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Paper 11
Date: January 17, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SONY CORPORATION,
Petitioner,

v.

OPTIMUM IMAGING TECHNOLOGIES, LLC,
Patent Owner.

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IPR2024-01046
Patent 10,877,266 B2

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Before JOHN F. HORVATH, GARTH D. BAER, and RUSSELL E. CASS, *Administrative Patent Judges*.

HORVATH, *Administrative Patent Judge*.

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

# I. INTRODUCTION

## *A. Background and Summary*

Sony Corporation ("Petitioner") filed a Petition requesting *inter partes* review of claims 1–27, 29 and 30 ("the challenged claims") of U.S. Patent No. 10,877,266 B2 (Ex. 1001, "the '266 patent"). Paper 2 ("Pet."), 1. Optimum Imaging Technologies, LLC ("Patent Owner") filed a Preliminary Response. Paper 10 ("Prelim. Resp."). We have jurisdiction and authority under 35 U.S.C. §§ 6, 314 and 37 C.F.R. § 42.4.

Upon consideration of the Petition and Preliminary Response, we are persuaded that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing the unpatentability of at least one challenged claim of the '266 patent. Accordingly, we institute *inter partes* review of all challenged claims on all grounds raised.

## *B. Real Parties-in-Interest*

Petitioner identifies itself as the real party-in-interest. Pet., xi. Patent Owner identifies itself as the real party-in-interest. Paper 4, 1; Paper 8, 1, Paper 9, 1.

## *C. Related Matters*

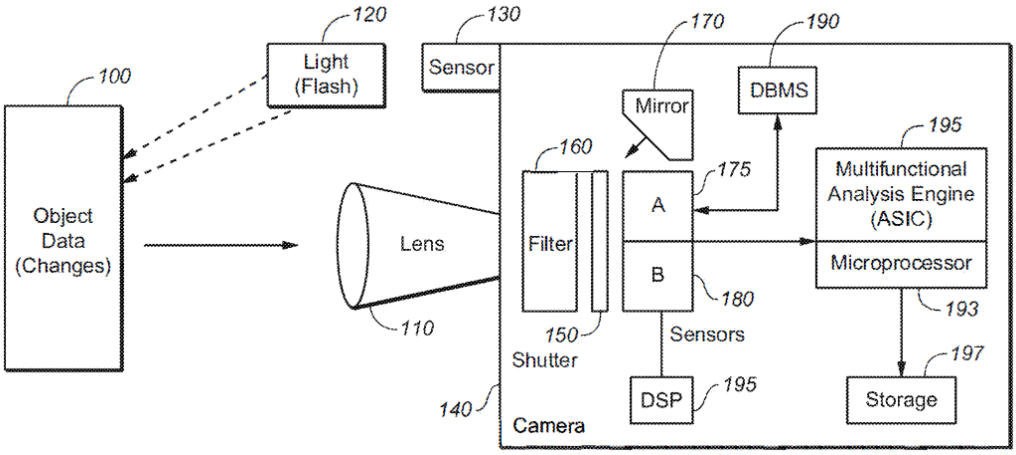
Petitioner and Patent Owner identify numerous patents, patent applications, *inter partes* reviews, and district court proceedings that can affect or be affected by this proceeding, including *Optimum Imaging Techs., LLC v. Sony Corp.*, 4:23-cv-00928 (EDTX) (the "related district court litigation"). Pet., xi–xii; Paper 4, 1–3; Paper 8, 1–3; Paper 9, 1–3.

## *D. The '266 Patent*

The '266 patent is directed toward an apparatus for "optical image collection, electronic organization and optimization of digital data using integrated circuits and software" with applications in "still and video

photography" as well as in "copying and scanning technologies." Ex. 1001, 1:30–36. The apparatus provides "electronic methods to optimize optical processing, the digital capture of light and post-capture image organization." *Id.* at 1:21–24.

Figure 1 of the patent is reproduced below.




The figure "illustrates the overall structure of the system." *Id.* at 30:29. Digital camera 140 includes, *inter alia*, lens 110, sensors 175/180, DBMS 190,[1] digital signal processor (DSP) 195, microprocessor 193, ASIC (application specific integrated circuit) 195, and memory 197. *Id.* at 30:25–38, Fig. 1. Light from object 100 is focused by lens 110 onto at least one of the sensors 175/180. *Id.* at 30:25–27. "The digital image data is passed from the digital sensor to either the ASIC or microprocessor and then stored in memory." *Id.* at 30:36–38. ASIC 195 and/or microprocessor 193 "process the image and control the camera." *Id.* at 30:33–36.

The patent explains that every optical "lens with a unique optical formula will have specific aberrations, the corrections for which will be

[1] Although Figure 1 identifies element 190 as a DBMS or database management system, the patent identifies element 190 as a database. *See* Ex. 1001, 30:32–33.

accessible in a database." *Id.* at 11:28–30. Thus, when taking a picture, the camera "identifies a specific lens and refers to a database that matches the lens type with [its] specific aberrations." *Id.* at 10:63–65. "After a specific lens type is identified (500) and a database is referenced (510), the lens type is matched with the specific optical aberrations (520)" and the DSP acts as a "digital filter [that] applies a correction to specific optical aberrations (530)." *Id.* at 31:14–18, Fig. 5. The digital filter "employ[s] the DSP hardware as well as specific software in order to attain specific aberration corrections." *Id.* at 31:39–41. It can make an image sharper, for example, by obtaining its frequency spectrum via Fast Fourier Transform (FFT), "differentiating the frequency spectrum," and emphasizing the sharper, higher frequency components "by limiting the low frequency, as in a high pass filter." *Id.* at 31:50–58.

This sequence of lens aberration correction steps is shown in Figure 7, which is reproduced below.

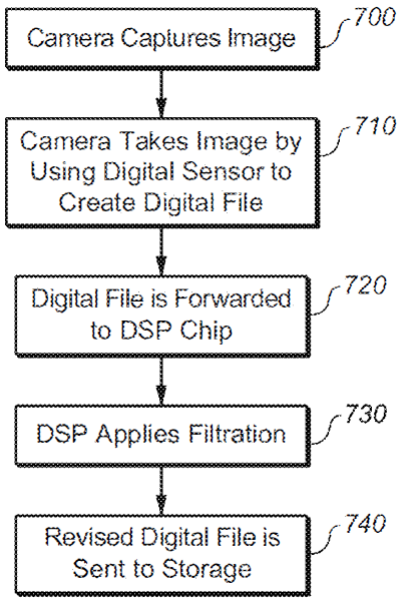



Figure 7 "is a flow chart of the process of digital image capture, processing, and storage." *Id.* at 8:62–63. The camera "uses a digital sensor to create a

digital file (710), the digital file is forwarded to the digital signal processor . . . (720)," which "applies the filtration (730) to correct the optical aberrations from the lenses," and "[t]he revised digital file is then sent to storage (740)." *Id.* at 31:33–38.

Camera 140 can also include a wireless router, allowing the camera to "send[] digital image data files wirelessly to a [remote] computer" and to download software "to update the camera settings and the database system." *Id.* at 29–10–13, 36:61–67. This allows camera 140 to be updated with aberration correction data for new lenses and with new or improved image correction algorithms. *Id.* at 29:13–20. These algorithms, in addition to allowing lens aberration corrections as described above, allow camera 140 to make depth of field, tonal range, and lens dust corrections, as well as to correct for noisy or dead pixels in sensors 175/180. *Id.* at 13:33–36, 14:49–62, 15:21–33, 16:45–52, 17:4–15, 33:7–19. In doing so, camera 140 may store and retrieve "specific variables, such as aperture data, shutter speed data, lens data, digital sensor data and [photo] subject data" and change its stored settings as "environmental data changes." *Id.* at 24:4–9.

*E. Illustrative Claim*

Claims 1, and 22 are independent, and claims 2–21 and 23–30 depend directly or indirectly from them. Ex. 1001, 37:28–39:20. Claim 1, which is illustrative of the challenged claims, is reproduced below.

> 1. A method of processing one or more images with a digital camera, comprising:
>
> digitally processing at least one captured image, the processing using in-camera hardware and software that is configured to:
>
> perform a plurality of image correction algorithms, process image correction data stored in a database system,

receive updated software and image correction data, and

upgrade the digital camera with the updated software and image correction data;

storing in memory one or more corrected images resulting from digitally processing the at least one captured image; and

wirelessly transmitting at least one of the one or more corrected images,

wherein the in-camera software and database system are upgradable to provide improved algorithms and correction data for correction of images.

*Id*. at 37:28–47.

*F. Evidence*

| Reference | | Effective Date | Exhibit |
|---|---|---|---|
| Watanabe-JP | JP 2004-192178 A | July 8, 2004 | 1005 |
| Niikawa | US 2002/0135688 A1 | Sep. 26, 2002 | 1006 |
| Bolle | US 6,301,440 B1 | Oct. 9, 2001 | 1007 |
| Ng | WO 2006/039486 A2 | Apr. 13, 2006 | 1008 |
| Irie | US 2006/0050158 A1 | Mar. 9, 2006 | 1011 |
| Watanabe-US | US 2005/0280877 A1 | Dec. 22, 2005 | 1013 |

Petitioner also relies upon the Declaration of Leonard Laub. Ex. 1003.

*G. Asserted Grounds*

Petitioner asserts the challenged claims are unpatentable on the following grounds:

| Ground | Claims | 35 U.S.C. § | References |
|---|---|---|---|
| 1 | 1, 2, 4, 5, 8, 11 13–20, 22, 23, 25, 27, 30 | 103 | Niikawa, Watanabe-JP |
| 2 | 1–3, 5–11, 16, 19, 22–25 | 103 | Niikawa, Watanabe-JP, Bolle |
| 3 | 1, 11, 12, 21, 22, 25, 26 | 103 | Niikawa, Watanabe-JP, Ng |
| 4 | 1, 29, 30 | 103 | Niikawa, Watanabe-JP, Irie |

| Ground | Claims | 35 U.S.C. § | References |
|---|---|---|---|
| 5 | 1, 17, 22 | 103 | Niikawa, Watanabe-JP, Watanabe-US |

## II. ANALYSIS

### *A. Discretionary Denial Under § 314(a)*

Petitioner stipulated, prior to the filing of Patent Owner's Preliminary Response, that if we institute review in this proceeding it will not pursue in the related district court litigation the same grounds raised here or that reasonably could have been raised here. *See Sony Corp. v. Optimum Imaging Techs. LLC*, IPR2024-00923 (PTAB), Ex. 1077, 1. In such cases, the Director has determined "the PTAB will not discretionarily deny institution." *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* (June 21, 2022), 3.[2]

Patent Owner argues we should not consider Petitioner's stipulation because it moots the *Fintiv* analysis in Patent Owner's Preliminary Response and "goes against the interests of fairness and efficiency" that the Director's guidance seeks to promote. Prelim. Resp. 40–42. We decline to address these policy concerns, which are better addressed to the Director and have already been addressed in proposed regulations. *See* 89 Fed. Reg. 28693 *et seq*. (Apr. 19, 2024).

### *B. Discretionary Denial under § 325(d)*

Patent Owner also requests discretionary denial, presumably pursuant to 35 U.S.C. § 325(d), in view of the Office's previous consideration of requests *for inter partes* review of related patents and the Examiner's

[2] Available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf).

consideration of those requests and the references they rely on during prosecution of the '266 patent. Prelim. Resp. 4–6.

The Board has set forth a two-part framework to consider whether to exercise discretion to deny institution under § 325(d):

> (1) whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

*Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GMBH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential). The Board considers *Becton, Dickinson*[3] factors (a), (b), and (d) to determine whether "the same or substantially the same art or arguments previously were presented to the Office," and if so, considers factors (c), (e), and (f) to determine "whether the petitioner has demonstrated a material error by the Office." *Id.* at 10.

Patent Owner argues the same art—Niikawa, Ng, and Watanabe-US—was previously presented to the Office in IPR2020-01321, IPR2020-01322, and prosecution of the '266 patent. Prelim. Resp. 4–6. Patent Owner further argues the rationale for relying on "Niikawa as a primary reference" in the previous IPRs was substantially the same as Petitioner's rationale for relying on that art in this proceeding. *Id.* at 6. Petitioner argues Patent Owner's request fails under step 1 of *Advanced Bionics* because "[e]ach of Grounds 1–5 present new art and each of Grounds 1–2 and 4–5 present *all*

[3] *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first para.).

new art (Niikawa, Watanabe-JP, Bolle, Irie, and Watanabe-US) not considered during prosecution." Pet. 94.

We find Patent Owner has satisfied step 1 of *Advanced Bionics* because Niikawa, Ng, and Watanabe-US were previously presented to the Office, both in the prior IPRs and in the prosecution of the '266 patent. Consequently, we proceed to step 2 of *Advanced Bionics* and consider *Becton, Dickenson* factors (c), (e), and (f) to determine "whether the petitioner has demonstrated a material error by the Office." *Advanced Bionics*, Paper 6 at 10. Factor (c) "focuses on the record developed by the Office in previously reviewing art or arguments" and informs "the petitioner's showing under factors (e) and (f)." *Id.* Factor (e) considers whether the petitioner has sufficiently shown how the Office erred in its prior consideration of the prior art and factor (f) considers the extent to which the facts and evidence in the Petition warrant reconsideration of the prior art. *Becton, Dickenson*, Paper 8 at 24–25.

Patent Owner argues "[t]he examiner reviewed the papers and exhibits from the Canon IPRs of related patents," including Mr. Laub's declaration, and "allowed the issued claims." Prelim. Resp. 4. Although we agree with Patent Owner that the Office reviewed the previous IPRs and the references they rely on, including Niikawa, Ng, and Watanabe-US, the *record* of the Office's consideration of these references and the merits of the challenges presented in IPR2020-01321 and IPR2020-01322 (involving different claims in related patents) is limited.

In denying IPR2020-01321 and IPR2020-01322, the Office simply stated, without elaboration, that its review of the merits in those proceedings did not "outweigh the other *Fintiv* factors favoring denial of institution," such as the imminent trial date of a related district court proceeding. *See*

*Canon Inc. v. Optimum Imaging Techs. LLC*, IPR2020-01321, Paper 10 at 5, 11 (PTAB Mar. 1, 2021); *Canon Inc. v. Optimum Imaging Techs. LLC* IPR2020-01322, Paper 9 at 5–6, 11 (PTAB Mar. 1, 2021). But there is no discussion of the actual merits, e.g., whether Canon had shown that one or more claims were likely unpatentable, let alone whether they were unpatentable over the Grounds presented here, none of which were presented in IPR2020-01321 or IPR2020-01322. *Id.* In allowing the '266 patent, the Examiner never rejected the claims presented over any prior art, and the only evidence that the Examiner actually considered the petitions filed in IPR2020-01321, IPR2020-01322, and the Niikawa, Ng, and Watanabe-US references is an initialized information disclosure statement. Ex. 1002, 1219–1223.

Where "the record of the Office's previous consideration of the art is not well developed or silent . . . a petitioner may show the Office erred by overlooking something persuasive under factors (e) and (f)." *Advanced Bionics* at 10. For the reasons discussed below, Petitioner demonstrates a reasonable likelihood of showing at least one challenged claim is unpatentable over Niikawa and Watanabe-JP. Therefore, the Petition as a whole presents sufficient evidence that the Examiner erred in failing to reject that claim over Niikawa and Watanabe-JP. Accordingly, we decline to exercise our discretion to deny institution under 35 U.S.C. § 325(d).

*C. Level of Ordinary Skill in the Art*

Petitioner identifies a person of ordinary skill in the art ("POSITA") at the time of the invention as someone that would have had "a bachelor's degree in electrical engineering, physics, or a related field, with at least two years of industry experience and/or research, both concerning digital camera system design and image processing." Pet. 3 (citing Ex. 1003 ¶ 54). Patent

Owner disputes this, arguing the district court has already found a POSITA "would have had 'an electrical engineering degree and three years of relevant experience'" and that this definition "should be adopted for purposes of institution." Prelim. Resp. 6 (quoting Ex. 2018, 6). Patent Owner further argues that—should we adopt the district court's definition—Petitioner's declarant "is not qualified to offer expert testimony" because he "does not have a degree in electrical engineering" and "does not meet the definition of a POSA." *Id.* at 6–7 (citing Ex. 1004, 6).

"[T]he level of skill in the art is a prism or lens through which a judge, jury, or the Board views the prior art and the claimed invention." *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The Board may consider such factors as the types of problems encountered in the art, prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of workers in the field when determining the level of skill in the art. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).

As noted above, the '226 patent describes a system for digital optical image collection, processing, and organization, which applies to "any imaging system that includes interactions between optics, digital image sensors, post-capture integrated circuits and digital storage components." Ex. 1001, 1:27–30. Artisans and inventors in such fields are not limited to electrical engineers. They include physicists and others with sufficient knowledge of the physics of optical, electronic, and opto-electronic devices. Indeed, many of the pioneering inventions needed to understand the operation of a digital camera were made by physicists, including the

inventions of the transistor,[4] the integrated circuit (IC),[5] the digital computer,[6] and the charge-coupled device (CCD).[7] For at least these reasons, we find Petitioner's assessment of the level of skill in the art to be reasonable and commensurate with the problems and solutions disclosed in the prior art. *In re GPAC Inc.*, 57 F.3d at 1579.

Accordingly, at this stage of the proceeding, we adopt as our own Petitioner's description of a person skilled in the art. We further find Petitioner's declarant, who (a) has a bachelor's degree in physics as well as post-graduate education in physics and optics, (b) is a member of the Optical Society of America and the Institute of Electrical and Electronic Engineers, and (c) has extensive work experience in signal processing, imaging systems, optical information recording, and electro-optical system design and manufacturing, is at least a person having ordinary skill in the art. Ex. 1004, 5–6. He is therefore competent to provide testimony in this proceeding.

*D. Claim Construction*

In *inter partes* reviews, we interpret a claim "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b) (2019). Under this standard, a claim is construed "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *Id.* However,

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[4] Julius Edgar Lilienfeld (field-effect transistor); John Bardeen, Walter Brattain, William Shockley (point-contact transistor); William Shockley (bipolar transistor).
[5] Robert Noyce (monolithic integrated circuit).
[6] John Atanasoff and Clifford Berry (electronic digital computer).
[7] George Smith and Willard Boyle (charge-coupled device).

only claim terms that are in controversy need to 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).

Neither party argues for the express construction of any claim term. Pet. 3; Prelim. Resp. 7. We find, at this stage of the proceeding, that we need not construe any claim term for purposes of this Decision.

*E. Obviousness over Niikawa and Watanabe-JP*

Petitioner contends claims 1, 2, 4, 5, 8, 11, 13–20, 22, 23, 25, 27, and 30 are obvious over the combination of Niikawa and Watanabe-JP. Pet. 3–64. Patent Owner disagrees. Prelim. Resp. 8–31. At this stage of the proceeding, we find Petitioner demonstrates a reasonable likelihood of showing at least one of these challenged claims is obvious over the combination of Niikawa and Watanabe-JP.

*1. Niikawa*

Niikawa discloses a digital camera and "an image processing technique for obtaining a synthesized image having improved image quality and graphic effect by synthesizing two images." Ex. 1006 ¶ 3. Niikawa refers to its image processing technique as "gradation control processing," but allows a user to select either "a normal exposure mode in which an exposure is made one by one in the usual manner [or] a gradation control processing mode." *Id.* ¶ 74.

Niikawa discloses several digital camera embodiments, including a first that uses dedicated circuitry (Figures 5–12B) to perform gamma (γ), white-balance (WB), and shading corrections on an image and a second that uses software executed by a processor (Figures 13–15) to make these corrections. *Id.* ¶¶ 75–143. Figure 13, which illustrates the software-based embodiment, is reproduced below.

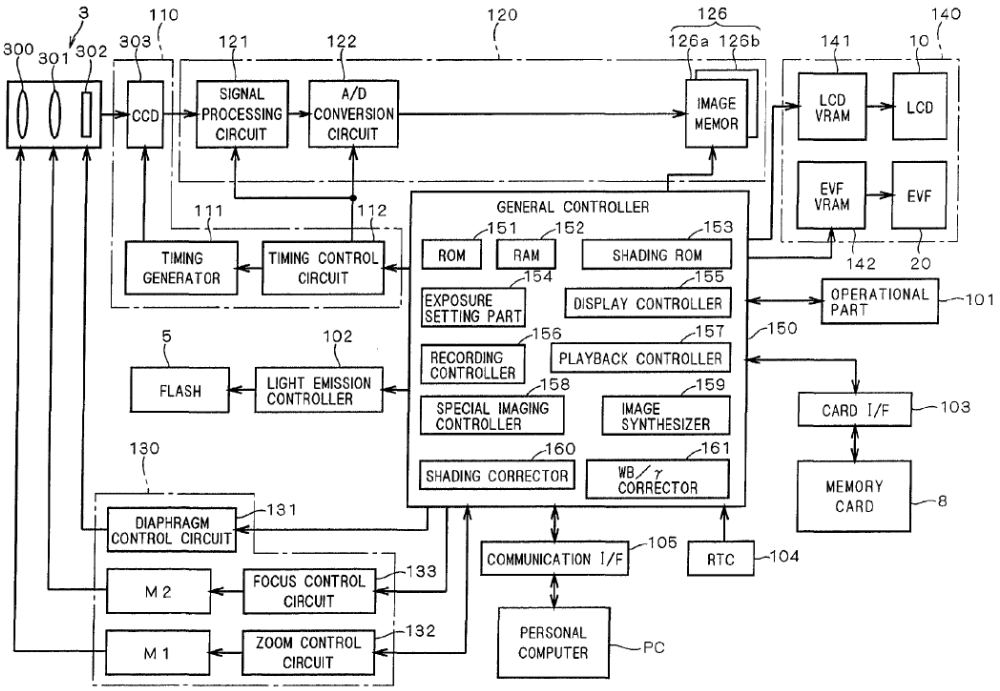


Figure 13 of Niikawa, reproduced above, is a block diagram of Niikawa's digital camera using software to perform image corrections. The camera includes lens 3, charge-coupled device (CCD) 303, analog-to-digital (A/D) converter 122, controller 150, and memory 126. *Id.*, Fig. 13. The camera can be connected to memory card 8 and personal computer (PC) via suitable interfaces. *Id.*

Controller 150 includes ROM 151, RAM 152, shading ROM 153, shading corrector 160, and WB/γ corrector 161. *Id.* Controller 150 can be "implemented by a microcomputer and performs centralized control of the [camera's] exposure function." *Id.* ¶ 95. ROM 151 "stores processing programs for executing a variety of concrete processings in the exposure function . . . and control programs for controlling drivings of the . . . members of the digital camera 1." *Id.* ¶ 96. "[P]rogram data recorded on a memory card 8 . . . can be read out via the card interface 103 to be stored in the ROM 151" thereby installing "processing programs and control programs . . . into the digital camera 1." *Id.* The programs can also "be

installed from the personal computer PC." *Id.* RAM 152 is local memory for controller 150, i.e., "a work area for executing a number of operations in accordance with the processing programs and the control programs." *Id.* ¶ 96.

Light passing through lens 3 is focused onto CCD 303, whose analog output is converted into a digital image file by A/D converter 122. *Id.* ¶¶ 77, 81. Controller 150 "reads out the image data . . . and performs [various] processes such as shading correction" and WB/γ correction. *Id.* ¶¶ 130–132. The shading correction is performed by software-based shading corrector 160, which "implements [a] process [the] same as the process executed by the shading correction circuit 123 in the first . . . embodiment." *Id.* ¶ 130. White balance and gamma correction is done by WB/γ corrector 161, which is "a function implemented by processing programs in the general controller 150 in place of the WB circuit 124 and the γ correction circuit 125. The processes in this WB/γ corrector 161 are [the] same as the processes in the WB circuit 124 and the γ correction circuit 125" in the first embodiment." *Id.* ¶ 131.

Shading corrector 160 corrects an image's shading by multiplication of "image data converted in the A/D conversion circuit 122 and a correction table inputted from the general controller 150." *Id.* ¶¶ 82, 130. The correction table contains inverse correction coefficients for each pixel in CCD 303. *Id.* ¶ 83. Multiplying every pixel value in CCD 303 "by the inverse of the correction coefficient" allows a captured image's "shading [to] be corrected." *Id.* ROM 153 stores "[a] plurality of correction tables for different . . . optical conditions such as focal length and f-number," and controller 150 selects an appropriate table for the shading correction process

"from the shading ROM 153 in accordance with the optical condition such as focal length and f-number at the time of imaging." *Id.* ¶ 84.

Software-based WB/γ corrector 161 adjusts an image's white balance by "converting the level of image data of each color component R, G, B with the use of a level conversion table inputted from the general controller 150." *Id.* ¶¶ 86, 131. The image's luminance or γ characteristic is corrected by "correct[ing] the level of each image data using [a] γ correction table." *Id.*

*2. Watanabe-JP*[8]

Watanabe-JP discloses a data management system that "performs data management of image data and programs stored in [a] digital camera 1 between the digital camera 1 and [a] personal computer 2." Ex. 1005 ¶ 37. Figure 1 of Watanabe-JP is reproduced below.

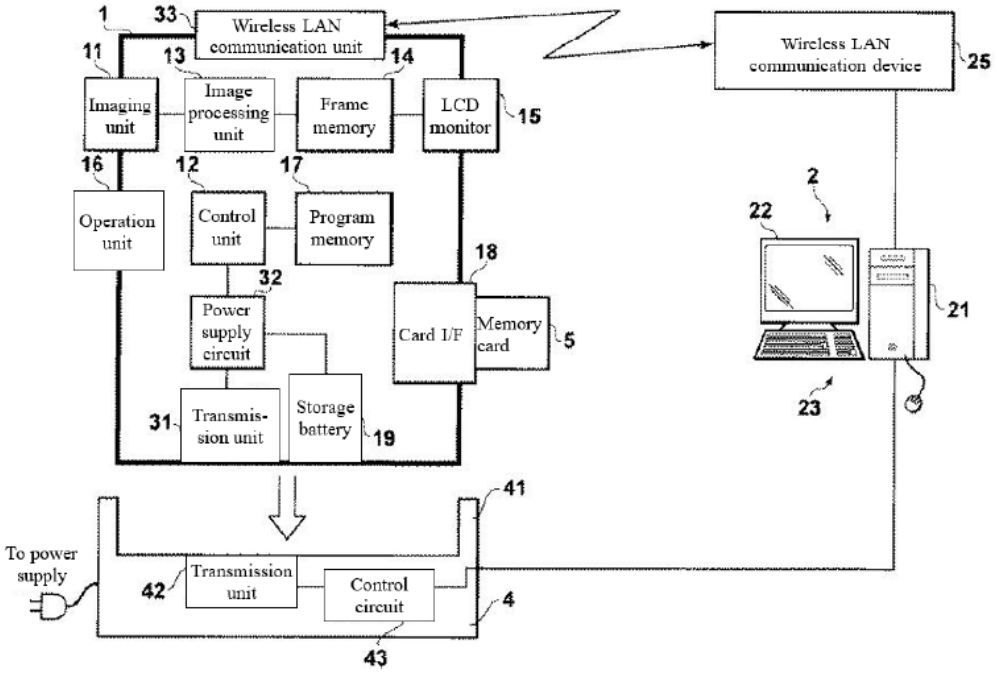


Figure 1 of Watanabe-JP is a "block diagram showing the configuration of the data management system." *Id.* ¶ 36. The system includes digital camera

[8] We cite to the certified English translation of Watanabe-JP. Ex. 1005.

1, cradle 41, and personal computer (PC) 2. *Id.*, Fig. 1. Digital camera 1 includes image unit 11 for acquiring image data, control unit 12 for controlling the camera, image processing unit 13 for processing the image, program memory 17 for storing program data for operating the camera, interface 18 for connection to external memory card 5, wireless LAN communication unit 34 for establishing a wireless connection to PC 2, and transmission unit 31 for establishing a wireless connection to PC2 through cradle 41. *Id.*

Control unit 12 controls automatic processes for both uploading images to and downloading software from PC 2. When digital camera 1 is seated on cradle 41, rechargeable battery 19 is inductively charged via electromagnetic coupling between camera transmission unit 31 and cradle transmission unit 42. *Id.* ¶¶ 55–56. Transmission unit 31 transmits the dates of images stored on memory card 5 to PC 2 through cradle 41. *Id.* ¶ 56. PC 2 uses the dates to determine whether new images are stored on memory card 5. *Id.* ¶ 57. If so, PC 2 transmits a signal to camera 1 through cradle transmission unit 42 identifying those images not stored on PC 2, and camera 1 transmits these images to PC 2 via wireless LAN communication unit 33. *Id.* ¶¶ 57–58.

Regardless of whether new images are stored on memory card 5, transmission unit 31 next transmits a program data version number to PC 2 through cradle 41. *Id.* ¶ 61. PC 2 uses the program data version number to determine whether the camera requires a software update. *Id.* ¶ 62. If so, PC 2 sends updated program data to camera 1 via a wireless link between PC 2's LAN communication unit 25 and the camera's LAN communication unit 33. *Id.* ¶¶ 67–68. Once the entire update is received, digital camera 1's "program data currently stored in program memory 17 is updated." *Id.* ¶ 72.

*3. The Niikawa-Watanabe-JP combination*

Petitioner contends a POSITA would have modified Niikawa's digital camera to incorporate Watanabe-JP's rechargeable battery and image and program version management processes. Pet. 13–14 (citing Ex. 1003 ¶¶ 187–188). The proposed modification incorporates Watanabe-JP's rechargeable battery 19, power supply circuit 32, transmission unit 31, wireless LAN communication unit 33, and programs needed to allow Niikawa's camera to be wirelessly rechargeable using Watanabe-JP's charging cradle 41 and to execute Watanabe-JP's wireless image and program version management processes. *Id.* Petitioner contends a person skilled in the art would have had a reasonable expectation of success in making these modifications because they were "straight forward and routine in the art, requiring only conventional skills." *Id.* at 14 (citing Ex. 1003 ¶¶ 189–191).

Petitioner articulates several reasons for its proposed modifications. First, Petitioner contends a POSITA would have incorporated the components needed to allow wireless image transfer because doing so (1) was a "conventional feature of digital cameras" and a known use of familiar components to produce an intended result, (2) would have allowed images to be transferred "to a wider range of external devices" independent of I/O port compatibility, and (3) would have reduced download times because only newly captured images would need to be downloaded. *Id.* at 10 (citing Ex. 1003 ¶¶ 135–137, 175–178; Ex. 1021 ¶¶ 172–180, 431; Ex. 1028 ¶¶ 3, 4, 14; Ex. 1016 ¶¶ 157–165, 175; Ex. 1015 ¶¶ 292, 306).

Second, Petitioner contends a POSITA would have incorporated the components needed to allow wireless program updates in order "to provide an additional and/or more convenient way to upgrade Niikawa's digital

camera," one that avoids the need for a physical connection and that automates program updating by "compar[ing] version information and prompt[ing] the user when newer versions are available." *Id.* at 11–12 (citing Ex. 1003 ¶¶ 179–182).

Third, Petitioner contends a POSITA would have incorporated the components needed for wireless recharging for convenience (no need for wires or to replace batteries) and to enable the data exchange that drives Watanabe-JP's image and version management processes. *Id.* at 12 (citing Ex. 1003 ¶¶ 183–186).

Patent Owner argues Niikawa and Watanabe-JP "are not properly combinable, much less applicable to the '266 Patent." Prelim. Resp. 9. Patent Owner further argues "Petitioner is using hindsight bias in its proposed combination" and "using the claims of the '266 Patent as a roadmap." *Id.* at 13. Lastly, Patent Owner argues that because Mr. Laub does not qualify as a POSITA, Petitioner has failed to show why such a person would have combined Niikawa and Watanabe-JP, why they would have had a reasonable expectation of success in doing so, or why the proposed modification of Niikawa was within such a person's skill set. *Id.*

At this stage of the proceeding, we find Petitioner articulates sufficient reasoning with rational underpinning to combine the teachings of Niikawa and Watanabe-JP for the reasons stated in the Petition, namely, the combination would make Niikawa's camera rechargeable, would automate its program update and image transfer processes, and would allow it to transfer images wirelessly. *See* Pet. 9–14.

We disagree with Patent Owner's contention that Mr. Laub is not competent to provide testimony regarding how or why a POSITA would have modified Niikawa's camera for the reasons stated in § II.C, *supra.*

We also disagree with Patent Owner's contentions that Niikawa and Watanabe-JP are not combinable and that the proposed combination is based on hindsight and road-mapping. These contentions are largely based on differences Patent Owner identifies between Niikawa's and Watanabe-JP's disclosures or between these disclosures and the '266 patent's disclosures. For example, Patent Owner argues Niikawa and Watanabe-JP are not combinable because "Watanabe-JP does not teach methods for shading correction or the use of image synthesis" and Niikawa "does not disclose a rechargeable battery or an electromagnetic induction cradle." Prelim. Resp. 26–27. Similarly, Patent Owner argues "Watanabe-JP requires two distinct transmission/communication sub-systems . . . which require additional hardware and software that is not disclosed in Niikawa." *Id.* at 18. Patent Owner contends these and other differences, as well as "the number and extent of modifications necessary in Petitioner's proposed combination," are evidence of Petitioner's use of hindsight bias. *Id.* at 27 (citing *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017)).

We disagree. First, one cannot show non-obviousness by attacking references individually when the grounds of unpatentability are based on a combination of references. *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Rather, the test for obviousness is "what the combined teachings of the references would have suggested to those of ordinary skill in the art." *Keller*, 642 F.2d at 426. Second, the patent challenger in *Metalcraft* used hindsight because it "provide[d] no explanation or reasoning for concluding that one of skill in the art would have combined . . . particular references [together] to produce the claimed invention." *Metalcraft*, 848 F.3d at 1367. By contrast,

Petitioner articulates several reasons for its proposed modifications of Niikawa in view of Watanabe-JP. Pet. 9–14.

Third, the differences Patent Owner identifies between disclosures in the '266 patent and Niikawa or Watanabe-JP are not recited in any of the claims. Nor are they excluded by the open-ended claims. For example, Patent Owner argues Niikawa's image correction process requires capturing, correcting, and synthesizing two images rather than capturing and correcting a single image.[9] Prelim. Resp. 15–17. But independent claims 1 and 22 recite "digitally processing *at least one captured image*" and do not exclude digitally processing and synthesizing two images. Ex. 1001, 37:30, 38:43. Likewise, Patent Owner argues Watanabe-JP "requires two distinct transmission/communication sub-systems (units 31/42 and 33/25) which require additional hardware and software that is not . . . required by the '266 Patent." Prelim. Resp. 18–19, 21. But independent claims 1 and 22 simply recite "wirelessly transmitting at least one of the . . . corrected images," and do not prohibit a camera having two distinct transmission units or from using only one (or both) to wirelessly transmit images. Ex. 1001, 37:43–44, 38:53–54.

Accordingly, for the reasons stated above, we find Petitioner sufficiently articulates reasoning with rational underpinning for combining the teachings of Niikawa and Watanabe-JP.

[9] This is only true in Niikawa's gradation control processing mode, not in its normal mode. Ex. 1006 ¶¶ 74, 100.

*4. Claim 1*

*a) digitally processing at least one captured image*

Claim 1 recites a method of processing one or more images with a digital camera comprising "digitally processing at least one captured image, the processing using in-camera hardware and software." Ex. 1001, 37:28–31. Petitioner contends Niikawa teaches such a method because its digital camera 1 includes controller 150, which executes processing and control programs stored in ROM 151 to process images captured on CCD 303. Pet. 15–16 (citing Ex. 1006 ¶¶ 75, 77–81, 84–86, 95–120, 128–142, 148, 157–159, Figs. 5, 13; Ex. 1003 ¶¶ 193, 195–197). Patent Owner does not dispute these contentions, with which we preliminarily agree. Prelim. Resp. 8–31.

*b) performing image correction algorithms and processing image correction data stored in a database*

Claim 1 further requires the camera's hardware and software be configured to "perform a plurality of image correction algorithms" and to "process image correction data stored in a database system." Ex. 1001, 37:30–35.

Petitioner contends Niikawa's camera is configured to perform these functions because it can perform shading, WB/γ, and dynamic range corrections using information stored in various correction tables. Pet. 16–28. For example, Petitioner contends Niikawa can perform shading correction by "multiplying captured image data with 'correction coefficients' stored in a 'correction table' selected from [a] 'plurality of correction tables' stored in ROM 153." *Id.* at 17 (citing Ex. 1006 ¶¶ 83, 84, 108–110, 129, 130, 138, 158; Ex. 1003 ¶ 199). This can be done via hardware (shading correction circuit 123) or software (shading corrector

160). *Id.* at 17–19 (citing Ex. 1006 ¶¶ 30, 83, 84, 95, 96, 108, 129, 130, 138, 158, Figs. 5, 9, 13, 14; Ex. 1003 ¶¶ 200–202). Petitioner also contends Niikawa can perform other image correction steps using data stored in a database, such as WB corrections using a "level conversion table," γ corrections using a "γ correction table," and dynamic range corrections. *Id.* at 19–23 (citing Ex. 1006 ¶¶ 74, 86, 95–120, 123, 129–131, 135–137, 140, 147, Figs. 5, 13; Ex. 1003 ¶¶ 84, 85, 91, 203, 205–209). Patent Owner does not dispute these contentions, with which we preliminarily agree. Prelim. Resp. 8–31.

*c) receiving updated software and image correction data, and upgrading the digital camera*

Claim 1 further requires the camera's hardware and software be configured to "receive updated software and image correction data, and upgrade the digital camera with the updated software and image correction data," "wherein the in-camera software and database system are upgradeable to provide improved algorithms and correction data for [the] correction of images." Ex. 1001, 37:30–32, 37:36–39, 37:45–47.

Petitioner contends Niikawa's camera is so configured because its processing and control programs can be received from a PC or memory card 8, which downloads them to ROM 150. Pet. 30 (citing Ex. 1006 ¶ 96; Ex. 1003 ¶ 231). Petitioner argues a POSITA would have understood that (a) ROM 150 was writeable and could be made rewriteable as taught by Watanabe-JP and (b) the updated program data included image correction data. *Id.* (citing Ex. 1006 ¶¶ 22, 60, 95–104, 115–120, 129–131; Ex. 1003 ¶¶ 232, 233). Petitioner further contends the Niikawa-Watanabe-JP combination is so configured because the combination would have used the Watanabe-JP wireless program update process to update image correction

software and data. *Id.* at 31–33 (citing Ex. 1105 ¶¶ 4, 22–25, 37–40, 61–72, Fig. 4; Ex. 1003 ¶¶ 234–239).

Petitioner argues it would have been obvious to configure the combination to update correction data as well as correction programs in order to implement new camera features or to improve camera functionality as known in the prior art. *Id.* at 32 (citing Ex. 1003 ¶¶ 235–239). For example, Petitioner contends Sarbadhikari[10] teaches updating a camera with updated "image processing software, look-up tables, matrices, compression tables, dynamic range optimization tables, and other files capable of affecting the captured image data." *Id.* (quoting Ex. 1009, 4:37–67). Similarly, according to Petitioner, Kokubu[11] teaches updating a camera with updated correction algorithms and correction data to improve gamma and white balance corrections. *Id.* (citing Ex. 1010 ¶¶ 3–9, 21, 22, 29–36). Patent Owner does not dispute Petitioner's contentions, with which we preliminarily agree. Prelim. Resp. 8–31.

*d) storing in memory corrected images*

Claim 1 further requires "storing in memory one or more corrected images resulting from digitally processing the at least one captured image." Ex. 1001, 37:40–42. Petitioner contends the Niikawa-Watanabe-JP combination teaches this limitation because Niikawa teaches storing corrected images in image memory 126 and/or on memory card 8. *Id.* at 35 (citing Ex. 1005 ¶¶ 87, 100, 101, 108–110, 121, 123, 140, 159; Ex. 1003 ¶ 246). Patent Owner does not dispute these contentions, with which we preliminarily agree. Prelim. Resp. 8–31.

[10] US 5,477,264, issued Dec. 19, 1995.
[11] JP 2004-186917 A, published Feb. 7, 2004.

*e) wirelessly transmitting corrected images*

Lastly, claim 1 requires "wirelessly transmitting at least one of the one or more corrected images." Ex. 1001, 37:43–44. Petitioner contends the Niikawa-Watanabe-JP combination teaches this limitation because it would implement Watanabe-JP's method of wireless image transmission. *Id.* at 35–36 (citing Ex. 1006 ¶¶ 57–60, Fig. 2; Ex. 1003 ¶¶ 247–249). Patent Owner does not dispute these contentions, with which we preliminarily agree. Prelim. Resp. 8–31.

*f) Conclusion regarding claim 1*

For the reasons discussed above, at this stage of the proceeding, we find Petitioner demonstrates a reasonable likelihood of showing the combination of Niikawa and Watanabe-JP teaches or suggests all of the limitations recited in claim 1 and that Petitioner articulates sufficient reasoning with rational underpinning to combine the teachings of these references. Accordingly, we find Petitioner demonstrates a reasonable likelihood of showing claim 1 is unpatentable as obvious over Niikawa and Watanabe-JP.

*F. Remaining Challenges*

Petitioner asserts three additional obviousness grounds that each add an additional reference. *See* Pet. 64–92. In challenging these additional grounds, Patent Owner contests only that the additional references are "so different that the references are not properly combinable." Prelim. Resp. 31; *id.* at 31–39. Patent Owner's arguments with respect to these additional grounds are similar to its previous arguments against the Nikawa-Watanabe-JP ground in that they attack the references individually and highlight differences/drawbacks in the teachings of the additional references that are immaterial to the claims and do not undermine Petitioner's rationale for

combining them with the Nikawa-Wanatabe-JP combination. *Id.* Given Petitioner's proffered rationales (*see* Pet. 69–72, 81–82, 85–87, 89–91), we find Petitioner sufficiently articulates reasoning with rational underpinning for combining the additional reference's teachings.

## III. CONCLUSION

We have reviewed the Petition and Patent Owner's Preliminary Response, and have considered all of the evidence and arguments presented by Petitioner and Patent Owner. We find, at this stage of the proceeding, Petitioner has demonstrated a reasonable likelihood of showing at least one claim of the '266 patent is unpatentable. Accordingly, we institute *inter partes* review of all claims on all grounds raised in the Petition.

The Board has not yet made a final determination with respect to any claim construction issue, priority issue, or the patentability of any challenged claim.

## IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314, an *inter partes* review is instituted on all challenged claims on all grounds; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial commencing on the entry date of this Decision.

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