

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD. and
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner,

v.

MAXELL, LTD.,
Patent Owner.

IPR2024-00867
Patent 10,176,848 B2, C1

Before NEIL T. POWELL, TERRENCE W. McMILLIN, and
KEVIN C. TROCK, *Administrative Patent Judges*.

TROCK, *Administrative Patent Judge*.

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

I. INTRODUCTION

We have authority to hear this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision issues pursuant to 35 U.S.C. § 318(a) (2018) and 37 C.F.R. § 42.73 (2019). For the reasons discussed herein, we determine that Petitioner, Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. (collectively, “Petitioner”) has shown by a preponderance of the evidence that claims 11, 12, 16, 17, 19, 20, and 84 (the “challenged claims”) of U.S. Patent No. 10,176,848 B2, C1 (Ex. 1001, “the ’848 patent”) are unpatentable. *See* 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d) (2019).

II. BACKGROUND

A. Procedural History

Petitioner filed a Petition, Paper 3 (“Pet.” or “Petition”), to institute an *inter partes* review of the challenged claims. Maxell, Ltd. (“Patent Owner”) timely filed a Preliminary Response, Paper 7 (“Prelim. Resp.”). Based on the record at that time, we issued a Decision granting *inter partes* review. Paper 9 (“Dec.” or “Institution Decision”).

After institution, Patent Owner filed a Response (Paper 20, “PO Resp.” or “Resp.”), Petitioner filed a Reply (Paper 24, “Pet. Reply” or “Reply”), and Patent Owner filed a Sur-reply (Paper 25, “PO Sur-reply” or “Sur-reply”).

On August 14, 2025, an oral hearing was held. A transcript of the hearing is made part of the record. Paper 34.

B. Real Party in Interest

Petitioner identifies Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. as the real parties in interest. Pet. 58. Patent Owner identifies itself as the real party in interest. Paper 5, 1.

C. Related Proceedings

According to the parties, the '848 patent is the subject of the following action: *Maxell, Ltd. v. Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc.*, No. 5:23-cv-00092-RWS (E.D. Tex.). Pet. 59; Paper 5, 1.

D. The '848 Patent (Ex. 1001)

The '848 patent relates to “a recording and reproducing apparatus and a recording and reproducing method, suitable for application to, e.g., a video camera.” Ex. 1001, 1:15–17. By way of background, the '848 patent describes that a video camera “can set a plurality of chapters in one scene, and can cue each chapter,” wherein a “scene means a series of images recorded during a period from when a user depresses a record button to start photographing to when the user depresses again the record button to stop photographing” and a “chapter means a delimiter of images in one scene.” *Id.* at 1:29–34, 1:36–37. The '848 patent notes that with the large capacity of a recording medium of a recent video camera, scenes photographed for a long time duration or a plurality of times can be stored, and “[i]t is therefore difficult for a user to quickly find a target scene from a number of scenes recorded in the recording medium.” *Id.* at 1:55–61. The '848 patent states that its invention “provides a recording and reproducing apparatus and a

recording and reproducing method allowing a user to rapidly and easily find a target chapter or scene.” *Id.* at 2:18–22.

The ’848 patent describes a recording and reproducing apparatus that “can selectively reproduce a particular chapter in accordance with user settings, such as a chapter on which a [very important person (VIP)] appears frequently.” Ex. 1001, 2:37–40. The apparatus comprises:

a recording and reproducing unit for recording and reproducing image information on the scene obtained through photographing, relative to a predetermined first recording medium; a face recognizing execution unit for executing a face recognizing process for a photographed image based on the image information; an importance level setting unit for setting an importance level of each chapter in accordance with a result of the face recognizing process for a very important person (VIP) set by a user; and a control unit for controlling the recording and reproducing unit so as to selectively reproduce each chapter having a relevant importance level, among importance levels of respective chapters.

Id. at 2:23–36.

According to the ’848 patent, during photographing with a video camera, encoded image information and scene management information, which includes chapter management information and face recognizing management information, is recorded. Ex. 1001, 5:14–20. The ’848 patent describes the chapter management information as including “information on a position, length, importance level, summary and the like of a start frame of

each chapter.” *Id.* at 5:20–23. Figure 2 of the ’848 patent is reproduced below.

FIG. 2

21	22	23
001	hh:mm:ss:ff	2
002	hh:mm:ss:ff	1
003	hh:mm:ss:ff	3
⋮	⋮	⋮

20

Figure 2, above, depicts an example of the chapter management information 20, which includes “chapter ID information 21, start frame position information 22 and chapter importance level information 23, respectively of each chapter set in a scene.” *Id.* at 5:28–33.

The ’848 patent describes the face recognizing management information as including “information on a position of a frame on which a face recognized by the face recognizing execution unit appears during

photographing, an expression and size of the face on the frame, and the like.” Ex. 1001, 5:23–27. Figure 3 of the ’848 patent is reproduced below.

FIG. 3

001	filepath/file.jpg	hh:mm:ss:ff ...
002	filepath/file.jpg	
003	filepath/file.jpg	hh:mm:ss:ff ...
⋮	⋮	

24

Figure 3, above, depicts an example of the face recognizing management information 24, which includes “face ID information 25 for each face recognized in the corresponding scene, path/file name information 26 and frame position information 27.” *Id.* at 5:47–52. The frame position information 27 “is information representative of a frame position (hour, minute, second and frame number) where a corresponding face is recognized” and “includes all frame positions on which a corresponding face appears.” *Id.* at 5:65–6:2.

The ’848 patent describes a “photographed image recording process” by setting the face recognizing function “valid.” Ex. 1001, 6:24–31; *see also id.* at FIG. 5. According to the ’848 patent, “if a user forms a VIP list registering VIP’s before photographing, the face recognizing process may be executed by template matching using the VIP list.” *Id.* at 6:51–54. For example, “[f]aces of objects having a high appearance frequency such as

family members may be registered beforehand in the video camera . . . as a VIP list.” *Id.* at 7:63–65.

The ’848 patent also describes a method of determining an importance level of each chapter in one scene according to the results of the face recognizing process. Ex. 1001, 7:23–26. The ’848 patent explains that the number of appearance frequencies of the VIP is counted for each chapter of the object scene. *Id.* at 8:26–29; *see also id.* at FIG. 8. According to the ’848 patent, “the highest chapter importance level of ‘1’ is set to the chapter on which the VIP appears most frequently, and the lowest chapter importance level of ‘5’ is set to the chapter on which the VIP appears least frequently.” *Id.* at 8:50–53.

The ’848 patent also describes an object scene reproducing method based upon the chapter importance level of each chapter. Ex. 1001, 8:66–9:1. Figure 9 of the ’848 patent is reproduced below.

FIG. 9

CHAPTER ID	CHAPTER IMPORTANCE LEVEL
001	5
002	1
003	5
004	3
005	1
006	5
007	5
008	5
009	3

Figure 9, above, depicts “an example of the chapter structure of an object scene and a chapter importance level set to each chapter.” *Id.* at 9:10–12. The ’848 patent describes a “standard reproducing mode,” wherein “all

chapters are sequentially reproduced in an order of smaller chapter ID, irrespective of the chapter importance level set to each chapter.” *Id.* at 9:20–28. The ’848 patent also describes an “express reproducing mode,” wherein “only the chapters having the chapter importance level ‘3’ or smaller (only the chapters having the importance levels ‘1’ to ‘3’) are reproduced.” *Id.* at 9:29–45. The ’848 patent further describes a “superexpress reproducing mode,” wherein “only the chapters having the chapter importance level ‘1’ are reproduced.” *Id.* at 9:46–54.

E. Challenged Claims

Petitioner challenges 11, 12, 16, 17, 19, 20, and 84 of the ’848 patent. Pet. 1. Claims 11 and 12 (Ex. 1001, 16:23–49) depend directly or indirectly from independent claim 8 (*id.* at 15:51–16:9), which was corrected after issuance (Ex. 1003, 21) and canceled in reexamination (Ex. 1002, 1:18). Claims 16 and 17 (Ex. 1001, 17:34–18:3) depend directly or indirectly from independent claim 13 (*id.* at 16:50–17:17), which was canceled in reexamination (Ex. 1002, 1:18). Claims 19 and 20 (Ex. 1001, 18:30–57) depend from independent claim 18 (*id.* at 18:4–29), which was canceled in reexamination (Ex. 1002, 1:18). Claim 84 (Ex. 1002, 8:37–10:21) is independent, and was added in reexamination (*id.* at 1:19–20) and corrected (Ex. 1004, 10–11). Claim 11 (incorporating the limitations of canceled claim 8) is generally illustrative and reproduced below.

[8pre]¹ A recording and reproducing apparatus for recording and reproducing image information, comprising:

[8a] a processor; and

¹ Alpha-numerical designation adopted by Petitioner. *See* Pet. vii–xiii.

[8b] a memory coupled to the processor and storing instructions that, when executed by the processor, cause the processor to:

[8c] capture a photograph and generate image information of the photograph;

[8d] record the image information in a recording medium;

[8e] execute a face-recognizing process on the image information to recognize a face;

[8f] reproduce the recorded image information from the recording medium;

[8g] register a person in the image information as a specific person in a mode selected from a first setting mode and a second setting mode, wherein, when the first setting mode is selected, a person with a face is obtained by newly photographing the person in a photographing mode and thereafter registered as the specific person, and, [8h] when the second setting mode is selected, a person with a face in the image information is selected from a plurality of faces in the image information recorded in the recording medium and thereafter registered as the specific person; and

[8i] selectively reproduce the recorded image information which includes the registered specific person.

Ex. 1001, 15:51–16:9; Ex. 1003, 12 (Certificate of Correction of Claim 8).

[11pre] The recording and reproducing apparatus according to claim 8,

[11a] wherein the memory further stores instructions that, when executed by the processor, cause the processor to: control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,

[11b] wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing

mode, and [11c] the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.

Ex. 1001, 16:23–37.

F. Evidence

Petitioner relies upon the following evidence:

(1) International Publication No. WO 2007/060980 A1, published May 31, 2007 (“Nozaki”) (Ex. 1006);

(2) U.S. Patent No. 9,665,597 B2, filed March 22, 2007, issued May 30, 2017 (“Haitani”) (Ex. 1007);

(3) U.S. Patent Application Publication No. US 2004/0095376 A1, published May 20, 2004 (“Graham”) (Ex. 1008);

(4) Korean Unexamined Patent Application Publication No. 10-2007-0017068 A, published February 8, 2007 (“Kim”) (Ex. 1009); and

(5) Declarations of Benjamin B. Bederson, Ph.D. (Exs. 1005, 1017).

Patent Owner relies upon the declaration of Ravin Balakrishnan, Ph.D. (Ex. 2030).

G. Asserted Grounds of Unpatentability

Claims Challenged	35 U.S.C. §	References/Basis
11, 12, 16, 17, 19, 20	103(a) ²	Nozaki, Haitani
84	103(a)	Nozaki, Haitani, Graham
84	103(a)	Nozaki, Haitani, Kim

Pet. 1.

III. ANALYSIS

A. Level of Ordinary Skill

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

Determining the level of ordinary skill in the art involves various factors, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (citation

² The '848 patent was filed as application number 14/478,020 on September 5, 2014. Ex. 1001, codes (21), (22). It claims priority to a Japanese application filed on May 19, 2008, before the March 16, 2013, effective date of the § 103 provisions in the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29. Neither party appears to contest this. Accordingly, we cite to pre-AIA § 103(a).

omitted). The prior art of record also reflects the level of ordinary skill in the art. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Petitioner describes a person of ordinary skill in the art as a person having “a Bachelors’ degree in electrical or computer engineering or a comparable field of study, with at least two to three years of experience in the field of image processing.” Pet. 4 (citing Ex. 1005 ¶ 35). Petitioner further asserts that “[a]dditional education could substitute for professional experience, and significant experience in the field could substitute for formal education.” *Id.* (citing Ex. 1005 ¶ 35).

Patent Owner describes a person of ordinary skill in the art as having an undergraduate Bachelor of Science degree in Computer Science or Electrical Engineering or equivalent degree and at least one year of experience working in the field of image recording and reproduction. More education (*e.g.*, a Master’s degree) or work experience in a relevant field may compensate for a deficit in one or the other relevant qualifications.

PO Resp. 7.

The parties’ descriptions of the level of skill in the art are very similar, with only a slight difference in the number of years of work experience suggested. Petitioner states that “[a]lthough the experts propose slightly different POSITA definitions, the differences are immaterial to the analysis here.” Pet. Reply. 1. Patent Owner does not believe the two definitions are materially different, and states that “the arguments herein do not change under either definition. PO Resp. 8.

Petitioner’s description of a person of ordinary skill appears to be consistent with the technical complexity of the subject matter described in the ’848 patent. This understanding is supported by the testimony of Petitioner’s declarant, Dr. Bederson, who states that he is “well acquainted

with the level of ordinary skill that would be required to implement the systems and methods described in the '848 patent.” Ex. 1005 ¶ 36.

Accordingly, we continue to use Petitioner’s assessment of a person of ordinary skill for purposes of this Decision.

B. Claim Construction

For this *inter partes* review, the Board applies the same claim construction standard as that applied in federal courts. *See* 37 C.F.R. § 42.100(b) (2023). Under this standard, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (citations omitted). “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Because the meaning of a claim term as understood by persons of skill in the art may not be immediately apparent, we may look to “those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.” *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004). These sources may include extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art. However, such extrinsic evidence is “less significant than the intrinsic record in determining ‘the legally operative meaning of claim language.’” *Phillips*,

415 F.3d at 1317 (quoting *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 862 (Fed. Cir. 2004)).

Only those terms that are in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Here, Petitioner contends that “all claim terms in the Challenged Claims should be construed according to their plain and ordinary meaning.” Pet. 5.

Patent Owner provides a proposed plain and ordinary meaning for the term “mode” as that term is used in the '848 patent. Patent Owner asserts that a person of ordinary skill in the art “would understand ‘mode’ to mean ‘an operational state that a system has been switched to,’” and argues that both intrinsic and extrinsic evidence supports such an understanding. PO Resp. 13–19.

In its Reply, Petitioner states that it does not “necessarily object to the concept of a ‘mode’ as an operational state,” but Petitioner does object to Patent Owner’s application of it, which, Petitioner asserts “is far narrower than the words alone suggest.” Pet. Reply 1. Petitioner asserts that Patent Owner does this “to argue that the ‘filters’ disclosed in the prior art ‘are not modes’ as the claims recite.” *Id.*

The parties’ arguments then move into a back-and-forth as to whether or not certain “threshold value[s]” used by the “chapter select reproducing function” are part of an algorithm used in connection with the “first,” “second,” and/or “third reproducing mode[s]” and whether that is similar to a filtering mechanism taught by the prior art. *See, e.g.* Pet. Reply 5 (“At

most, the definitions show that “mode” and “filter” have different meanings. But in no way do they preclude modes from being distinguished by the filters they include.”); PO Sur-reply 6 (“As ‘filter’ is not used in the Patent, extrinsic evidence must be used to define filter.”).

These arguments go beyond the issue we were asked to decide, which is whether a person of ordinary skill in the art would understand the term “mode” to mean “an operational state that a system has been switched to.” *See* Pet. 5 (“all claim terms in the Challenged Claims should be construed according to their plain and ordinary meaning.”); PO Resp. 13 (A person of ordinary skill in the art “would understand ‘mode’ to mean ‘an operational state that a system has been switched to.’”); Pet. Reply 1 (“Petitioners do not necessarily object to the concept of a ‘mode’ as an operational state—indeed, the challenged claims remain invalid even under this construction.”). These additional arguments raised by the parties concerning the use of filters, thresholds, algorithms, functions, and various types of reproducing modes appear more directed toward addressing the question of whether the asserted prior art reads on the challenged claims, not the question of what a person of ordinary skill in the art would have understood the term “mode” to mean when read in the context of the ’848 patent at the time of the claimed invention.

Our analysis of what the ordinary and customary meaning of the term “mode” would be to a person of ordinary skill in the art in at the time of the invention starts with the language of the claims, for “the claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Phillips* at 1314. “[T]he context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of

those terms.” *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003).

Here, challenged claims 11, 12, 16, 17, 19, and 20 are dependent claims, and claim 84 is the only independent challenged claim.³ The challenged claims use the term “mode” in several different contexts. The term “mode” is sometimes used to introduce a number of modes to be selected from (*see, e.g.*, claim 84, Ex. 1002, 8:58 (“*in a mode selected from*”). The term “mode” is also used when identifying different types of “modes.” For example, the ’848 patent claims recite at least five different types of “modes,” including a “setting mode,” a “reproducing mode,” a “photographing mode,” a “record mode,” and a “reproduction mode.” *See, e.g.*, Ex. 1002, 8:58, Ex. 1001, 18:50, Ex. 1002, 8:62, 8:42, 8:45.

The ’848 specification also discusses these various “modes.” For example, with respect to the “record mode,” the Specification explains that

In the video camera 1, a user interface 4 is constituted of various operation buttons, a touch panel adhered to a screen of a display 6 to be described later. In accordance with a user operation command input from the user interface 4, a system controller 5 executes a corresponding control process to record a photographed image in the hard disc drive 2 and DVD 3 loaded in the DVD drive and to reproduce a photographed image recorded in the hard disc drive 2 and DVD 3 and display the reproduced image on the display 6.

The system controller 5 is actually a microcomputer constituted of a central processing unit (CPU), an internal memory and the like. *When a record button in the user*

³ The independent claims 8, 13, and 18, from which claims 11, 12, 16, 17, 19, and 20 depend, were cancelled during reexamination. *See* Ex. 1002, 1:18. Nonetheless, cancelled independent claims 8, 13, and 18 are still relevant for determining patentability of the challenged claims in this proceeding.

interface 4 is depressed after a record mode is selected upon operation of the user interface 4, the system controller drives an image sensor 7 constituted of a charge coupled device (CCD), complementary metal oxide semiconductor (CMOS) transistors and the like.

Ex. 1001, 3:51–67 (emphasis added). The Specification also explains that “[m]ore specifically, as the record button of the user interface 4 is depressed after the record mode is selected, the system controller 5 starts the photographed image recording process.” *Id.* at 6:32–35.

The Specification also explains that there are several “reproducing modes,” including “standard,” “express,” and “superexpress,” which are used to sort video scenes based upon chapter importance levels assigned according to the frequency of appearance of a VIP’s face in the chapter scenes. *Id.* Fig. 8, 8:21–9:9. The Specification explains that “the highest chapter importance level of ‘1’ is set to the chapter on which the VIP appears most frequently, and the lowest chapter importance level of ‘5’ is set to the chapter on which the VIP appears least frequently.” *Id.* at 8:50–53.

With respect to the “standard reproducing mode,” the Specification explains that “reproduction is performed by selecting as a reproducing mode a ‘standard reproducing mode’ from the menu, all chapters are sequentially reproduced in an order of smaller chapter ID, irrespective of the chapter importance level set to each chapter.” *Id.* at 9:20–24.

With respect to the “express reproducing mode,” the Specification explains that “a user starts reproducing by selecting as the reproducing mode an ‘express reproducing mode,’” such that “only the chapters having the chapter importance level ‘3’ or smaller (only the chapters having the importance levels ‘1’ to ‘3’) are reproduced.” *Id.* at 9:29–30, 38–41.

With respect to the “superexpress reproducing mode,” the Specification explains that “a user starts reproducing by selecting as the reproducing mode a ‘superexpress reproducing mode,’” whereby “only the chapters having the chapter importance level ‘1’ are reproduced.” *Id.* at 9:46–47, 52–54.

The ’848 specification refers to this process as the “chapter select reproducing function,” and explains that the “chapter importance levels” are “predetermined threshold values” that are used by the chapter select reproducing function of the system controller to sort and display reproduced images. *See id.* at 9:61–62, 10:12–30. The Specification explains that the system controller “judges whether the chapter importance level of the chapter is a predetermined threshold value or smaller set to the present reproducing mode (Step SP22). The threshold value is ‘5’ if the ‘standard reproducing mode’ is set, ‘3’ if the ‘express reproducing mode’ is set, and ‘1’ if the ‘superexpress reproducing mode’ is set.” *Id.* at 10:19–25.

The Specification also describes a VIP “setting mode” explaining that “when a VIP setting mode is selected by operating the user interface 4, the system controller 61 starts the VIP setting process to first display a pre-photographing VIP setting screen 70 illustrated in FIG. 14 on the display 6 (Step SP30).” *Id.* 12:28–32.

The parties do not direct us to anything in the prosecution history that might be relevant to determining the ordinary and customary meaning of the term “mode” to a person of ordinary skill in the art at the time of the claimed invention. *See* Pet. 5, PO Resp. 13–19, Pet. Reply 1–6, PO Sur-reply 2–7.

The person of ordinary skill in the art is deemed to read claim terms not only in the context of the claims in which the disputed term appears, but also in the context of the entire patent, including the specification. *Phillips*

at 1313. The specification “is always highly relevant to the claim construction analysis. Usually, it is dispositive because it is the single best guide to the meaning of a disputed term.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). “Extrinsic evidence may also be considered, if needed to assist in determining the meaning or scope of technical terms in the claims.” *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1216 (Fed. Cir. 1995).

Here, we do not believe that extrinsic evidence is needed to determine the meaning of the claim term “mode” as it is used in the ’848 patent and as one of ordinary skill in the art would understand it at the time of the invention. First, the parties do not necessarily disagree as to the meaning of the term “mode.” Patent Owner asserts that a person of ordinary skill in the art “would understand ‘mode’ to mean “an operational state that a system has been switched to.” PO Resp. 13. Petitioner “do[es] not necessarily object to the concept of a ‘mode’ as an operational state,” but does object to how Patent Owner applies the term. Pet. Reply 1. Petitioner objects to Patent Owner’s “application of its construction,” which, Petitioner argues, “is far narrower than the words alone suggest.” *Id.*

Second, the intrinsic evidence, including the claims and the ’848 specification, makes it readily apparent what the ordinary and customary meaning of the term “mode” would be to one of ordinary skill in the art at the time of the invention. Based upon our consideration of the claims and the ’848 specification, we find that the term “mode,” as it is used by the ’848 patent, means a “state,” “condition,” or “operational state” of a recording device, such as a video camera, that is selected by a user and may include a selection function using threshold values.

This understanding is supported by both the express language of the claims and by the '848 specification. For example, independent claim 84 recites in pertinent part

[84b]⁴ a display displaying a first option and a second option, wherein *when the first option is selected, the recording and reproducing apparatus enters a record mode* to capture video information, and *when the second option is selected, the recording and reproducing apparatus enters a reproduction mode* to reproduce and display recorded video information

Ex. 1002, 8:40–46.

Here, independent claim 84 recites a “display” with a “*first option and a second option*” such that “*when the first option is selected, the recording and reproducing apparatus enters a record mode,*” and “*when the second option is selected, the recording and reproducing apparatus enters a reproduction mode.*” Claim 84 is describing a situation that when a user selects a “*first option*” on the “display” of the claimed device, the device “*enters a record mode*” and when the user selects a “*second option*” on the “display” of the claimed device, the device “*enters a reproduction mode.*” *Id.*

The situation recited in claim 84 is described in further detail in the '848 specification. There, the specification explains that

[w]hen a record button in the user interface 4 is depressed *after a record mode is selected upon operation of the user interface 4*, the system controller 5 drives an image sensor 7 constituted of a charge coupled device (CCD), complementary metal oxide semiconductor (CMOS) transistors and the like.

Ex. 1001, 3:62–67.

The Specification goes on to explain that

⁴ We use the numbered designations for the claims assigned by Petitioner. See Pet. vii–xiii.

[w]hen a reproduction button of the user interface 4 is depressed after a reproduction mode is selected upon operation of the user interface 4, the system controller 5 controls a corresponding one of the hard disc drive controller 13 and DVD drive controller 14 to make the hard disc drive controller 13 or DVD drive controller 14 read and transmit the encoded image information to CODEC 10 via the bus 11.

Id. at 4:36–42.

Each of these passages from the '848 specification supports the understanding that user interface 4 comprises a touch panel (“*a display*”) that allows a user to make a choice as to which mode to put the recording device into, here the device being an exemplary video camera. The passages describe how a user may select between putting the video camera into a “*record mode*” (“*a first option*”) or a “*reproduction mode*” (“*a second option*”).

Accordingly, based upon our consideration of the '848 patent claims and Specification, we determine that a person of ordinary skill in the art at the time of the claimed invention would understand that the ordinary and customary meaning of the term “mode” as it is used in the '848 patent, would be a “state,” “condition,” or “operational state” of a recording device, such as a video camera, that is selected by a user and may include a selection function using threshold values.

C. Patentability Challenges

Petitioner presents three grounds challenging the patentability of particular claims of the '848 patent under 35 U.S.C. § 103. Petitioner challenges (1) claims 11, 12, 16, 17, 19, and 20 based on the combined teachings of Nozaki and Haitani; (2) claim 84 based on the combined

teachings of Nozaki, Haitani, and Graham; and (3) claim 84 based on the combined teachings of Nozaki, Haitani, and Kim. Pet. 1.

1. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham*, 383 U.S. at 17–18. At this stage, neither party has presented evidence on the fourth *Graham* factor.

The Supreme Court has made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. Reaching this conclusion, however, requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention. *Id.*

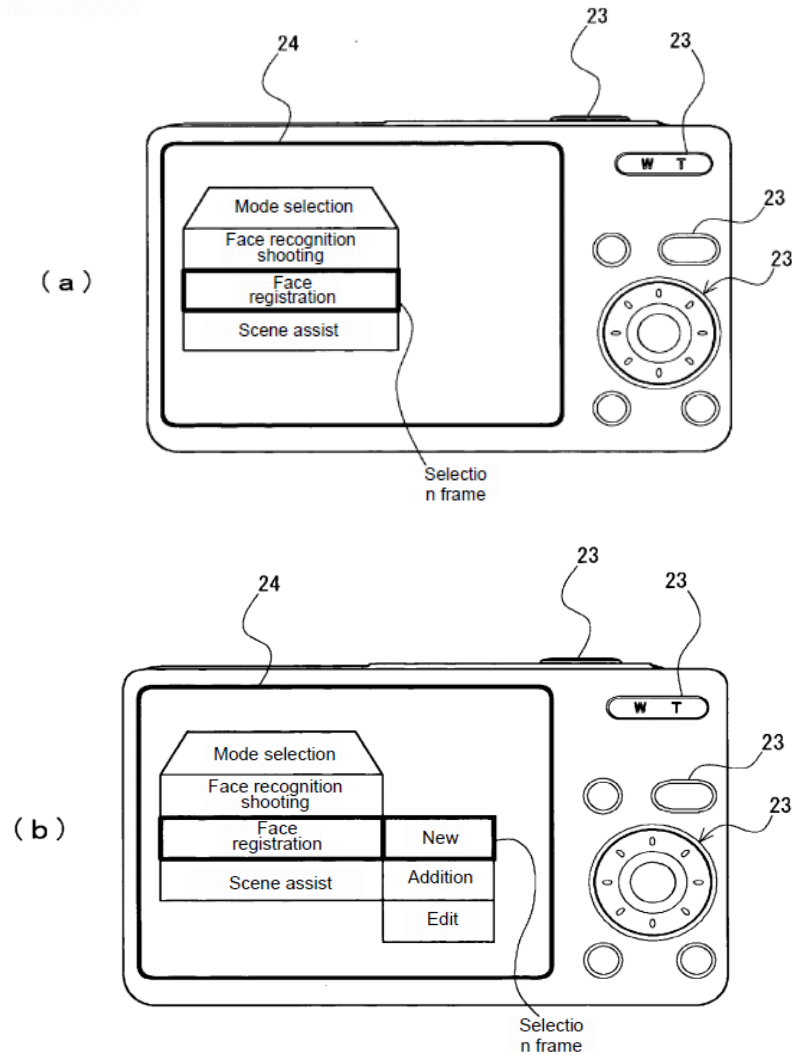
2. Relevant Prior Art

a. Nozaki (Ex. 1006)

Nozaki is a PCT International Application Publication that was published on May 31, 2007, more than one year before the earliest U.S. priority date of the '848 patent. Ex. 1001, code (63); Ex. 1006, code (43). Petitioner asserts that Nozaki is prior art under pre-AIA 35 U.S.C. § 102(a) and § 102(b). Pet. 5.

Nozaki relates to “an electronic camera and an image processing device provided with human face recognition functions.” Ex. 1006 ¶ 1. Nozaki describes a face registration mode, which is “a type of shooting mode with which a user can shoot the face of a registered person to generate face recognizing data.” *Id.* ¶ 62.

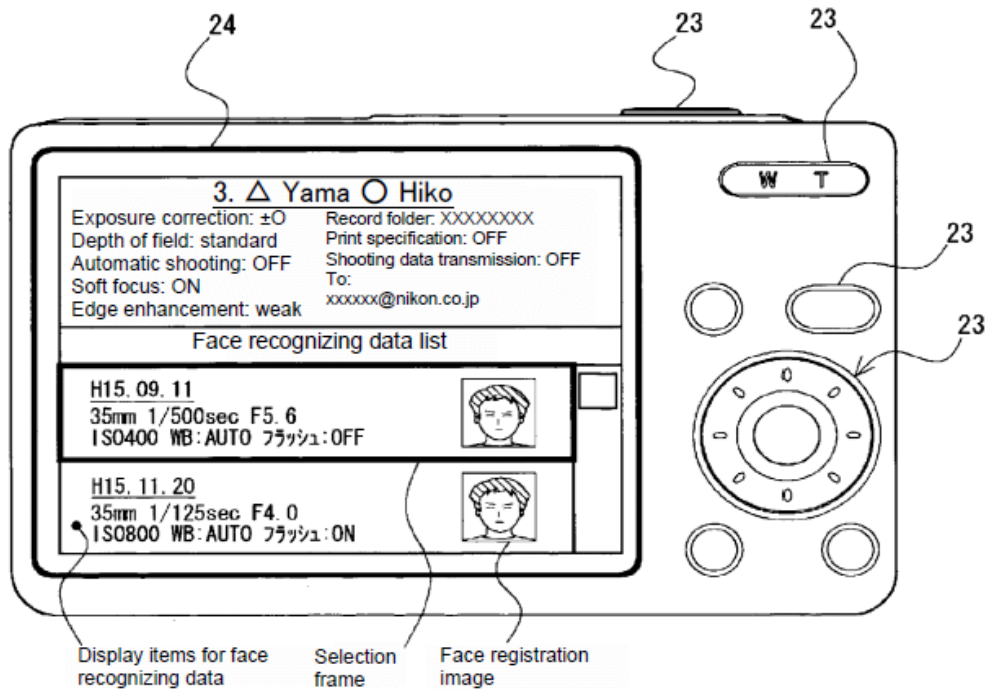
Nozaki’s Figures 3(a) and 3(b) are reproduced below.



Nozaki's Figures 3(a) and 3(b), above, depict an example of a mode selection screen displayed on the liquid crystal monitor 24 of an electronic camera. Ex. 1006 ¶¶ 41, 63, 64. Referring to Figure 3(a), Nozaki describes that “the user operates a selection frame on the mode selection screen by using the operating member 23 . . . to actuate a ‘face registration mode.’” *Id.* ¶ 63. Referring to Figure 3(b), Nozaki explains that a menu for the “face registration mode” is then displayed on the liquid crystal monitor 24 and “[w]here the face of a new person is registered, the user selectively inputs

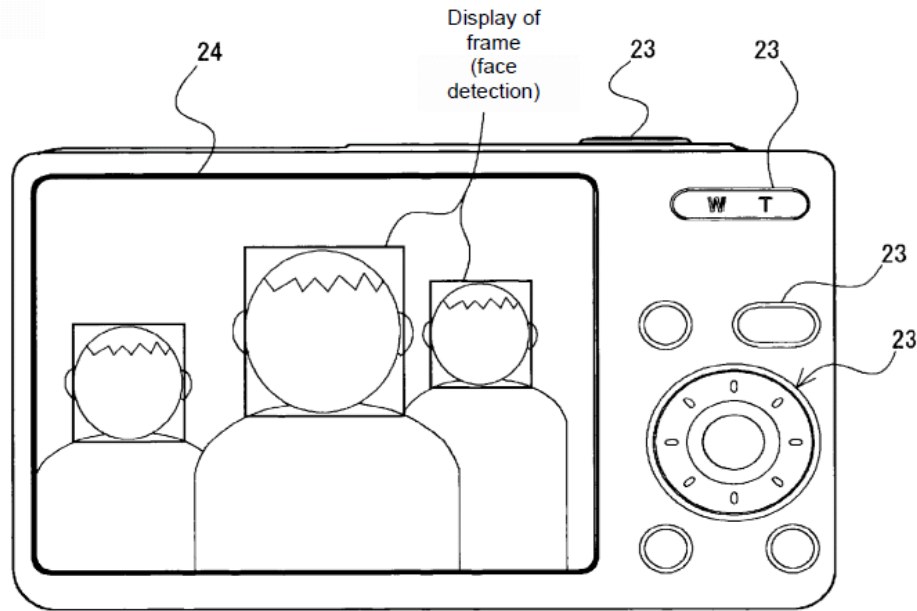
‘new,’” while, “where the face of the person who has already been registered is additionally shot, the user selectively inputs ‘addition.’” *Id.* ¶ 64.

Nozaki’s Figure 5 is reproduced below:



Nozaki’s Figure 5, above, shows an example of a detailed information screen of the registered person. Ex. 1006 ¶ 41. When “new” is selected in Figure 3(b) above, Nozaki describes, referring to Figure 5, that the detailed information screen of registered person is displayed on the liquid crystal monitor 24, “prompting a user to input information on the ‘name of registered person’ and ‘processing setting on face recognition,’” which is recorded in the camera’s face registration memory. *Id.* ¶ 65; *see also id.* at Figure 1.

Nozaki’s Figure 6 is reproduced below.



Nozaki's Figure 6, above, depicts a display example of a preview image on face detection. Ex. 1006 ¶ 41. Referring to Figure 6, Nozaki explains that when the face of a person is detected inside the shooting screen, a rectangular frame is displayed at a position of the face area of a preview image so that "a user is able to confirm the presence or absence of face detection by referring to the preview image." *Id.* ¶ 74.

According to Nozaki, when the camera's release button is fully pressed, the camera's image sensor is driven to shoot a subject image and face registration image data is generated based on an image signal at release. Ex. 1006 ¶¶ 80–81. Nozaki further describes that face recognizing data of a registered person is generated from the face registration image data, which is trimmed and resized into a predetermined size by resolution conversion to generate index image data. *Id.* ¶ 81. The shooting condition, date, and time are recorded for the face recognizing data, index image data, and face registration image data in the face registration memory. *Id.* ¶ 82.

b. Haitani (Ex. 1007)

Haitani is a U.S. Patent that issued on May 30, 2017, from an application filed on March 22, 2007, which is earlier than the earliest priority date of the '848 patent. Ex. 1001, codes (30), (63); Ex. 1007, code (22). Petitioner asserts that Haitani is prior art under pre-AIA 35 U.S.C. § 102(e). Pet. 5.

Haitani relates to a device that “may process images (e.g. sort, group, file, e-mail, etc.) using various filters,” which “may relate to non-image data in the image files to be processed” and “may include time and location filters.” Ex. 1007, code (57). Haitani describes a portable hand-held device, such as a smartphone, that may include a camera to capture images using an image application run by a processing circuit. *Id.* at 2:11–27; *see also id.* at Figs. 1 and 2. According to Haitani, the image application may be configured to display images on a display of the device and may also include various filters to limit the number of images displayed. *Id.* at 2:42–45.

Haitani describes that image data captured by the camera may be used to form an image file. Ex. 1007, 3:28–30. Haitani further describes that non-image data based on the image in an image file may be added to the image file. *Id.* at 6:33–35. According to Haitani, an image recognition program recognizes objects, such as people, in an image and “may be pre-trained to identify certain individuals (such as individuals the user may photograph regularly) and then look for those people in the images” of the device. *Id.* at 6:35–42. Haitani describes that data based on the object recognition, such as the names, other identification, or association with a group of the people recognized in the image, can be added to the image files. *Id.* at 6:43–52.

Haitani discloses that if there are large numbers of image files, the device may use filters to reduce the number of image files through which a user needs to sort to select an image for sharing, viewing, or taking other actions. Ex. 1007, 10:61–66. According to Haitani, “[f]or a system that uses filters by subject matter, there may be more than one filter menu . . . that relates to that subject matter.” *Id.* at 11:4–6. For example, one filter menu relates to broad categories, such as a state/province location, and a second filter menu relates to narrower categories within the broad categories, such as a city location within the selected state/province. *Id.* at 11:6–11.

Figure 6 of Haitani is reproduced below.

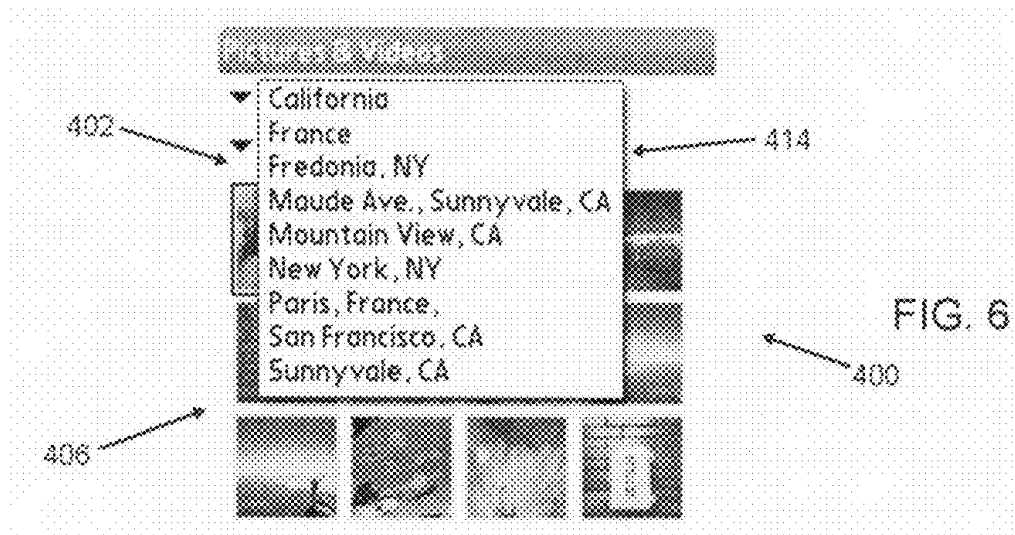


Figure 6, above, depicts a first filter menu 402 including multiple filter options 414 of varying specificity within the same menu 402. Ex. 1007, 11:24–26. As shown in Figure 6, “[a] single filter menu can include a first filter option directed to a broad category (e.g. the state of California) and a second filter option directed to categories that are within and narrower than the first filter option (e.g. cities within California).” *Id.* at 11:26–30.

c. Graham (Ex. 1008)

Graham is a U.S. Patent Application Publication that published on May 20, 2004, more than one year before the earliest U.S. priority date of the '848 patent. Ex. 1001, code (63); Ex. 1008, code (43). Petitioner asserts that Graham is prior art under pre-AIA 35 U.S.C. § 102(b). Pet. 6.

Graham relates to techniques for providing a graphical user interface (GUI) that “enables a user to navigate and skim through the stored information and to analyze the contents of the stored information.” Ex. 1008, code (57). Graham notes that, to assimilate vast quantities of information in a short period of time, “readers find they must read electronic documents ‘horizontally’ rather than ‘vertically,’ i.e., they must scan, skim, and browse sections of interest in one or more electronic documents rather than read and analyze a single document from start to end.” *Id.* ¶ 13. Accordingly, “there is a need for techniques that allow users to skim or read a multimedia document ‘horizontally.’” *Id.* ¶ 14.

Figure 3 of Graham is reproduced below.

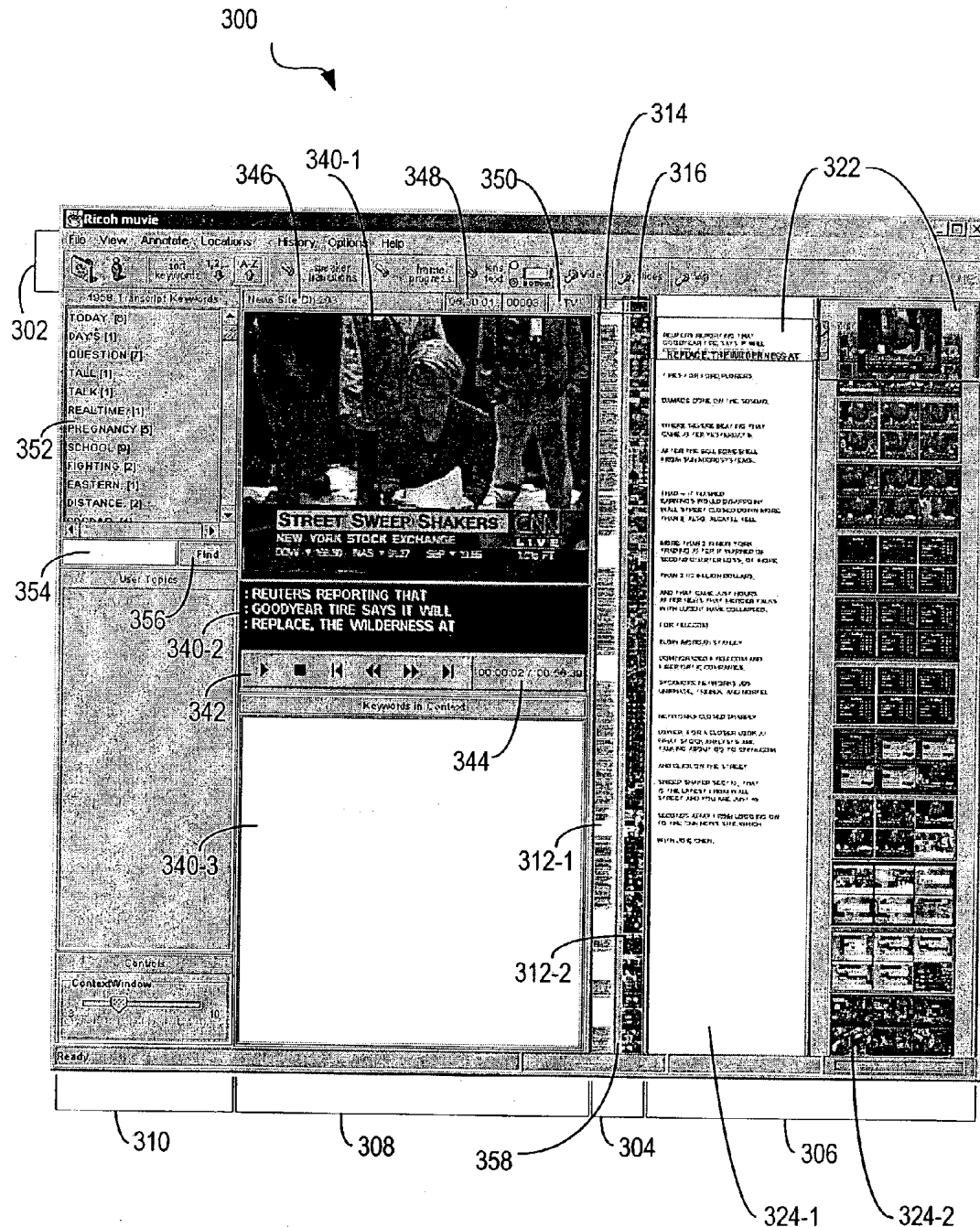


Fig. 3

Graham's Figure 3, above, depicts a user interface (GUI) 300 displaying multimedia information stored in a multimedia document. Ex. 1008 ¶¶ 81–82. According to Graham, the term “multimedia information” is “intended to refer to information that comprises information of several different types,”

such as a combination of text information, graphics information, animation information, audio information, and video information. *Id.* ¶ 61. According to Graham, the term “multimedia document” is “intended to refer to any electronic storage unit (e.g., a file, a directory, etc.) that stores multimedia information,” such as “video recordings, MPEG files, news broadcast recordings, presentation recordings, recorded meetings, classroom lecture recordings, broadcast television programs, or the like.” *Id.* ¶ 62. For example, interface 300 in Figure 3 displays multimedia information, including video information, audio information, and closed-caption (CC) text information, stored by a television broadcast recording multimedia document. *Id.* ¶ 318. According to Graham, “[t]he video information, audio information, and CC text information are all captured along the same (or common) timeline possibly by different capture devices.” *Id.*

As shown in Figure 3, GUI 300 comprises several viewing areas, including a viewing area 304 comprising one or more thumbnail images 312. Ex. 1008 ¶¶ 84, 87. For example, viewing area 304 displays two thumbnail images 312-1 and 312-2, wherein thumbnail image 312-1 displays text information, such as CC text or transcription of audio information included in the multimedia information displayed by GUI 300, and thumbnail image 312-2 displays video information included in the multimedia information displayed by GUI 300. *Id.* ¶¶ 87–88. According to Graham, “[s]ince the audio and video information are captured along the same timeline, the representations of the information can be displayed such that they are temporally aligned or synchronized with each other” and “thumbnail images 312-1 and 312-2 are aligned such that the text information . . . in thumbnail image 312-1 and video keyframes displayed in thumbnail 312-2 that occur at a particular point of time are displayed approximately close to each other

along the same horizontal axis.” *Id.* ¶ 319; *see also id.* ¶ 90. Graham explains that “[t]his enables a user to determine various types of information in the television broadcast recording occurring approximately concurrently by simply scanning the thumbnail images in the horizontal axis.” *Id.* ¶ 319.

d. Kim (Ex. 1009)

Kim is a Korean Unexamined Patent Application Publication that published on February 8, 2007, more than one year before the earliest U.S. priority date of the ’848 patent. Ex. 1001, code (63); Ex. 1009, code (43). Petitioner asserts that Kim is prior art under pre-AIA 35 U.S.C. § 102(b). Pet. 6.

Kim relates to “an apparatus and method for high-speed video partitioning according to topic based on detected main characters.” Ex. 1009, 6.⁵ Kim describes a “method of partitioning a video by subject” comprising “a step of detecting a plurality of key frames using character information in a video sequence consisting of a plurality of frames, and determining the detected key frames as the starting shot of each subject; and a step of creating a topic list using the starting shot of each topic.” *Id.* at 7.

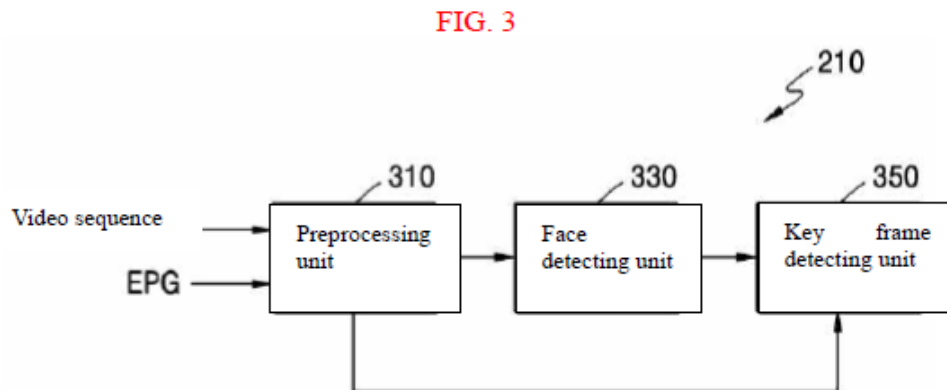
Kim’s Figure 1 is reproduced below.

⁵ The cited page numbers in Exhibit 1009 refer to page numbers added by Petitioner at the bottom right corner of the reference.



Kim’s Figure 1, above, depicts “an example of division by subject in a news video.” Ex. 1009, 7. As shown in Figure 1, the news video is partitioned into chapters 1–25 according to topic, wherein “each chapter consists of a starting shot set as a key frame in which the main characters appear and a data screen supporting the content.” *Id.*

Kim’s Figure 3 is reproduced below.



Kim’s Figure 3, above, depicts a block diagram of a start shot determining unit 210 comprising a preprocessing unit 310, a face detecting unit 330, and a key frame determining unit 350. Ex. 1009, 7. According to Kim, the preprocessing unit 310 “takes the video sequence constituting one video as an input, detects the scene transition, determines the frames belonging to the

current scene, and uses the EPG (Electronic Program Guide) signal of the video as an input to determine the number of main characters.” *Id.* at 8. The face detecting unit 330 “detects a face in each frame belonging to the current scene determined by the preprocessing unit 310.” *Id.* Kim also describes that the key frame determining unit 350 “extracts clothing information from frames in which faces are detected in the face detecting unit 330, clusters the frames by characters corresponding to the clothing information, and determines the frame comprising the main character as the key frame, that is, the starting shot of the subject.” *Id.*

Figures 4B and 4C of Kim are reproduced below.



Kim’s Figure 4B, above, depicts the key frame, which is the character clustering result determined by the key frame determining unit 350.

Ex. 1009, 8. Kim’s Figure 4C, above, depicts a topic list generated by the key frame shown in Figure 4B. *Id.*

D. Obviousness Over Nozaki and Haitani (Ground 1)

For Ground 1, Petitioner contends that dependent claims 11, 12, 16, 17, 19, and 20 are unpatentable under 35 U.S.C. § 103(a) as obvious over Nozaki and Haitani. Pet. 7–36. Petitioner submits the testimony of Dr.

Bederson in support of its position. Ex. 1005 ¶¶ 66–139; Ex. 1017 ¶¶ 19–22.

Patent Owner disputes certain aspects of Petitioner’s evidence and arguments. PO Resp. 19–49. Patent Owner submits the declaration of Dr. Balakrishnan in support of its position. Ex. 2030 ¶¶ 111–127, 195–198, 206–209.

We begin our analysis by considering Petitioner’s rationale for combining the teachings of Nozaki and Haitani.

*1. Rationale to Combine Nozaki and Haitani*⁶

Petitioner asserts that “Nozaki and Haitani are analogous art to the ’848 patent, and [a person of ordinary skill in the art] would have found it obvious to combine them for that reason alone.” Pet. 7 (citing Ex. 1005 ¶ 66). Petitioner explains that “[t]he ’848 patent is directed to ‘a recording and reproducing apparatus’ with methods for capturing and reproducing video information that are ‘suitable for application to, e.g., a video camera.’” Pet. 7 (citing Ex. 1001, 1:15–17). According to Petitioner, “Nozaki and Haitani likewise disclose devices with digital cameras that can capture and reproduce image/video files.” Pet. 7–8 (citing Ex. 1006 ¶¶ 1, 47–48; Ex. 1007, 2:8–17).

Petitioner asserts that “[t]he disclosures in Nozaki and Haitani are compatible and complementary to each other, and [a person of ordinary skill in the art] would have been motivated to combine them for this additional reason.” Pet. 8 (citing Ex. 1005 ¶ 67). Petitioner explains that “Nozaki uses

⁶ Patent Owner challenges Petitioner’s rationale to combine Nozaki and Haitani in several different sections of its Response. *See, e.g.*, PO Resp. Sec. IV.A–B, H, and K. We address the entirety of Patent Owner’s evidence and arguments on this issue in this section of the Decision.

face-recognition technology to organize recorded images/videos into ‘groups’ according to whether they feature identified registered individuals.” Pet 8 (citing Ex. 1006 ¶¶ 62–65, 73–83, 110–114). Petitioner points out that “[a]lthough Nozaki discloses the reproduction of image/video files based on stored information about those files (e.g., face-recognition data, time/date data, event data, etc.), Nozaki does not explore the ways that the recorded information can be used to tailor the reproduction search process to produce broader or narrower results.” Pet. 8 (citing Ex. 1005 ¶ 67). According to Petitioner, “Haitani teaches how to achieve this objective.” Pet. 8 (citing Ex. 1005 ¶ 67). “Specifically,” Petitioner points out, “Haitani discloses selectively reproducing image and video information using combinations of filters, many of which use data that the Nozaki device already generates, including face-recognition data, date/time information, and event data.” Pet. 8 (citing Ex. 1007, 1:29–33, 2:40–49, 6:39–42).

According to Petitioner, a person of ordinary skill in the art “would have recognized that Haitani’s filters-based search and reproduction would complement the Nozaki device in order to improve the efficiency of the Nozaki device in recalling and reproducing the images desired by the user.” Pet. 8 (citing Ex. 1005 ¶ 68). Petitioner asserts that a person of ordinary skill in the art “would have known, similar to what Haitani teaches, that users of devices with digital cameras generate a large number of image and video data and need ways to sort and locate those files.” Pet. 8–9 (citing Ex. 1005 ¶ 68). Petitioner argues that “Haitani’s search filters address this need and could have been easily implemented in the Nozaki device.” Pet. 9 (citing Ex. 1005 ¶ 68). “Such implementation,” Petitioner asserts, “would have been within the skill” of a person of ordinary skill in the art. *Id.*

Patent Owner asserts that a person of ordinary skill in the art “would not ignore the problems that prior art sought to solve in determining whether the two references could be analogous art,” and “merely because the ’848 patent discloses a ‘reproduction and reproducing apparatus’ and Nozaki and Haitani each disclose digital cameras,” a person of ordinary skill in the art “would not be motivated to combine” them. PO Resp. 21.

Patent Owner first contests Petitioner’s evidence of a rationale to combine Nozaki and Haitani with respect to claims 11–12, 16–17, and 19–20. *See* PO Resp. 20–23. Here, Patent Owner argues that a person of ordinary skill in the art “would not be motivated to combine the teachings of Nozaki and Haitani because they are directed to solving different problems and use different technology and/or structures to solve these problems.” *Id.* at 22. According to Patent Owner, “there is no reason that a POSITA would look to Haitani’s filters to purportedly solve a problem that Nozaki does not contemplate.” Patent Owner also argues that the Petition “does not explain how a POSITA would implement Haitani’s filtering feature in Nozaki’s device.” *Id.*

We disagree with Patent Owner. In determining obviousness, the scope of relevant prior art “necessarily encompasses not only the field of the inventor’s endeavor but also any analogous art.” *In re GPAC Inc.*, 57 F.3d 1573, 1577–78 (Fed. Cir. 1995). A reference qualifies as prior art for a determination under § 103(a) when it is analogous to the claimed invention. *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992). A reference is analogous to the claimed invention when it is from the same field of endeavor, *regardless* of the problem addressed. *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011). Similarity in the structure and function of the invention and the prior art is indicative that the prior art is within the inventor’s field of endeavor.

State Contracting & Engineering Corp. v. Condotte America, Inc., 346 F.3d 1057, 1069 (Fed. Cir. 2003).

Here, the claimed invention is directed to a “Recording and Reproducing Apparatus and Method,” which may be in the form of a “video camera.” Ex. 1001, codes (54), (57), 3:43. Nozaki is directed to an “Electronic Camera and Image Processing Device” Ex. 1006, codes (53), (54), (57), and describes an electronic camera that “includes an image sensor, an image processing section, a controlling section, a face detecting section, a face image generating section or a face recognizing data generating section, and a recording section. *Id.* ¶ 10. Haitani is directed to a “Method And System For Processing Images” and describes a system that includes a portable handheld device that “may include a camera 12 to capture images” configurable to “capture still images (pictures), moving images (movies), or both still and moving images.” Ex. 1007, 1:1–2, 2:11–14. Patent Owner acknowledges that “the ’848 patent discloses a ‘reproduction and reproducing apparatus’ and Nozaki and Haitani each disclose digital cameras. PO Resp. 21. Accordingly, there can be no dispute that Nozaki and Haitani disclose devices that are similar in structure and function to the claimed invention and are, therefore, from the same field of endeavor as the claimed invention and qualify as analogous art.

Moreover, Nozaki and Haitani, like the ’848 patent, are directed to improving the photographing and reproducing efficiency of cameras, including through the use of face-recognition software. *See* Ex. 1006 ¶ 1; Ex. 1007, 9:40–42; Ex. 1017 ¶¶ 19–20.

We also disagree with Patent Owner’s arguments that Petitioner does not articulate a sufficient rationale to combine the teachings of Nozaki and Haitani, or that a person of ordinary skill in the art would not know how do

so. First, the level of ordinary skill here is a person having a Bachelors' degree in electrical or computer engineering or a comparable field of study, with at least two to three years of experience in the field of image processing. There is substantial evidence that Petitioner's proposed combination of teachings from Nozaki and Haitani are well within the capabilities of a person of ordinary skill in the art. *See* Ex. 1005 ¶¶ 68; Ex. 1017 ¶¶ 21–22.

Second, Petitioner provides substantial evidence that a person of ordinary skill in the art would recognize that Haitani's filtered search modes of reproducing image information overlap with compatible features already present in Nozaki, that incorporating Haitani's search modes with the existing reproducing modes of Nozaki would provide improvements, including enhancing the efficiency of Nozaki's image search and reproduction capabilities; and that such modifications were well within the capabilities of a person of ordinary skill in the art. *See* Ex. 1005 ¶¶ 67–68, 87–93, 95–99; Ex. 1017 ¶¶ 20–22.

Patent Owner next contests Petitioner's evidence of a rationale to combine the teachings of Nozaki and Haitani with respect to specific limitations of particular claims, namely limitations [8i], [13h]–[13j], and [18g]–[18i]. *See, e.g.*, PO Resp. 24–25, 43–44, 46. These limitations are directed to similar subject matter.

Limitation [8i] recites “*selectively reproduce the recorded image information which includes the registered specific person.*” Ex. 1001 16:8–10. With respect to this limitation, Patent Owner argues that a person of ordinary skill in the art would not have found it obvious to combine Nozaki with Haitani “to comprise a processor to ‘selectively reproduce the recorded image information which includes the registered specific person,’” and that a

person of ordinary skill in the art “would not be motivated to look to or incorporate Haitani’s filters to selectively reproduce an image.” *Id.* at 24 (citing Ex. 2030 ¶ 125). With respect to limitations [13h]–[13j] and [18g]–[18j], Patent Owner does not add any substantive arguments, but merely references previous arguments in its Response. *See* PO Resp. 43–44, 46.

We disagree with Patent Owner’s argument. “[T]he [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418. Petitioner points out, and we agree, Nozaki teaches providing “face recognition data” from each captured photograph of a registered person. *See* Ex. 1006, Fig. 5, ¶¶ 150–152. Nozaki already implements a version of Haitani’s filter criteria because it displays a subset of the total images stored on the device that have been filtered according to face recognizing data, and therefore would be compatible with, and complementary to, Haitani. *Id.* ¶¶ 150–153. Although Nozaki does not show the full-size image on the screen instead of a thumbnail, Petitioner presents substantial evidence that it would have been obvious to a person of ordinary skill in the art to implement such functionality in Nozaki because of Haitani’s teaching of full-screen image reproduction, which would allow users to selectively display images using reproducing modes that filter according to similar criteria (e.g., face recognizing data). *See* Ex. 1005 ¶¶ 87–93.

Moreover, Nozaki also discloses a “regeneration mode” for selecting and reproducing saved images, and Petitioner provides substantial evidence that a person of ordinary skill in the art would have found it obvious to implement Haitani’s teachings within this regeneration mode, so that users

could achieve different reproducing modes that include various filters to narrow the set of selectable image and video files and more quickly locate the desired file to reproduce. *See* Ex. 1005 ¶¶ 92–93.

Accordingly, based upon the complete record, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that a person of ordinary skill in the art at the time of the claimed invention would have had a reasoned basis to combine the teachings of Nozaki and Haitani in the manner described and would have had a reasonable expectation of success in that endeavor.

2. Claim 11 (incorporating limitations of canceled claim 8)

We now consider the evidence and arguments of the parties directed to claim 11, which depends from cancelled claim 8. Petitioner contends that claim 11 is unpatentable under 35 U.S.C. § 103(a) as obvious over the combined teachings of Nozaki and Haitani. Pet. 26–30. Petitioner submits the testimony of Dr. Bederson in support of its contentions. Ex. 1005 ¶¶ 66–101.

Patent Owner disputes Petitioner’s evidence. PO Resp. 25–38. Patent Owner submits the declaration of Dr. Balakrishnan in support of its position. Ex. 2030 ¶¶ 128–173.

a. Limitation [11a]

Limitation [11a] recites: “*wherein the memory further stores instructions that, when executed by the processor, cause the processor to: control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode.*” Ex. 1001, 16:24–28.

Petitioner asserts that Nozaki in combination with Haitani renders this limitation obvious. Pet 26 (citing Ex. 1005 ¶ 95). Petitioner asserts that

Nozaki teaches a memory that stores program instructions for execution by a processor, and that Haitani contains similar teachings. Pet. 26 (citing Ex. 1005 ¶ 95; Ex. 1007, 26:53–54, 27:31–41, 31:51–59). Petitioner also asserts that Haitani teaches selectively reproducing images/videos using search filters—including filters based on face-recognizing data, and that a person of ordinary skill in the art would recognize this as a reproducing mode. Pet. 26 (citing Ex. 1005 ¶ 95). According to Petitioner, Haitani also discloses that one or more additional filters may be combined with the face-recognition filter, resulting in additional reproducing modes that generate narrower lists of photos and/or videos for reproduction. Pet. 26 (citing Ex. 1005 ¶ 96; Ex. 1007, 10:61–11:3, 11:15–33, 12:16–17, 13:9–13, 20:45–50). Petitioner asserts that a person of ordinary skill in the art “would have understood that these modes of searching for images/videos are discrete from each other, and that using a single filter constitutes a reproducing mode that reproduces a broader range of images/videos for display than reproducing modes that combine the original filter with one or more additional filters.” Pet. 26–27 (citing Ex. 1005 ¶ 96).

According to Petitioner, “Haitani discloses that, ‘[i]f large numbers of image files exist,’ a device can ‘reduce the number of files through which a user needs to sort to select an image for sharing, viewing, or taking other actions’ by ‘filtering images 246 using generated filters, pre-configured filters, user entered filters, or some other type of filter.’” Pet. 27 (citing Ex. 1005 ¶ 97; Ex. 1007, 10:61–66). Petitioner asserts that “Haitani teaches that its filters may employ a ‘combination of the non-image data . . . which may be associated with an image file.’” Pet. 27 (citing Ex. 1007, 10:66–11:3). Petitioner argues that “face-recognition data is a type of ‘non-image data’ that Haitani teaches for use as a filter, and which a user may select in order

to pick out images/videos that contain a registered person.” Pet. 27. According to Petitioner, “Haitani also discloses other nonimage filters including, among other things, a ‘time filter’ and an ‘event-related filter’ for sorting through and selectively displaying photo/video information.” Pet. 27 (citing Ex. 1005 ¶ 97; Ex. 1007, 11:2–3, 12:16–17).

Petitioner argues that a person of ordinary skill in the art “would have understood Haitani to teach that a user may combine one or more of these additional filters with the face-recognition filter to employ a different reproducing mode that picks out a more narrowly focused set of images/videos.” Pet. 27 (citing Ex. 1005 ¶ 98). According to Petitioner, “Haitani explains that ‘[f]ilters selectable by a user’ may have ‘varying degrees of specificity’ and may be arranged such that a first filter ‘may cover a broad range’ followed by a second filter that is ‘responsive’ to the first and customized to ‘display filter options that are narrower.’” Pet. 27–28 (citing Ex. 1007, 11:15–23; *see also id.* at 11:24–33 (discussing three filters that narrow the reproduced images from state, to city, to areas in a city)). Petitioner asserts that a person of ordinary skill in the art “would have found it obvious to implement in the Nozaki device the combinations of filters disclosed in Haitani to create multiple reproducing modes that efficiently sort through, select, and display desired image(s) and/or video(s).” Pet. 28 (citing Ex. 1005 ¶ 99).

Petitioner argues that a person of ordinary skill in the art “would have understood Haitani’s teachings regarding filters to be compatible with Nozaki because, in addition to face-recognizing data, Nozaki discloses generating the same types of non-image data that Haitani teaches for use as a filter—including, for example, date and time information (Ex. 1006 ¶ 58), relationship to a user (Ex. 1006 ¶ 141), and events ‘such as family and group

activities’ (Ex. 1006 ¶ 148). Pet. 28 (citing Ex. 1005 ¶ 99). “Indeed,” Petitioner asserts, a person of ordinary skill in the art “would recognize that Nozaki already suggests sorting the index images on the detailed information screen (Figure 5) sequentially according to the times when the images were captured.” Pet. 28 (citing Ex. 1005 ¶ 99; Ex. 1006 ¶¶ 143–144). Petitioner also argues that a person of ordinary skill in the art “would recognize that Haitani teaches combining face-recognition and time-based filters.” Pet. 28 (citing Ex. 1007, 13:9–13, 20:45–50). Petitioner argues that a person of ordinary skill in the art “therefore would have found it obvious to implement the multiple-filter search of Haitani in the Nozaki device, such that the Nozaki device operates according to this limitation to reproduce images in an additional mode.” Pet. 28–29 (citing Ex. 1005 ¶ 99). “Such a modification,” Petitioner argues, “would have required a minimal number of changes to Nozaki’s existing design, which were well within the skill in the art at the time.” Pet. 29 (citing Ex. 1005 ¶ 99).

Patent Owner asserts that “Neither Nozaki nor Haitani, alone or together, disclose a first **and** second reproducing mode for reproducing the image information as claimed in limitation [11.a].” PO Resp. 25 (citing Ex. 2030 ¶ 128). Patent Owner argues that “the different filters in Haitani are not two separate modes” as claimed, because “Haitani’s filters are not operational states.” PO Resp. 26. Patent Owner asserts that “a user choosing various filters in Haitani to display images or videos is operating in, at most, a single ‘review mode’ state.” *Id.*

Patent Owner also argues that “Nozaki uses ‘mode’ consistently with its plain and ordinary meaning as understood by a [person of ordinary skill in the art]—*i.e.*, an operational state that a system has been switched to.” *Id.* at 28–29. According to Patent Owner, “[d]epending on which mode the user

selects, wholly different processing operations are performed by the CPU 26 in Nozaki.” *Id.* at 28 (citing Ex. 2030 ¶ 135).

Patent Owner argues that “the filtering search feature in Haitani . . . merely separates data based on user input,” and is not “an operational state of a device.” PO Resp. 29 (citing Ex. 2030 ¶ 141; *see also* Ex. 1001, 9:20–22; 9:29–30; 9:46–47; *see also id.* at Fig. 9). Patent Owner also asserts that Dr. Bederson acknowledged that “Haitani distinguishes modes from filters.” PO Resp. 29 (citing Ex. 2031, 49:13–18).

Patent Owner argues that “multiple dictionary definitions distinguish ‘filter’ and ‘mode’ consistent with the ’848 patent,” and that “Dr. Bederson testified that Haitani’s use of the word filter is consistent with the definition of filter posed as “something that separates data or signals in accordance with specified criteria.” PO Resp. 30 (citing Ex. 2031, 38:16–39:20). Patent Owner also asserts that Haitani “confirms that that the filtering features fail to teach the first and second reproducing modes,” because “Haitani draws a clear distinction between the filtering and mode terms.” PO Resp. 30 (citing Ex. 2030 ¶ 146). According to Patent Owner, Haitani “uses the term ‘mode’ in reference to operational states,” such as a “standalone mode, a mobile station (MS) assisted mode, and/or a MS-based mode.” PO Resp. 31 (citing Ex. 1007, 29:61–64). “Haitani,” Patent Owner argues, “clearly distinguishes between modes and filters and does not use them interchangeably.” PO Resp. 31 (citing Ex. 2030 ¶ 149).

Patent Owner concludes that a person of ordinary skill in the art “would not treat modes and filters the same—Haitani itself confirms this—and would not conclude that the filters in Haitani teach or disclose the first and second reproducing modes as claimed in limitation [11.a].” PO Resp. 32. According to Patent Owner, “Haitani explains various modes and those

modes describe different operating states of the portable device whereas the filters do not.” *Id.* (citing Ex. 2030 ¶ 151).

We disagree with Patent Owner. Patent Owner’s principal argument is that the different filters in Haitani cannot be separate “modes,” because Haitani’s filters are not “operational states.” PO Resp. 26. Patent Owner argues that the filtering search feature in Haitani “merely separates data based on user input,” and thus is not “an operational state of a device.” PO Resp. 29. But Patent Owner’s arguments fail to take into account the full disclosure of the ’848 patent when considering the meaning of the term “mode” as it is used in the ’848 patent claims.

Here, we determined that a person of ordinary skill in the art at the time of the claimed invention would understand the term “mode” as it is used in the ’848 patent to be a “state,” “condition,” or “operational state” of a recording device, such as a video camera, that is selected by a user and may include a selection function using threshold values. This understanding is based on the use of the term “mode” in the claim language and the Specification.

The claims themselves make clear that particular modes, such as a “record mode” and a “reproduction mode” are options that are selected by a user from a display. *See* Ex. 1002, 8:40–46. The ’848 specification explains, for example, that “reproduction is performed by selecting as a reproducing mode a ‘standard reproducing mode’ from the menu,” whereby “all chapters are sequentially reproduced in an order of smaller chapter ID.” Ex. 1001, 9:20–24.

With respect to the “express reproducing mode,” the Specification explains that “a user starts reproducing by selecting as the reproducing mode an ‘express reproducing mode,’” such that “only the chapters having the

chapter importance level ‘3’ or smaller (only the chapters having the importance levels ‘1’ to ‘3’) are reproduced.” *Id.* at 9:29–30, 38–41.

Similarly, with respect to the “superexpress reproducing mode,” the Specification explains that “a user starts reproducing by selecting as the reproducing mode a ‘superexpress reproducing mode,’” whereby “only the chapters having the chapter importance level ‘1’ are reproduced.” *Id.* at 9:46–47, 52–54. The Specification explains that the “chapter importance levels” are “predetermined threshold values” that are used by the “chapter select reproducing function” of the system controller to sort and display reproduced images. *See id.* at 9:61–62, 10:12–30.

As we discussed *supra*, a person of ordinary skill in the art at the time of the claimed invention would understand that the term “mode” as it is used in the ’848 patent, would be a “state,” “condition,” or “operational state” of a recording device, such as a video camera, that is selected by a user and may include a selection function using threshold values. *See* Sec. III.B. As the ’848 patent teaches, and Dr. Bederson testifies, the threshold values assigned to the video chapters by the “chapter select reproducing function” upon activating the “standard,” “express,” and “superexpress reproducing modes” act to sort and select the various video chapters based upon their “importance” by determining the frequency with which a VIP appears in each of the chapters. *See* Ex. 1001, 9:20–62, 10:16–30; Ex. 1005 ¶¶ 95–99. The activation of these “modes” in the ’848 patent acts as a selection or filtering process that meets the stated goals of the claimed invention, which allows a user to “find an object chapter and scene quickly and easily.” Ex. 1001, 2:53–58.

Thus, a person of ordinary skill in the art at the time of the claimed invention would understand that the term “mode” as it is used in the context

of '848 patent, would encompass a state, condition, or operational state of a recording device, such as a video camera, that may use threshold values as a means to separate, sort and display images.

Here, Petitioner provides substantial evidence that Haitani teaches selectively reproducing images/videos using search filters—including filters based on face-recognizing data, and that a person of ordinary skill in the art would recognize this as a reproducing mode. Pet. 26 (citing Ex. 1005 ¶ 95).

Dr. Bederson testifies, and we agree, that Haitani's filtered searches resemble the reproducing modes of the '848 patent and provide additional reproducing modes that generate narrower lists of photos and/or videos for reproduction that reproduce a broader range of images/videos for display than reproducing modes that combine the original filter with one or more additional filters. Ex. 1005 ¶¶ 95–96; *see also* Ex. 1017 ¶ 15. Dr. Balakrishnan agrees that using picture size as a threshold is an example of filtering based on size. Ex. 1018, 48–49.

Petitioner also provides substantial evidence that Haitani discloses that one or more additional filters may be combined with the face-recognition filter, resulting in additional reproducing modes that generate narrower lists of photos and/or videos for reproduction. Pet. 26 (citing Ex. 1005 ¶ 96; Ex. 1007, 10:61–11:3, 11:15–33, 12:16–17, 13:9–13, 20:45–50).

Petitioner also provides substantial evidence that a person of ordinary skill in the art “would have understood that these modes of searching for images/videos are discrete from each other, and that using a single filter constitutes a reproducing mode that reproduces a broader range of images/videos for display than reproducing modes that combine the original filter with one or more additional filters.” Pet. 26–27 (citing Ex. 1005 ¶ 96).

Accordingly, based upon the complete record, we find that Petitioner has established by a preponderance of the evidence that the combination of Nozaki and Haitani teach or suggest the recited “*wherein the memory further stores instructions that, when executed by the processor, cause the processor to: control the reproduction of the image information in a reproducing mode set from one of a first reproducing mode and a second reproducing mode,*” of limitation [11a].

b. Limitation [11b]

Limitation [11b] recites: “*wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode.*” Ex. 1001, 16:29–33.

Petitioner asserts that Nozaki in combination with Haitani renders this limitation obvious. Pet. 29 (citing Ex. 1005 ¶ 100). Petitioner asserts that “Haitani discloses different modes of reproducing data that use one filter or a combination of filters.” Pet. 29. According to Petitioner, “Haitani explains that a mode using one filter ‘may cover a broad range’ whereas a mode that adds a second filter ‘responsive’ to the first will ‘display filter options that are narrower.’” Pet. 29 (citing Ex. 1007, 11:15–23). Petitioner argues that “[t]his is consistent with the disclosures in the ’848 patent regarding, for example, a ‘standard reproducing mode’ that reproduces ‘all chapters’ and an ‘express reproducing mode’ that reproduces only a subset of chapters.” Pet. 29 (citing Ex. 1001, 9:20–45; Ex. 1005 ¶ 100). Petitioner argues that a person of ordinary skill in the art “would have understood that the reproducing time for the first mode (i.e., a ‘narrower’ search that combines multiple filters) would be shorter than a reproducing time for a second mode (i.e., a ‘broad’ search that uses a single filter) as this limitation

recites, because the first mode reproduces fewer image/video files than the second mode.” Pet. 29 (citing Ex. 1005 ¶ 100).

Patent Owner argues that “[t]here is no evidence within Haitani or any extrinsic evidence (*e.g.*, something that incorporates the filtering feature of Haitani) to demonstrate that the reproducing time for the first mode would be shorter than the second mode.” PO Resp. 35 (citing Ex. 2030 ¶ 161).

Patent Owner argues that the “time taken to filter data and display results is dependent on many factors including the type of data and how it’s structured and indexed and cannot simplistically be attributed to the number of data items ultimately displayed.” PO Resp. 36 (citing Ex. 2030 ¶ 162).

According to Patent Owner, a person of ordinary skill in the art “would not understand that [the] disclosure in the ’848 patent as being ‘consistent’ with the filtering search feature in Haitani, which merely separates data based on user input.” PO Resp. 36 (citing Ex. 2030 ¶ 163).

We disagree with Patent Owner. Petitioner provides substantial evidence that the combined teachings of Nozaki and Haitani show that reproducing times for a first mode would be shorter than a second mode. For example, Haitani explains that a mode using one filter “may cover a broad range” whereas a mode that adds a second filter “responsive” to the first would “display filter options that are narrower.” Ex. 1007, 11:15–23. This is consistent with the teachings in the ’848 patent regarding, for example, a “standard reproducing mode” that reproduces “all chapters” and an “express reproducing mode” that reproduces only a subset of chapters. *See* Ex. 1001, 9:20–45. Dr. Bederson testifies, and we agree, that a person of ordinary skill in the art would understand that the reproducing time for the first mode (*i.e.*, a narrower search that combines multiple filters) would be shorter than a reproducing time for a second mode (*i.e.*, a broad search that

uses a single filter) because the first mode reproduces fewer image/video files than the second mode, and search results that generate fewer image/video files will encompass a shorter “reproducing time” than search results that generate a larger number of image/video files. Ex. 1005 ¶ 100.

Accordingly, based upon the complete record, we find that Petitioner has established by a preponderance of the evidence that the combination of Nozaki and Haitani teach or suggest the recited “*wherein a reproducing time required for reproducing the image information under the first reproducing mode is shorter than a reproducing time required for reproducing the image information under the second reproducing mode,*” of limitation [11b].

c. Limitation [11c]

Limitation [11c] recites “*the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode.*” Ex. 1001, 16:33–37.

Petitioner asserts that Nozaki in combination with Haitani renders this limitation obvious. Pet. 30 (citing Ex. 1005 ¶ 101). Petitioner asserts that “Haitani discloses different modes of reproducing data that use one filter or a combination of filters, including a mode using one filter ‘cover[ing] a broad range’ and a mode adding a second filter that reproduces a ‘narrower’ range of images/videos.” Pet. 30 (citing *id.* at Sections VI.C.2 and VI.C.3). According to Petitioner, a person of ordinary skill in the art “would have understood that the images/videos reproduced in the ‘broad’ second mode that uses a single search term (e.g., only face recognizing data) would include the images/videos reproduced in the ‘narrower’ first mode (e.g., face recognizing data plus a date/time range) as well as other images/videos that

the first mode did not cause to be reproduced.” Pet. 30 (citing Ex. 1005 ¶ 101).

Patent Owner argues that Petitioner “point[s] to no evidence within Haitani or extrinsic evidence to demonstrate that the purportedly broader second reproducing mode includes images/videos in the first reproducing mode plus other image information not in the first mode as claimed.” PO Resp. 37–38 (citing Ex. 2030 ¶ 171). Patent Owner argues that “[t]he narrower filter identified by Dr. Bederson comprising two filters—a face recognizing data plus a date/time range—could comprise the entire universe of face-recognition images in the broader filter.” PO Resp. 38. Patent Owner concludes that a person of ordinary skill in the art “would recognize that the Nozaki-Haitani combination, and specifically the filters in Haitani, does not disclose the first and second reproducing modes as claimed in limitation [11.c].” PO Resp. 38 (citing Ex. 2030 ¶¶ 172–173).

We disagree with Patent Owner. Patent Owner provides substantial evidence that the combined teachings of Nozaki and Haitani meet limitation [11c]. Haitani teaches different modes of reproducing data that use one filter or a combination of filters, including a mode using one filter covering a broad range and a mode adding a second filter that reproduces a narrower range of images/videos. *See, e.g.*, Ex. 1007, 10:61–11:3, 11:15–33, 12:16–17, 13:9–13, 20:45–50. Dr. Bederson provides corroborating testimony, which we credit. Ex. 1005 ¶ 101.

Based on this evidence, a person of ordinary skill in the art would have understood that the images/videos reproduced in the broad second mode that uses a single search term (e.g., only face recognizing data) would include the images/videos reproduced in the narrower first mode (e.g., face

recognizing data plus a date/time range) as well as other images/videos that the first mode did not cause to be reproduced.

Accordingly, based upon the complete record, we find that Petitioner has established by a preponderance of the evidence that the combination of Nozaki and Haitani teach or suggest the recited “*the image information reproduced under the second mode includes the image information reproduced under the first reproducing mode and other of the image information not reproduced under the first reproducing mode,*” of limitation [11c].

d. Conclusion

Based on the complete record, we are persuaded that Petitioner has established by a preponderance of the evidence that the combined teachings of Nozaki and Haitani meet the limitations of claim 11 and the incorporated limitations of cancelled claim 8, and that a person of ordinary skill in the art at the time of the claimed invention would have had reason to combine their teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

3. Claim 12 (depends from claim 11)

a. Limitation [12a]

Limitation [12a] recites: “wherein the memory further stores instructions that, when executed by the processor, cause the processor to: control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode.” Ex. 1001, 16:38–44.

Petitioner asserts that Nozaki in combination with Haitani renders this limitation obvious. Pet. 30 (citing Ex. 1005 ¶ 103). Petitioner asserts that both Nozaki and Haitani disclose a memory that stores program instructions

for execution by a processor. Pet. 30 (citing *id.* at Sec. VI.C.2). Petitioner also asserts that Haitani discloses the use of different reproducing modes that use a filter or a combination of filters (e.g., filters based on face-recognition data, date/time, location, or events) to search for and reproduce a set or subset of image/video files. Pet. 30–31 (citing *id.* at Sec. VI.C.2 and CI.C.3).

According to Petitioner, a person of ordinary skill in the art “would have understood that Haitani therefore discloses three search modes that use different filters, and that will generate different sets of image/video files. Pet. 31 (citing Ex. 1005 ¶ 103). Petitioner argues, for example, that “a first mode might use face registration data as a filter, a second mode might add date/time as an additional filter, and a third mode might further add a third filter (e.g., location or events).” Pet. 31 (citing Ex. 1005 ¶ 103). According to Petitioner, a person of ordinary skill in the art “would have known that each mode would generate broader or narrower results.” Pet. 31 (citing Ex. 1005 ¶ 103). “Each mode.” Petitioner argues, “would correspond to a mode recited in this limitation.” Pet. 31 (citing Ex. 1005 ¶ 103).

Patent Owner argues that “Haitani’s filters are not modes, and thus do not meet this limitation even if combined with Nozaki.” PO Resp. 39 (citing Ex. 2030 ¶¶ 174–176). Patent Owner also criticizes Dr. Bederson for relying on Haitani’s teaching of filtering and failing “to map their theories to the claim language.” PO Resp. 39 (citing Ex. 2031, 62:18–25).

We do not agree with Patent Owner. As we discussed *supra*, a person of ordinary skill in the art at the time of the claimed invention would understand that the term “mode” as it is used in the ’848 patent, would be a “state,” “condition,” or “operational state” of a recording device, such as a video camera, that is selected by a user and may include a selection function

using threshold values. *See* Sec. III.B. As the '848 patent teaches, and Dr. Bederson testifies, the threshold values assigned to the video chapters by the “chapter select reproducing function” upon activating the “standard,” “express,” and “superexpress reproducing modes” act to sort and select the various video chapters based upon their “importance” by determining the frequency with which a VIP appears in each of the chapters. *See* Ex. 1001, 9:20–62, 10:16–30; Ex. 1005 ¶¶ 95–99. The activation of these “modes” in the '848 patent acts as a selection or filtering process that meets the stated goals of the claimed invention, which allows a user to “find an object chapter and scene quickly and easily.” Ex. 1001, 3:53–58.

Accordingly, based upon the complete record, we find that Petitioner has established by a preponderance of the evidence that the combination of Nozaki and Haitani teach or suggest the recited “*wherein the memory further stores instructions that, when executed by the processor, cause the processor to: control the reproduction of the image information in the reproducing mode set from one of the first reproducing mode, the second reproducing mode, and a third reproducing mode,*” of limitation [12a].

b. Limitation [12b]

Limitation [12b] recites: “*wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode.*” Ex. 1001, 16:45–49.

Petitioner asserts that Nozaki in combination with Haitani renders obvious this limitation. Pet. 31 (citing Ex. 1005 ¶ 104). Petitioner argues that a person of ordinary skill in the art “would have understood Haitani to disclose at least three reproducing modes, for example if each mode adds another filter to the filter(s) of the mode preceding it.” Pet. 31 (citing *id.* at

Sec. VI.D.2). According to Petitioner, a person of ordinary skill in the art “would have known that each mode would generate broader or narrower results, with the broadest mode being a “third” mode having the characteristics recited in this limitation, i.e., a reproducing time longer than the second mode.” Pet. 31 (citing Ex. 1005 ¶ 104).

Patent Owner asserts that neither Nozaki nor Haitani disclose a first and second reproducing mode, let alone a third reproducing mode, for reproducing the image information as claimed in limitation [12b]. PO Resp. 40. Patent Owner argues that “[n]o evidence is cited to in Haitani or elsewhere to demonstrate the reproducing time for the third reproduction mode is longer than the second reproducing mode. *Id.* Patent Owner also argues that “[t]here is nothing in Haitani to indicate any reproduction speed of the filtering operations, whether for one or multiple filters, let alone in the specifically claimed arrangement.” *Id.* at 40–41. Patent Owner argues that “[t]he time taken to filter data and display results is dependent on many factors including the type of data and how it’s structured and indexed and cannot simplistically be attributed to the number of data items ultimately displayed as per the Petition’s and Dr. Bederson’s reductionist argument.” *Id.* at 41.

We disagree with Patent Owner. Petitioner provides substantial evidence demonstrating that the combined teachings of Nozaki and Haitani meet the subject matter of limitation [12b]. Petitioner provides evidence that Haitani teaches at least three reproducing modes, for example if each mode adds another filter to the filter(s) of the mode preceding it. Pet. 31.

Petitioner provides evidence that Haitani discloses different modes of reproducing data that use one filter or a combination of filters, including a mode using one filter covering a broad range and a mode adding a second

filter that reproduces a narrower range of images/videos. Ex. 1007, 10:61–11:3, 11:15–33, 12:16–17, 13:9–13, 20:45–50. Petitioner provides evidence that Haitani discloses selectively reproducing images/videos using search filters—including filters based on face-recognizing data, and that Haitani discloses the use of filters used to limit the number of images displayed on the monitor of a portable handheld device. *Id.* at 2:40–45. Haitani’s filters may be user selectable and may use the data in the image file obtained from non-image applications. *Id.* at 2:45–49.

Haitani teaches that one form of non-image data may come from an image recognition program, which may be pretrained to identify certain individuals (such as individuals the user may photograph regularly) and then look for those people in the images of a recording and reproducing apparatus. *Id.* at 6:39–42. Thus, Petitioner provides evidence that Haitani teaches the use of filters to selectively reproduce stored images/videos corresponding to an individual who has been previously registered on a recording and reproducing apparatus. Ex. 1005 ¶ 90.

Dr. Bederson also testifies that a person of ordinary skill in the art would have known that each mode would generate broader or narrower results, with the broadest mode being a third mode having the characteristics recited in this limitation, i.e., a reproducing time longer than the second mode. Ex.1005 ¶¶ 103, 104.

Accordingly, Petitioner has provided substantial evidence that a person of ordinary skill in the art would have understood that the images/videos reproduced in the broad second mode that uses a single search term (e.g., only face recognizing data) would include the images/videos reproduced in the narrower first mode (e.g., face recognizing data plus a

date/time range) as well as other images/videos that the first mode did not cause to be reproduced. Ex. 1005 ¶ 101.

Accordingly, based upon the complete record, we find that Petitioner has established by a preponderance of the evidence that the combination of Nozaki and Haitani teach or suggest the recited “*wherein a reproducing time required for reproducing the image information under the third reproducing mode is longer than the reproducing time required for reproducing the image information under the second reproducing mode,*” of limitation [12b].

c. Conclusion

Based on the complete record, we are persuaded that Petitioner has established by a preponderance of the evidence that the combined teachings of Nozaki and Haitani meet the limitations of claim 12, and that a person of ordinary skill in the art at the time of the claimed invention would have had reason to combine their teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

4. Claim 16 (incorporating limitations of canceled claim 13)

Claim 16 is substantially similar to claim 11. For claim 16, Petitioner relies on the evidence and arguments it provided with respect to claim 11. *See* Pet. 34 (citing *id.* at Secs. VI.E, VI.C.2, VI.C.3, VI.C.4).

Similarly, for claim 16, Patent Owner relies on its evidence and arguments provided with respect to claim 11. PO Resp. 44–45 (citing Ex. 2030 ¶¶ 199–202).

Based on the complete record, and for the reasons stated *supra* with respect to claim 11, we are persuaded that Petitioner has established by a preponderance of the evidence that the combined teachings of Nozaki and Haitani meet the limitations of claim 16 and the incorporated limitations of

cancelled claim 13, and that a person of ordinary skill in the art at the time of the claimed invention would have had reason to combine their teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

5. Claim 17 (depends from claim 16)

Claim 17 is substantially similar to claim 12. For claim 17, Petitioner relies on the evidence and arguments it provided with respect to claim 12. *See* Pet. 34–35 (citing *id.* at Secs. VI.F, VI.D.2, VI.D.3).

Similarly, for claim 17, Patent Owner relies on its evidence and arguments provided with respect to claim 12. *See* PO Resp. 45–46 (citing Ex. 2030 ¶¶ 203–205).

Based on the complete record, and for the reasons stated *supra* with respect to claim 12, we are persuaded that Petitioner has established by a preponderance of the evidence that the combined teachings of Nozaki and Haitani meet the limitations of claim 17 and that a person of ordinary skill in the art at the time of the claimed invention would have had reason to combine their teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

6. Claim 19 (incorporating limitations of canceled claim 18)

Claim 19 is substantially similar to claim 11. For claim 19, Petitioner relies on the evidence and arguments it provided with respect to claim 11. *See* Pet. 36 (citing *id.* at Secs. VI.H, VI.C.2, VI.C.3, VI.C.4).

Similarly, for claim 19, Patent Owner relies on its evidence and arguments provided with respect to claim 11. *See* PO Resp. 47–48 (citing Ex. 2030 ¶¶ 210–213).

Based on the complete record, and for the reasons stated *supra* with respect to claim 11, we are persuaded that Petitioner has established by a

preponderance of the evidence that the combined teachings of Nozaki and Haitani meet the limitations of claim 19 and the incorporated limitations of cancelled claim 18, and that a person of ordinary skill in the art at the time of the claimed invention would have had reason to combine their teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

7. Claim 20 (depends from claim 19)

Claim 20 is substantially similar to claim 12. For claim 20, Petitioner relies on the evidence and arguments it provided with respect to claim 12. *See* Pet. 36 (citing *id.* at Secs. VI.I, VI.D.2, VI.D.3).

Similarly, for claim 20, Patent Owner relies on its evidence and arguments provided with respect to claim 12. *See* PO Resp. 48–49 (citing Ex. 2030 ¶¶ 214–216).

Based on the complete record, and for the reasons stated *supra* with respect to claim 12, we are persuaded that Petitioner has established by a preponderance of the evidence that the combined teachings of Nozaki and Haitani meet the limitations of claim 20, and that a person of ordinary skill in the art at the time of the claimed invention would have had reason to combine their teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

E. Obviousness over Nozaki, Haitani, and Graham (Ground 2)

In Ground 2, Petitioner contends that claim 84 is unpatentable under 35 U.S.C. § 103(a) as obvious over Nozaki, Haitani, and Graham. *See* Pet.

37–52. Petitioner provides a claim analysis, supported by the testimony of Dr. Bederson. *See* Ex. 1005 ¶¶ 140–169.

For Ground 2, Patent Owner disputes Petitioner’s rationale to combine the asserted art. *See* PO Resp. 49–58. Patent Owner, however, does not separately challenge Petitioner’s evidence and arguments that the asserted prior art teaches all of the recited limitations of claim 84. *See id.*

We begin our analysis by considering Petitioner’s rationale for combining the teachings of the asserted art.

1. Rationale to Combine Nozaki, Haitani, and Graham

Petitioner contends that Graham is analogous art to the ’848 patent because, like Nozaki and Haitani, Graham discloses a method for selectively reproducing video files in the context of a computer device (with or without a camera) like a PDA, a cell phone, or a video camera. Pet. 37 (citing Ex. 1008 ¶¶ 72, 73, 318). For that reason, Petitioner asserts that a person of ordinary skill in the art would have found it obvious to combine Graham with Nozaki and Haitani. Ex. 1005 ¶ 140.

Petitioner argues that the disclosures of Graham are compatible with, and complementary to, those in Nozaki and Haitani, and that a person of ordinary skill in the art would have been motivated to combine them for this reason as well. Pet. 37 (citing Ex. 1005 ¶ 141). Petitioner asserts that a person of ordinary skill in the art would have been motivated to combine Haitani with Nozaki so that the Nozaki device could take advantage of Haitani’s filter-based search method for selectively reproducing broader and narrower sets of image/video files. Pet. 37. Petitioner also asserts that a person of ordinary skill in the art would have also found it obvious to modify the Nozaki device to incorporate the disclosures in Graham, which are directed to searching for and reproducing specific segments within

individual video files. *Id.* (citing Ex. 1008, Fig. 3, ¶¶ 5, 60–62, 88.

According to Petitioner, a person of ordinary skill in the art “would have recognized that Graham’s method of segmenting video files into individual ‘keyframe’ chapters and displaying those keyframes as selectable thumbnail images is compatible with the reproduction software disclosed in Nozaki.” Pet. 37 (citing Ex. 1005 ¶ 141). Petitioner asserts that a person of ordinary skill in the art “would have also recognized that Nozaki’s face-detection data could be used as an additional method by which to identify keyframes in a video file, such that the listing of ‘face recognizing data’ in Figure 5 of Nozaki could be alternatively configured as a scrollable list of keyframe data similar to Graham.” Pet. 37–38 (citing Ex. 1005 ¶ 141). Petitioner also asserts that a person of ordinary skill in the art “would have been motivated to implement this modification to improve the efficiency of searching for specific moments within a long video file.” Pet. 38 (citing Ex. 1005 ¶ 142). According to Petitioner, Graham’s video segmenting methods address this need and could have been easily implemented in the Nozaki device. Pet. 38 (citing Ex. 1005 ¶ 142). “Such implementation,” Petitioner asserts, “would have been within the skill” of a person of ordinary skill in the art. Pet. 38 (citing Ex. 1005 ¶ 142).

Patent Owner asserts that a person of ordinary skill in the art would not be motivated to combine the teachings of Nozaki, Haitani, and Graham “because they are directed to solving different problems and use different structures to solve these problems.” PO Resp. 51. Patent Owner also asserts that the Petition fails to explain how a person of ordinary skill in the art “would implement the video-segmenting from Graham in a portable device like Nozaki.” *Id.*

Patent Owner also argues that there is nothing to suggest that a person of ordinary skill in the art would use a touch screen application, as it is disclosed in Hatani's cell phone, in Nozaki, as Nozaki is an electronic camera. *Id.* at 53. Patent Owner argues that Haitani and Nozaki are directed to solving different problems and use different structures to solve these problems. *Id.* at 54 (citing Ex. 2030 ¶ 233).

Patent Owner also argues that a person of ordinary skill in the art would not have found it obvious to combine Nozaki with Graham to comprise a processor that automatically sets a plurality of sections corresponding to the video information of the scene. PO Resp. 54–55 (citing Ex. 2030 ¶ 235). Patent Owner argues that Graham is solving a wholly different problem with different hardware than Nozaki. PO Resp. 55 (citing Ex. 2030 ¶ 239; *see also* Ex. 1008 ¶¶ 60–62, 88). Patent Owner argues that the Petition points to nothing in Graham that would suggest its video keyframing methodology is compatible with Nozaki. PO Resp. 56.

We disagree with Patent Owner. Contrary to Patent Owner's assertions and as we stated earlier, "the [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 550 U.S. at 418. "[A]n analysis of obviousness . . . may include recourse to logic, judgment, and common sense available to the person of ordinary skill in the art that do not necessarily require explication in any reference or expert opinion." *Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009).

Patent Owner's argument that a person of ordinary skill in the art would not be motivated to combine the teachings of Nozaki, Haitani, and

Graham because they are directed to solving different problems and use different structures to solve these problems is unavailing, because “[u]nder the correct [obviousness] analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 420.

Similarly, Patent Owner’s argument that there is nothing to suggest that a person of ordinary skill in the art would use a touch screen application, as it is disclosed in Hatani’s cell phone, in Nozaki, as Nozaki is an electronic camera, is also unavailing because “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 550 U.S. at 417.

Patent Owner’s argument that the Petition points to nothing in Graham that would suggest its video keyframing methodology is compatible with Nozaki is similarly unavailing, because a reason to combine teachings from the prior art “may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved.” *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1355 (Fed. Cir. 1999) (citing *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998)).

Here, Petitioner provides a persuasive rationale as to why a person of ordinary skill in the art would combine the teachings of Nozaki, Haitani, and Graham as described in the Petition. For example, Petitioner explains that a person of ordinary skill in the art would have recognized that Nozaki’s face-detection data could be used as an additional method by which to identify

keyframes in a video file, such that the listing of face recognizing data in Figure 5 of Nozaki could be configured as a scrollable list of keyframe data similar to Graham. Pet. 37–38 (citing Ex. 1005 ¶ 141). Petitioner also explains that a person of ordinary skill in the art would have been motivated to implement this modification to improve the efficiency of searching for specific moments within a long video file. Pet. 38 (citing Ex. 1005 ¶ 142). Petitioner also explains that Graham’s video segmenting methods address this need and could have been easily implemented in the Nozaki device. Pet. 38 (citing Ex. 1005 ¶ 142). Dr. Bederson testifies that such implementation would have been within the skill of a person of ordinary skill in the art. Ex. 1005 ¶ 142.

Accordingly, based upon the complete record, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that a person of ordinary skill in the art at the time of the claimed invention would have had a reasoned basis to combine the teachings of Nozaki, Haitani, and Graham in the manner described and would have had a reasonable expectation of success in that endeavor.

2. Independent Claim 84

As noted above, Petitioner contends that claim 84 is unpatentable as obvious over the combined teachings of Nozaki, Haitani, and Graham. Petitioner provides a claim analysis, supported by the testimony of Dr. Bederson. *See* Pet. 37–52; Ex. 1005 ¶¶ 140–169.

Patent Owner challenges Petitioner’s rationale to combine the asserted art, but does not separately challenge Petitioner’s evidence and arguments that the asserted prior art teaches the recited limitations of claim 84. *See* PO Resp. 49–58. Similarly, Dr. Balakrishnan does not address Petitioner’s

evidence and arguments that the asserted prior art teaches the recited limitations of claim 84. *See* Ex. 2030 ¶¶ 217–249.

We have considered Petitioner’s evidence and arguments that the combination of Nozaki, Haitani, and Graham teaches or suggests the recited limitations of claim 84, and have also considered the testimonial evidence of Dr. Bederson in that regard. Pet. 37–52; Ex. 1005 ¶¶ 140–169. Based on the complete record, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that the combined teachings of Nozaki, Haitani, and Graham meet all the recited limitations of independent claim 84. We are also persuaded that Petitioner has demonstrated by a preponderance of the evidence that a person of ordinary skill in the art at the relevant time period would have had reason to combine these teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

F. Obviousness over Nozaki, Haitani, and Kim (Ground 3)

For Ground 3, Petitioner contends that claim 84 is unpatentable under 35 U.S.C. § 103(a) as obvious over Nozaki, Haitani, and Kim. Pet. 52–57. Petitioner provides a claim analysis, supported by the testimony of Dr. Bederson. *See* Ex. 1005 ¶¶ 170–179.

For Ground 3, Patent Owner disputes Petitioner’s rationale to combine the asserted art. PO Resp. 58–66. Patent Owner, however, does not separately challenge Petitioner’s evidence and arguments that the asserted prior art teaches all of the recited limitations of claim 84. *See id.*

1. Rationale to Combine Nozaki, Haitani, and Kim

Petitioner asserts that “Kim is analogous art to the ’848 patent because, similar to Nozaki and Haitani, it discloses a method for selectively

reproducing video files in the context of a computer device (with or without a camera) like a PDA, a cell phone, or a video camera.” Pet. 52 (citing Ex. 1009, 11). “For this reason,” Petitioner argues, a person of ordinary skill in the art “would have found it obvious to combine Kim with Nozaki and Haitani.” Pet. 52 (citing Ex. 1005 ¶ 170).

According to Petitioner, the disclosures of Kim are compatible with, and complementary to, those in Nozaki and Haitani, and a person of ordinary skill in the art “would have been motivated to combine them for this reason as well.” Pet. 52 (citing Ex. 1005 ¶ 171). Petitioner asserts that a person of ordinary skill in the art would have “found it obvious to modify the Nozaki device to incorporate the disclosures in Kim, which are directed to searching for and reproducing specific segments within individual video files.” Pet. 52 (citing Ex. 1008, Fig. 3, ¶¶ 5, 60–62, 88). Petitioner argues that a person of ordinary skill in the art “would have recognized that Kim’s method of segmenting video files into individual ‘key frame’ chapters and displaying those key frames as selectable thumbnail images is compatible with the reproduction software disclosed in Nozaki.” Pet. 52 (citing Ex. 1005 ¶ 171). Petitioner argues that a person of ordinary skill in the art “would have also recognized that Nozaki’s face-detection data could be used in a manner that is consistent with Kim’s ‘face detecting unit,’ such that the Nozaki device’s face-detection functionality could be used to identify key frames in a video file.” Pet. 52–53 (citing Ex. 1005 ¶ 171). According to Petitioner, a person of ordinary skill in the art “would have understood, for example, that the listing of face recognizing data’ in Figure 5 of Nozaki could be configured according to the ‘topic list’ in Kim to provide a scrollable list of key frame chapter thumbnails, that, similar to Kim, would enable a user to navigate a video file.” Pet. 53 (citing Ex. 1005 ¶ 171).

Petitioner argues that a person of ordinary skill in the art “would have been motivated to implement this modification to improve the efficiency of searching for specific moments within a long video file.” Pet. 53 (citing Ex. 1005 ¶ 172). Petitioner argues that “Kim’s video segmenting methods address this need and could have been easily implemented in the Nozaki device.” Pet. 53 (citing Ex. 1005 ¶ 172). “Such implementation,” Petitioner asserts, “would have been within the skill” of a person of ordinary skill in the art. Pet. 53 (citing Ex. 1005 ¶ 172).

Patent Owner argues that “[t]he design requirements for Nozaki, Haitani, and Kim are substantially different,” and a person of ordinary skill in the art “would not be motivated to combine the teachings of Nozaki, Haitani, and Kim because they are directed to solving different problems and use different structures to solve these problems.” PO Resp. 60 (citing Ex. 2030 ¶¶ 254–255). Patent Owner argues that “Petitioner and Dr. Bederson fail to explain how a POSITA would implement the video-segmenting from Kim in portable device like Nozaki, let alone the combination of Nozaki-Haitani to which Kim is being added.” PO Resp. 60 (citing Ex. 2030 ¶ 256).

Patent Owner also argues that “[n]either Petitioner nor its expert attempts to quantify such ‘easy’ implementation techniques. Implementing an entirely different function on a processor cannot necessarily be expected to be easy.” PO Resp. 61 (citing Ex. 2030 ¶ 256). Patent Owner further argues that “Kim is solving a wholly different problem with different hardware than Nozaki,” and “Petitioner and Dr. Bederson point to nothing in Kim that would suggest its multimedia content indexing technique is compatible with Nozaki.” PO Resp. 63–64 (citing Ex. 2030 ¶¶ 269–270). Patent Owner asserts that “modifying Nozaki as suggested by Petitioner and Dr. Bederson to aid users is pure hindsight,” and “[n]o reason or motivation

is provided that a POSITA would combine two different systems solving two different problems together.” PO Resp. 66 (citing Ex. 2030 ¶ 277).

We disagree with Patent Owner. As we stated previously, “the [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418. “[A]n analysis of obviousness . . . may include recourse to logic, judgment, and common sense available to the person of ordinary skill in the art that do not necessarily require explication in any reference or expert opinion.” *Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009).

Patent Owner’s argument that a person of ordinary skill in the art would not be motivated to combine the teachings of Nozaki, Haitani, and Kim because they are directed to solving different problems and use different structures to solve these problems is unavailing, because “[u]nder the correct [obviousness] analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *KSR*, 550 U.S. at 420. Moreover, “a skilled artisan may be motivated to combine particular features of different references, *e.g.*, to secure some benefits at the expense of others, even when bodily incorporation would be impossible or inadvisable.” *Axonics, Inc. v. Medtronic, Inc.*, 73 F.4th 950, 957 (Fed. Cir. 2023).

Similarly, Patent Owner’s argument that there is nothing in Kim that would suggest its multimedia content indexing technique is compatible with Nozaki, is also unavailing because “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it

would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 550 U.S. at 417. Moreover, a reason to combine teachings from the prior art “may be found in explicit or implicit teachings within the references themselves, from the ordinary knowledge of those skilled in the art, or from the nature of the problem to be solved.” *WMS Gaming Inc. v. Int’l Game Tech.*, 184 F.3d 1339, 1355 (Fed. Cir. 1999) (citing *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998)).

Here, Petitioner provides a persuasive rationale as to why a person of ordinary skill in the art would combine the teachings of Nozaki, Haitani, and Kim as described in the Petition. For example, Petitioner explains that a person of ordinary skill in the art would have recognized that Nozaki’s face-detection data could be used in a manner that is consistent with Kim’s “face detecting unit,” such that the Nozaki device’s face-detection functionality could be used to identify key frames in a video file. Pet. 53 (citing Ex. 1005 ¶ 171). Petitioner also explains that a person of ordinary skill in the art would have understood that the listing of “face recognizing data” in Figure 5 of Nozaki could be configured according to the “topic list” in Kim to provide a scrollable list of key frame chapter thumbnails, that, similar to Kim, would enable a user to navigate a video file. Pet. 53 (citing Ex. 1005 ¶ 171). Petitioner further explains that a person of ordinary skill in the art would have been motivated to implement this modification to improve the efficiency of searching for specific moments within a long video file, and that Kim’s video segmenting methods address this need and could have been implemented in the Nozaki device. Pet. 53 (citing Ex. 1005 ¶ 172). Dr. Bederson provides testimony, which we credit, that such an implementation

would have been within the skill of a person of ordinary skill in the art. Ex. 1005 ¶ 172.

Accordingly, based upon the complete record, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that a person of ordinary skill in the art at the time of the claimed invention would have had a reasoned basis to combine the teachings of Nozaki, Haitani, and Graham in the manner described and would have had a reasonable expectation of success in that endeavor.

2. Independent Claim 84

Petitioner contends that claim 84 is unpatentable as obvious over the combined teachings of Nozaki, Haitani, and Graham. Petitioner provides a claim analysis, supported by the testimony of Dr. Bederson. *See* Pet. 52–57; Ex. 1005 ¶¶ 170–179.

Patent Owner challenges Petitioner’s rationale to combine the asserted art, but does not separately challenge Petitioner’s evidence and arguments that the asserted prior art teaches the recited limitations of claim 84. *See* PO Resp. 58–66. Similarly, Dr. Balakrishnan does not address Petitioner’s evidence and arguments that the asserted prior art teaches the recited limitations of claim 84. *See* Ex. 2030 ¶¶ 250–278.

We have considered Petitioner’s evidence and arguments that the combination of Nozaki, Haitani, and Graham teaches or suggests the recited limitations of claim 84, and have also considered the testimonial evidence of Dr. Bederson in that regard. Pet. 52–57; Ex. 1005 ¶¶ 170–179. Based on the complete record, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that the combined teachings of Nozaki, Haitani, and Kim meet all the recited limitations of independent claim 84. We are also persuaded that Petitioner has demonstrated by a preponderance

of the evidence that a person of ordinary skill in the art at the relevant time period would have had reason to combine these teachings in the manner described, and would have had a reasonable expectation of success in that endeavor.

IV. CONCLUSION⁷

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 11, 12, 16, 17, 19, 20, and 84 of U.S. Patent 10,176,848 B2, C1 are unpatentable on the bases set forth in the following table.

Claims Challenged	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
11, 12, 16, 17, 19, 20	103(a)	Nozaki, Haitani	11, 12, 16, 17, 19, 20	
84	103(a)	Nozaki, Haitani, Graham	84	
84	103(a)	Nozaki, Haitani, Kim	84	

⁷ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

V. ORDER

Accordingly, it is

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 11, 12, 16, 17, 19, 20, and 84 of U.S. Patent 10,176,848 B2, C1 are unpatentable; and

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

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