame rate [], or the playback speed [].” Pet. 29; Ex. 2003, ¶ 96. But Petitioner’s motivations to combine, predicated to Takabe’s statements that the circular display is “easy to understand,” (*id.*) relies entirely on hindsight. Ex. 2003, ¶ 96.

Takabe² discloses a “display method and display device” for displaying set values where multiple levels of set values exist, “such as the set values for the shutter speed and aperture on a digital camera, for example.” Ex. 1005, 1:6-7; Ex. 2003, ¶ 97. It discloses that “values and items for states that can be selected in multiple stages are positioned in order in designated places within a virtually set section of a circle or ellipse on the display panel.” Ex. 1005, Summary. Figure 9 of Takabe is

² Although the Petition states that “[n]one of the references were cited during prosecution of the ’041 Patent” (Pet. at 3), a Japanese counterpart of Takabe, JP2004363707, was submitted to the United States Patent and Trademark Office in an Information Disclosure Statement and considered during prosecution. Ex. 1002, at 26.

shown below:



In arriving at an obviousness determination, the Board must sufficiently explain and support the conclusions that the prior art references disclose all the elements recited in the Challenged Claims, and a relevant skilled artisan not only could have made but would have been motivated to combine all the prior art references in the way the patent claims. *Pers. Web*, 848 F.3d at 994. That is, even if all the claim elements are found across a number of references, an obviousness determination must consider whether a POSITA would have been motivated to combine those references. *Intelligent Bio-Sys.*, 821 F.3d at 1368; *L.A. Biomedical Rsch. Inst. at Harbor-UCLA Med. Ctr.*, 849 F.3d at 1067 (vacating and remanding an obviousness determination, in part, because the Board did not make factual findings as to whether there was an apparent reason to combine all three prior art references to achieve the claimed invention and whether a POSITA would have had

a reasonable expectation of success from such a combination). This combination determination, as supported by an articulated motivation to combine, requires a plausible rationale as to why those prior art references would have worked together. *Broadcom*, 732 F.3d at 1335.

A person of skill in the art would not have looked to combine Morikawa, which deals with multi-frame rate content (as noted in Section V.A) and the digital camera or video camera of Takabe (Ex. 1005 at 1:10-13) in order to pick one of the two alleged playback speeds of Morikawa (“Normal” or “Slow”) in a circular display. Ex. 2003, ¶ 98. A person of skill in the art would not find the technical combination feasible because Takabe’s video camera would not likely be able to manipulate multi-frame rate content after it has already been received. *Id.* For example, even if the multi-frame content were uploaded through a memory card, the specification of Takabe is unclear on how it would provide a user the capability to change the playback speed. *Id.*

A POSITA would understand the description of Takabe to be directed towards a user specifying metrics in which to capture content at the input, not manipulate input content by adjusting playback speed. Ex. 2003, ¶ 99.

The Petition should, therefore, be denied as to Ground 1B regarding Claim 3.

C. Ground 1C: Morikawa, Alone or in Combination with Walpole, Does Not Render Claims 5 Obvious

1. Walpole Does Not Disclose “... 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,” as Required by Claim 5

Claim 5 requires both the software algorithm structure and function of the claimed “output frame rate specification” as construed in Section IV.B. Ex. 2003, ¶ 100. Walpole is silent on the algorithm steps of “specifying variable frame rates for each of different moving image data” and “transmitting specified output frame rates to frame rate conversion unit” as well as the function of “specify[ing] variable output frame rate of the first moving image data and variable output frame rate of the second moving image data that have been input into the moving image data input unit.” *Id.*

Walpole is silent on being able to specify a first and second output frame rates of two different moving image data inputs based on currently available network bandwidth, for example. Ex. 2003, ¶ 101.

Petitioner ignores Claim 5’s language that “the output frame rate [is] based on network band information of an external device receiving the moving image data”. Pet. at 35; Ex. 2003, ¶ 102. The ’041 Patent describes how, when the claim describes an external device, “[a]ssumed is a tablet PC or a smartphone, for example, as the

external device that supports wireless network communication likewise and includes a display monitor.” ’041 Patent, 16:55-17:14; Ex. 2003, ¶ 102. A POSITA would understand such an “external device” to be a “device other than the imaging apparatus” that is claimed. ’041 Patent at 7:61-65, 12:30-55; Ex. 2003, ¶ 102. A POSITA would understand Walpole to only disclose, at most, specifying the output frame rate based on network band information on the device from which the moving image data output originated or in *real-time streaming* from remote servers. Ex. 1006, at 13 (“This paper has described the architecture of a distributed multimedia player that integrates support for advanced adaptive QoS control, complex presentations, and real-time transmission of continuous media streams from multiple remote servers.”); Ex. 2003, ¶ 102.

2. Petitioner Does Not Show That a POSITA Would Be Motivated to Combine Morikawa with Walpole

Ground 1C combines Morikawa and Walpole to attempt to render Claim 5 obvious. Claim 5 requires configuring the output frame rate specification unit to specify the output frame rate based on network band information of an external device. Ex. 2003, ¶ 103.

Walpole is a conference publication that describes an “adaptive Internet-based video and audio player.” Ex. 1006 at 3; Ex. 2003, ¶ 104. Walpole is a real-time system and proposes an *adaptive* application that attempts to “preserve presentation

quality in one dimension” by allowing quality to vary in response to available network bandwidth. *Id.* Although the Petition does not adequately state a motivation to combine, the Petition states that it would have been obvious to combine Walpole with Morikawa because “Morikawa describes its video processing system as network-enabled.” *Id.*; Pet. at 33.

A POSITA would not have been motivated to combine Morikawa and Walpole to reach the invention of Claim 5. Morikawa only describes that it is network-enabled on the input side: “an input unit 102 is an input interface of video contents. Input sources include . . . a server via a network.” Ex. 1004, [0023]; Ex. 2003, ¶ 105. Claim 5 requires altering the *output frame rate* based on network band information of an external device *receiving* the output. Ex. 2003, ¶ 105. But Morikawa has no need for the teachings of Walpole because it does not output data over a network. *Id.* The only disclosure of a display device in Morikawa is “a liquid crystal display device or plasma display device” that displays the display data on a screen. *Id.*; Ex. 1004, ¶ [0033].

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions and the combination yielded nothing more than predictable results to one of ordinary skill in the art. *KSR*, 550 U.S. at 416; *B/E Aerospace, Inc.*

v. C&D Zodiac, Inc., 962 F.3d 1373, 1379 (Fed. Cir. 2020); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63 (1969); *Great Atl. & P. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147, 152 (1950). Because there is no disclosure of the system in Morikawa outputting information over a network, there would have been no need for the POSITA to look to the rate-limiting disclosure in Walpole to solve the non-existent problem of fluctuating network bandwidth, except through the application of impermissible hindsight. The combination of Morikawa and Walpole would not yield the result of the claimed invention predictably without changing the respective functions of Morikawa and Walpole (*e.g.*, the content in Morikawa would have to be output over a network).

The Petition should therefore be denied as to Ground 1C regarding Claim 5.

D. Ground 2A: Suzuki Does Not Render Claims 1 and 6 Obvious

1. Suzuki Does Not Disclose “a moving image data input unit ...,” as Required by Claim 1 or “inputting 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,” as Required by Claim 6

Petitioner incorrectly cites to Suzuki’s multi-frame rate contents as disclosing this limitation. *See* Ex. 1007, Fig. 8 (showing the frame rate for a singular moving image data changing over time); Ex. 2003, ¶ 107. Suzuki fails to obviate these claim

limitations. *See supra* V.A.1.

2. Suzuki Does Not Disclose “an input frame rate specification unit...,” as Required by Claim 1 or “specifying the first frame rate of the first moving image data and the second frame rate of the second moving image data,” as Required by Claim 6

Suzuki cannot disclose the “input frame rate specification unit” claim limitation or “specifying the first frame rate of the first moving image data and the second frame rate of the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 108; *see supra* Section V.D.1.

Suzuki does not disclose “transmitting specified input frame rate to frame rate conversion unit” or the “frame rate conversion unit,” which is required by the software algorithm structure of the “input frame rate specification unit.” Ex. 2003, ¶ 109; *see infra* Section V.D.5.

3. Suzuki Does Not Disclose “an output frame rate specification unit ...,” as required by Claims 1 and 4 or “specifying output frame rate of the first moving image data and output frame rate of the second moving image data that have been input,” as Required by Claim 6

Suzuki cannot disclose the “output frame rate specification unit” claim limitation or “specifying output frame rate of the first moving image data and output frame rate of the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 110; *see supra* Section V.D.1.

For the reasons further described in Section V.D.5, Suzuki does not disclose “transmitting specified output frame rates to frame rate conversion unit” or the “frame rate conversion unit,” which is required by the software algorithm structure of the “output frame rate specification unit.” Ex. 2003, ¶ 111; *see infra* Section V.D.5.

4. Suzuki Does Not Disclose “a playback speed specification unit ...,” as required by Claim 1 or “specifying a same playback speed for the first moving image data and the second moving image data,” as required by Claim 6

Suzuki cannot disclose the “playback speed specification unit” claim limitation or “specifying a same playback speed for the first moving image data and the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 112; *see supra* Section V.D.1.

Suzuki does not and cannot disclose the “playback speed specification unit” claim limitation or “specifying a same playback speed for the first moving image data and the second moving image data.” Ex. 2003, ¶ 113. If at all, Suzuki sets a “reproduction speed” for only one moving image data, and not a first moving image data and the second moving image data, as required by Claims 1 and 6. *Id.*; Ex. 1007 at [0087]-[0089]. Petitioner mistakenly cites to Fig. 8, object 801 for showing allegedly a same playback speed for multiple moving image data. Pet. at 40-41; Ex. 2003, ¶ 113. However, Suzuki itself contradicts that, and states: “FIG. 8 illustrates

moving image data that is captured and recorded as described above. Moving image data 801 includes a 60-fps moving image in the period from T0 to T1, a 240-fps moving image in the period from T1 to T2, and a 120-fps moving image in the period from T2 to T3.” Ex. 1007, [0044]; Ex. 2003, ¶ 113. In other words, a POSITA would understand object 801 in Fig. 8 of Suzuki to be one multi-frame rate data, similar to that of Morikawa. Ex. 2003, ¶ 113. For at least the same reasons therefore, as in Section V.A.4, Suzuki fails to teach this limitation.

Morikawa also does not disclose a “frame rate conversion unit,” which is required by the software algorithm structure of the “playback speed specification unit.” Ex. 2003, ¶ 114; *see infra* Section V.D.5.

5. Suzuki Does Not Disclose “a frame rate conversion unit ...,” as Required by Claim 1 or “changing a frame rate of the first moving image data based on the first frame rate, the output frame rate, and the playback speed, and changing a frame rate of the second moving image data based on the second frame rate, the output frame rate, and the playback speed,” as Required by Claim 6

Suzuki cannot disclose the “frame rate conversion unit” claim limitation or “changing a frame rate of the first moving image data ...and changing a frame rate of the second moving image data,” which requires “first moving image data” and “second moving image data.” Ex. 2003, ¶ 115; *see supra* Section V.D.1.

Moreover, neither the software algorithm structure of the “frame rate

conversion unit” which requires “receiving specified playback speed for both the first and second moving image data” and “converting input frame rate to a frame rate that is output, for each of the first moving image data and second moving image data, based on the . . . specified playback speed” nor the corresponding function of “changing a frame rate . . . based on the . . . playback speed” is disclosed by Morikawa. Ex. 2003, ¶ 116.

As noted in Section IV.E.1, the changed frame rates of the first and second moving image data in the Challenged Claims are based, at least in part, on the specified output frame rates of the first and second moving image data. Therefore, a POSITA would understand that the changed output frame rates are not necessarily the same as the specified output frame rates. Ex. 2003, ¶ 117; ’041 Patent, Claim 1 (“*change a frame rate* of the first moving image data *based on* the first frame rate, *the output frame rate*, and the playback speed.”). No such distinction is present in Suzuki, which merely states: “In Step S701, the control unit 107 sets the interval of frames to be displayed to FR/60xM according to the reproduction speed in high-speed reproduction and the frame rate of the moving image.” Ex. 1007, [0087]. As a result these claim limitations cannot be obviated by Morikawa which, at best, just changes the multiple input frame rates of a single piece of content into changed output frame rates. Ex. 2003, ¶ 117.

E. Ground 2B: Suzuki, Alone or in Combination with Takabe Does Not Render Claims 3 Obvious

- 1. Takabe Does Not Disclose “... 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,” as Required by Claim 3**

See Section VII.B.1 above. Ex. 2003, ¶ 118.

- 2. Petitioner Does Not Show That a POSITA Would Be Motivated to Combine Suzuki with Takabe**

The Petitioner argues that Claim 3 is rendered obvious over a combination of Suzuki with Takabe’s circular digital camera display. Pet. at 47-50; Ex. 2003, ¶ 119.

Petitioner’s obviousness arguments are predicated on the idea that “[i]t would have been obvious [] to use Takabe’s circular ring shape interface component to display and enable a user to specify the moving image parameters described in the apparatus of Suzuki, such as the first frame rate [], second frame rate [], or the playback speed [].” Pet. at 47; Ex. 2003, ¶ 120. But Petitioner’s motivations to combine, predicated on Takabe’s statements that the circular display is “easy to understand,” (*id.*) does not provide sufficient motivation to combine, absent impermissible hindsight. Ex. 2003, ¶ 121.

Petitioner and its expert merely parrot back generic statements regarding obviousness, without actually providing a motivation to combine besides ease of use. Pet. at 47; Ex. 1003, ¶¶ 104-107. A statement that the two references *could* be combined is insufficient; it does not “imply a motivation to pick out those two references and combine them to arrive at the claimed invention.” *Pers. Web*, 848 F.3d at 993-94. And, regarding the bare assertion that it would have been obvious to “incorporate the well-known techniques of Takabe’s [sic] into Suzuki to achieve the predictable benefits described in Takabe” (Pet. at 48), it is necessary to provide evidence concerning “which of the prior art elements allegedly has a known function, what that function is, and why that function is allegedly predictable.” *Johns Manville Corp. v. Knauf Insulation, Inc.*, IPR2018-00827, Paper 9 at 19 (P.T.A.B. Oct. 16, 2018). An unsupported statement that combining the teachings of the two references would have been obvious to a POSITA because it would result in ease of use does not meet Petitioner’s burden to demonstrate that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention. Institution of Ground 2B should, therefore, be denied.

F. Ground 2C: Suzuki, Alone or in Combination with Sekiguchi Does Not Render Claim 4 Obvious

1. Sekiguchi Does Not Disclose “... 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,” as Required by Claim 4

Claim 4 requires both the software algorithm structure and function of the claimed “output frame rate specification” as construed in Section IV.B. Sekiguchi is silent on the algorithm steps of “specifying variable frame rates for each of different moving image data” and “transmitting specified output frame rates to frame rate conversion unit” as well as the function of “specify[ing] variable output frame rate of the first moving image data and variable output frame rate of the second moving image data that have been input into the moving image data input unit.” Ex. 2003, ¶ 122.

Sekiguchi is silent on being able to specify a first and second output frame rates of two different moving image data inputs based on information of an external device, for example. *Id.*, ¶ 123.

Petitioner ignores Claim 4’s language that “the output frame rate [is] based on information of an external device receiving the moving image data”. Pet. at 52; Ex. 2003, ¶ 124. Petitioner merely calls a “display panel” the information of an external device. *Id.* The ’041 Patent describes how, when the claim describes an external

device, “[a]ssumed is a tablet PC or a smartphone, for example, as the external device that supports wireless network communication likewise and includes a display monitor.” ’041 Patent , 16:55-17:14; Ex. 2003, ¶ 124. A POSITA would understand such an “external device” to be a “device other than the imaging apparatus” that is claimed. ’041 Patent at 7:61-65; *see also id.* at 12:30-55; Ex. 2003, ¶ 124. A POSITA would understand Sekiguchi to only disclose, at most, specifying the output frame rate based on a “frame rate [that] is synchronized with the refresh rate of a display panel.” Pet. at 52; Ex. 2003, ¶ 124. However a POSITA would understand that it is the display panel of the device receiving the moving image data, and therefore does not meet this claim limitation. Ex. 2003, ¶ 124.

2. Petitioner Does Not Show That a POSITA Would Be Motivated to Combine Suzuki with Sekiguchi

Ground 2C regarding combining Suzuki with Sekiguchi to reach the invention of Claim 4 fails because a POSITA would not have been motivated to combine Sekiguchi, which discloses modifying a frame rate in response to network conditions, with Suzuki, which only discloses a fixed frame rate. Ex. 2003, ¶ 125.

Suzuki describes a video camera recording system which possesses the capability to play video. Ex. 2003, ¶ 126. The videos recorded with Suzuki’s video camera functionality are played back at a later time. *Id.* Sekiguchi presents a video playback system, such as a TV or a set top box, that plays video from a source, such

as broadcast TV input. *Id.* While Suzuki and Sekiguchi are both directed to the field of digital video, Suzuki deals with video camera devices without any network capability and Sekiguchi is only a broadcast video playback device. *Id.* Petitioner makes no showing of how an artisan would have had a reasonable expectation of success from combining systems from these two different technological fields. *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1360–61 (Fed. Cir. 2017) (quoting *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Pat. Litig.*, 676 F.3d 1154, 1068–69 (Fed. Cir. 2012)). (“[W]here a party argues a skilled artisan would have been motivated to combine references, it must show the artisan ‘would have had a reasonable expectation of success from doing so.’”). Sekiguchi also discloses “control[ling] the frame rate of the video data in units of frames to 60 fps so that the frame rate is synchronized with the refresh rate of the panel.” Ex. 1008, [0031]; Ex. 2003, ¶ 127. However, as discussed above, Suzuki only discloses a fixed output frame rate. *Id.* Therefore, the combination of Sekiguchi with Suzuki is not technically possible, nor would a POSITA have been motivated to make this combination. *Id.*

The Petition also merely states in a single sentence that a POSITA “would have been motivated to modify Suzuki to specify the output frame rate of a display device, as taught by Sekiguchi, in order to avoid . . . anomalies.” Pet. at 50-51; Ex. 2003, ¶ 128. But “avoiding anomalies” is merely the recognition of a problem, and

neither the Petition nor the identical expert declaration explain *how* Suzuki would have been modified based on the teachings of Sekiguchi. There is no description, for example, of how the modified system would detect the frame rate required by the display device. Ex. 2003, ¶ 128. There is no description of how the modified frame rate would impact playback speed. *Id.* And, there is no description or discussion of the steps that a POSITA would take to make the proposed combination. *Id.* Even ignoring that the references are not combinable, the Petition does not sufficiently articulate a motivation to combine, and therefore Ground 2C should be denied. *Id.*

G. Ground 2D: Suzuki, Alone or in Combination with Walpole Does Not Render Claim 5 Obvious

- 1. Walpole Does Not Disclose “... 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,” as Required by Claim 5**

See Section VII.C.1 above. Ex. 2003, ¶ 129.

- 2. Petitioner Does Not Show That a POSITA Would Be Motivated to Combine Suzuki with Walpole**

Ground 2D combines Suzuki and Walpole to attempt to render Claim 5 obvious. Ex. 2003, ¶ 130. Claim 5 requires configuring the output frame rate specification unit to specify the output frame rate based on network band information of an external device. *Id.*

Walpole is a conference publication that describes an “adaptive Internet-based

video and audio player.” Ex. 1006 at 3; Ex. 2003, ¶ 131. Walpole is a real-time system and proposes an *adaptive* application that attempts to “preserve presentation quality in one dimension” by allowing quality to vary in response to available network bandwidth. *Id.* Aside from leading to a “better user experience” (Pet. at 53), the Petition does not state a motivation to combine Suzuki and Walpole, nor does it state how a POSITA would have done so. *Id.* Therefore, a POSITA would not have been motivated to combine Suzuki and Walpole to reach the invention of Claim 5. *Id.*

Suzuki does not disclose that any portion of the system is connected to the internet, instead disclosing a closed system including an image capturing unit, display unit, operation unit, and recording medium. Ex. 1007, Fig. 1; Ex. 2003, ¶ 132. Because there is no disclosure of the system in Suzuki outputting information over a network, there would have been no need for the POSITA to look to the rate-limiting disclosure in Walpole to solve the non-existent problem of fluctuating network bandwidth except through the impermissible application of hindsight. Ex. 2003, ¶ 132.

Specifically, Walpole teaches a streaming server that uses MPEG compressed video for streaming. Ex. 2003, ¶ 133. The frame rate at the server is adaptively reduced by dropping compressed video frames. That means the frame rate of Walpole can only be reduced and not increased. *Id.* The frame rate reduction in

Walpole's system is limited by the frame dependencies and the structure of the group of pictures, while the delays in the network are used to estimate the frame rate reduction in the compressed video streamed by the server. *Id.* The playback device of Walpole decodes the compressed video and plays the video at normal speed. *Id.* The purpose of this system is to adaptively reduce the framerate at the server so that the receiver does not have to do any adaptation. *Id.*

Suzuki's invention teaches a playback device that plays a locally stored file. Ex. 2003, ¶ 134. Any frame rate conversion in Suzuki is performed on an uncompressed video obtained by processing the multi-frame rate input video data (which may have to be decoded if the input video is compressed). *Id.*

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions and the combination yielded nothing more than predictable results to one of ordinary skill in the art. *KSR*, 550 U.S. at 416; *B/E Aerospace, Inc. v. C&D Zodiac, Inc.*, 962 F.3d 1373, 1379 (Fed. Cir. 2020); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63 (1969). A POSITA working with Suzuki's invention that deals with multi-frame rate input video data would not have been motivated to combine Walpole's compressed domain video adaptation in a real-time streaming

solution. Ex. 2003, ¶ 135. The systems are not similar and there is no motivation to combine because the combination of Suzuki and Walpole would not yield the result of the claimed invention predictably without changing the respective functions of Suzuki and Walpole (*e.g.*, the compressed domain video adaptation in a real-time streaming solution). *Id.*

The Petition should, therefore, be denied as to Ground 2D regarding Claim 5.

V. THE PETITION SHOULD BE DENIED IN THE DISCRETION OF THE DIRECTOR UNDER 35 U.S.C. § 314(A)

A. Petitioner’s Lack of Sotera-Type Stipulation Weighs in Favor of Discretionary Denial

This Petition is co-extensive with invalidity arguments that Petitioner has already raised in the District Court Litigation. Ex. 2002, at 27-32, 53-56, 140-160. But Petitioner has not made a *Sotera*-style stipulation that “if IPR is instituted, [Petitioner] will not pursue in the District Court Litigation any ground raised or that could have been reasonably raised in an IPR” in its Petition. *See Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12, 13-14 (P.T.A.B. Dec. 1, 2020) (designated Dec. 17, 2020). Petitioner’s inability to commit to non-duplicative efforts between the District Court Litigation and this proceeding weighs in favor of discretionarily denying institution.

B. Petitioner’s Improper Motion for Joinder Weighs in Favor of Discretionary Denial

Institution should be denied because Petitioner failed to comply with the

Board's Consolidated Trial Practice Guide ("Trial Practice Guide") and its rules governing Motion for Joinder. Specifically, Petitioner is directed to request a conference call involving the Board, Patent Owner, and Petitioner of the first proceeding (TikTok Inc.) in order to timely manage all relevant proceedings. Trial Practice Guide, at 76 ("A party who files a motion for joinder should arrange a conference call with the panel, petitioner, and patent owner of the first proceeding within five business days of filing the motion. The purpose of the conference call is for the panel to timely manage the proceedings."). Petitioner failed to do so, which prevents the timely management of this proceeding in relation to the docketed deadlines of the ongoing district court litigations with Petitioner and ByteDance Ltd. (one of the real party-in-interests to IPR2022-01548), and IPR2022-01548 itself. In view of this failure to follow this Board's Trial Practice Guide and its repercussions on the timeline of concurrent proceedings, the Petition should be denied in the Director's discretion under 35 U.S.C. § 314(a).

VI. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board deny institution of the Petition in its entirety.

Respectfully submitted,

Dated: September 13, 2023

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CERTIFICATE OF WORD COUNT

The undersigned hereby certifies that the portions of the above-captioned PATENT OWNER'S RESPONSE specified in 37 C.F.R. § 42.24 has 13,437 words in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24. This word count was prepared using Microsoft Word for Office 365.

Respectfully submitted,

September 13, 2023

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