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571-272-7822

Paper 72
Entered: January 19, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PNC BANK, N.A.,
Petitioner,

v.

UNITED SERVICES AUTOMOBILE ASSOCIATION,
Patent Owner.

IPR2021-01073
Patent 8,977,571 B1

Before MICHAEL R. ZECHER, DAVID C. McKONE, and SCOTT B. HOWARD, *Administrative Patent Judges*.

HOWARD, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
Denying Patent Owner's Motion to Exclude
Denying Patent Owner's Motion to File Supplemental Information
35 U.S.C. § 318(a), 37 C.F.R. §§ 42.64(c), 42.123(b)

I. INTRODUCTION

A. Background and Summary

PNC Bank, N.A. ("Petitioner"), filed a Petition requesting *inter partes* review ("IPR") of claims 1–6, 9, 10, 12, and 13 of U.S. Patent No. 8,977,571 B1 (Ex. 1001, "the '571 patent"). Paper 3 ("Petition," "Pet."). United Services Automobile Association ("Patent Owner") filed a Preliminary Response. Paper 8.[1] With our authorization (Paper 10), Petitioner filed a Preliminary Reply to the Preliminary Response (Paper 12)[2] and Patent Owner filed a Preliminary Sur-Reply (Paper 15).[3] We instituted an *inter partes* review of claims 1–6, 9, 10, 12, and 13 of the '571 patent on all grounds of unpatentability alleged in the Petition. Paper 20 ("Institution Decision" or "Inst. Dec.").[4]

After institution of trial, Patent Owner filed a Corrected Response (Paper 42, "PO Resp."), Petitioner filed a Reply (Paper 45, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 60, "PO Sur-reply").

With our authorization, Patent Owner filed a first motion to file supplemental information (Paper 47), which Petitioner opposed (Paper 49), and we granted (Paper 54).

Patent Owner filed a motion to exclude evidence (Paper 61, "Mot. Exclude"), Petitioner filed an opposition (Paper 63, "Opp. Exclude"), and Patent Owner filed a reply to the opposition (Paper 65, "Reply Exclude").

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[1] A public version of the Preliminary Response is filed as Paper 9.

[2] A public version of the Preliminary Reply is filed as Paper 14.

[3] A public version of the Preliminary Sur-reply is filed as Paper 18.

[4] A public version of the Institution Decision is filed as Paper 25.

An oral hearing[5] was held on October 25, 2022, and the record contains a transcript of this hearing. Paper 69 ("Tr.").

With our authorization (Ex. 3003), Patent Owner filed a second motion to file supplemental information (Paper 70, "Mot. SI"), which Petitioner opposes (Paper 71, "Opp. SI").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–6, 9, 10, 12, and 13 of the '571 patent are unpatentable.

B. Real Parties in Interest

Petitioner identifies itself as the only real party in interest. Pet. 3; *see also* Inst. Dec. 35–41 (holding that Mitek Systems, Inc., was not an unnamed real party in interest).

Patent Owner identifies itself as the only real party in interest. Paper 5 (Patent Owner's Mandatory Notices), 2.

C. Related Matters

The parties identify *United Services Automobile Association v. PNC Bank N.A.*, No. 2:20-cv-00319-JRG (E.D. Tex.) ("the Texas case" or "the Texas court") as a litigation in which Patent Owner is asserting, *inter alia*, the '571 patent. Pet. 3; Paper 5, 2. Patent Owner also identifies *Mitek Systems, Inc. v. United Services Automobile Association*, Case No. 2:20-cv-00115-JRG (E.D. Tex.) as a proceeding involving the '571 patent. Paper 5, 2.

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[5] A single consolidated oral hearing was held for IPR2021-01070 and IPR2021-01073. *See* Tr. 1, 3:2–11.

The parties also identify various post-grant proceedings involving the '571 patent and other related patents. Pet. 3–4; Paper 5, 3. This includes (1) *Wells Fargo Bank, N.A. v. United Services Automobile Ass'n*, CBM2019-00004 (institution denied because the '779 patent is not a covered business method patent), (2) *Wells Fargo Bank, N.A. v. United Services Automobile Ass'n*, IPR2019-01082 ("Wells Fargo IPR") (final written decision determining no challenged claims unpatentable), and (3) *Mitek Systems, Inc. v. United Services Automobile Ass'n*, IPR2020-00975(institution denied). *See* Paper 5, 3; Pet. 3–4.

D. The '571 Patent

The '571 patent is titled "Systems and Methods for Image Monitoring of Check During Mobile Deposit." Ex. 1001, code (54). Figure 1 of the '571 patent is reproduced below.

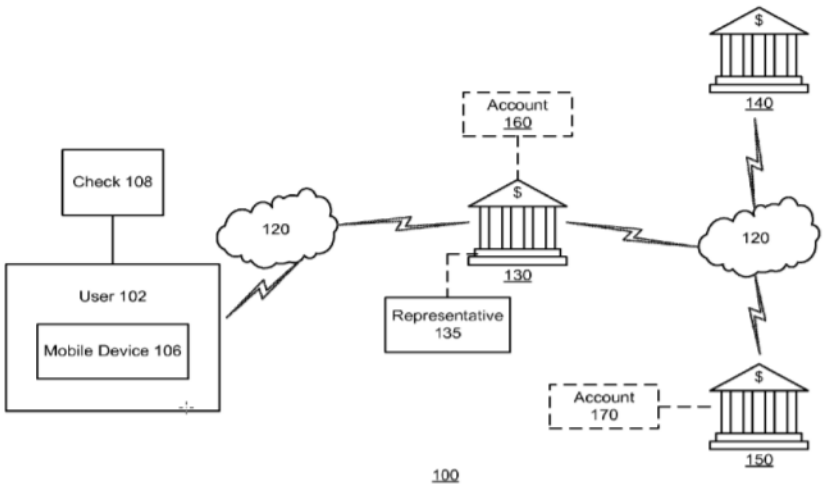

Figure 1 above illustrates a system "in which example embodiments and aspects may be implemented." *Id.* at 2:43−45. As shown in Figure 1, system 100 includes an account owner (user 102) and financial institutions 130, 140, 150 (e.g., banks), communicating with each other via networks 120 (e.g., the Internet). *Id.* at 2:45−52, 3:4−22. User 102 may deposit check 108 in account 160, and financial institution 130 may process and clear

check 108. *Id.* at 3:10−12. For example, after endorsing check 108, user 102 uses mobile device 106 that includes a camera to convert check 108 into a digital image by taking a picture of the front and/or back of check 108. *Id.* at 3:45−48.

The '571 patent recognizes that "depositing a check typically involves [a payee] going to a local bank branch and physically presenting the check to a bank teller." Ex. 1001, 1:22–24. Thus, "[t]o reduce such burdens for the payee, systems and methods have been developed to enable the remote deposit of checks." *Id.* at 1:24–26. The '571 patent states:

> For example, the payee may capture a digital image of a check using a mobile device. The financial institution may then receive from the payee the digital image of the check. The financial institution may then use the digital image to credit funds to the payee.

Id. at 1:26–30. However, the '571 patent recognizes that "such a technique requires the efficient and accurate detection and extraction of the information pertaining to a check in the digital image," and that "[c]apturing a digital image at a mobile device that allows for subsequent detection and extraction of the information from the digital image is difficult." *Id.* at 1:30–35. In addition, the '571 patent recites that electronically exchanging a check image requires the image to be in "Check 21 compliant format." *Id.* at 12:16–17. The '571 patent explains that:

> The Check Clearing for the 21st Century Act (or Check 21 Act) is a United States federal law that allows the recipient of a paper check to create a digital version, thereby eliminating the need for further handling of the physical document. The Check 21 standard for electronic exchange is defined in the standard DSTU X9.37-2003 ("X9.37"). It is a binary interchange format.

Id. at 12:19–25. The'571 patent discloses an invention wherein:

> An image of a check that is in the field of view of a camera is *monitored prior to the image of the check being captured.* The camera is associated with a mobile device. The *monitoring may be performed by the camera, the mobile device, and/or a financial institution* that is in communication with the mobile device. When the image of the check in the field of view passes monitoring criteria, an image may be taken by the camera and provided from the mobile device to a financial institution. The check may be deposited in a user's bank account based on the image.

Id. at 1:38–47 (emphases added).

The '571 patent explains that "[t]o *increase the likelihood of capturing a digital image of the check 108 that may be readable and processed* such that the check 108 can be cleared, the image is monitored for compliance with one or more monitoring criteria, prior to the image of the check 108 being captured." Ex. 1001, 3:54–58 (emphasis added). The '571 patent further states that "[a]n application may *monitor whether* the check 108 is sufficiently within the frame of the camera and has a *high enough quality for subsequent processing*." *Id.* at 3:61–64 (emphases added); *see also id.* at 4:17–22 ("By ensuring that the image of the check passes monitoring criteria during pre-image capture monitoring, *the number of nonconforming images of checks is reduced* during presentment of the images to a financial institution for processing and clearing." (Emphasis added)); 7:52–57; 8:45–49; 10:6–13; 12:9–14; 13:38–40 ("Compliance with the monitoring criteria is intended to ensure that the image of the check is suitable for one or more processing tasks.").

Figure 3 of the '571 patent is reproduced below.

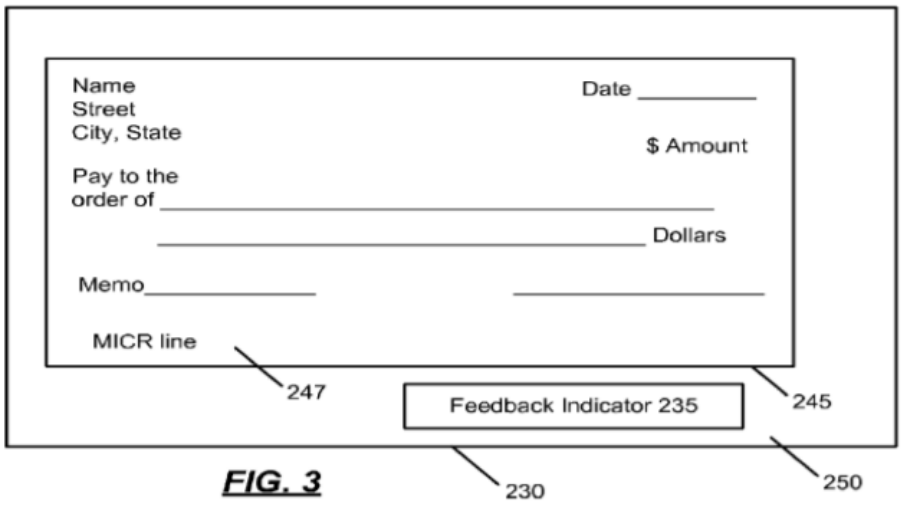

FIG. 3

As shown in Figure 3 above, image 230 comprises check image 247, background image 250, feedback indicator 235, and edge 245, which separates check image 247 from background image 250. Ex. 1001, 6:63–7:2. Image 230 may be generated by a mobile device with a camera and provided in the field of view of the camera prior to and during image capture of the check. *Id.* at 6:65–67, 7:3–5.

According to the '571 patent, one of the monitoring criteria may be based on the positioning of check 108 in image 230. Ex. 1001, 7:29–30. The positioning of check 108 in image 230 may be compared with an alignment guide. *Id.* at 7:38–41. The alignment guide may be a bounding rectangle, horizontal and/or vertical bars, or parallel lines. *Id.* at 7:59–62. For example, "aligning the check 108, thereby passing this monitoring criterion, means enclosing the check 108 within the bounding rectangle." *Id.* at 7:62–65. If check 108 is outside the alignment guide in image 230, feedback is generated and provided to user 102 regarding this monitoring criterion with instruction for moving check 108 or the camera in order to align check 108 properly in the field of view. *Id.* at 7:65–8:3.

The '571 patent also discloses that, "[i]n an implementation, the results of the monitoring may indicate that the camera and/or the check should be repositioned and/or the light source should be adjusted prior to an image capture in order to capture an image of the check that may be processed properly, e.g., *to have the data from the check obtained without error from the image, so that that check can be cleared*." *Id.* at 15:43–49 (emphasis added). The '571 patent explains that "feedback based on the results may be generated and provided visually and/or aurally to the user via the camera and/or the mobile device" and that "the feedback may be provided if the image fails to pass the monitoring criteria." *Id.* at 15:50–53.

E. Illustrative Claims

Of the challenged claims, claims 1 and 9 are independent. Claims 2−6 depend from claim 1, and claims 10, 12, and 13 depend from claim 9. Claim 1 is illustrative and reproduced below:

> 1. [1-pre] A non-transitory computer-readable medium comprising computer-readable instructions for depositing a check that, when executed by a processor, cause the processor to:
>
> [1a] monitor an image of the check in a field of view of a camera of a mobile device with respect to a monitoring criterion using an image monitoring and capture module of the mobile device;
>
> [1b] capture the image of the check with the camera when the image of the check passes the monitoring criterion; and
>
> [1c] provide the image of the check from the camera to a depository via a communication pathway between the mobile device and the depository.

Ex. 1001, 21:5–17.

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–6, 9, 10, 12, and 13 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §[6]	Reference(s)/Basis
1–3, 6, 9, 10, 13	103(a)	Acharya,[7] Luo[8]
4, 5	103(a)	Acharya, Luo, Nepomniachtchi[9]
12	103(a)	Acharya, Luo, Yoon[10]

Petitioner also relies on the testimony of Dr. Todd Mowry. Ex. 1002; Ex. 1036.

Patent Owner cites extensively to the references listed below (*see, e.g.*, PO Resp. 6–27):

Reference		Date	Exhibit No.
Yoon	US 2007/0262148 A1	pub. Nov. 15, 2007	2008
ImageNet	Presentation titled "ImageNet Mobile Deposit" by Mitek Systems	June 2008	1014
Blackson	US 7,419,093 B1	iss. Sept. 2, 2008	2108

[6] The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103. The application that issued as the '571 patent has a filing date prior to the effective date of the applicable AIA amendments (March 16, 2013). *See* Ex. 1001, code (22). Accordingly, we apply the pre-AIA version of 35 U.S.C. § 103.

[7] US 8,768,836 B1, issued on July 1, 2014 (Ex. 1003).

[8] CN 1897644A, published Jan. 17, 2007 (Ex. 1004). Exhibit 1004 consists of both original published Chinese patent application and an English translation. All cites are to the pagination added by Petitioner to the English translation.

[9] US 2009/0185241 A1, published July 23, 2009 (Ex. 1016).

[10] US 2007/0262148 A1, published Nov. 15, 2007 (Ex. 1005).

Patent Owner also relies on the testimony of Dr. Charles Creusere. Ex. 2115.

II. ANALYSIS

A. Legal Standards

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under 35 U.S.C. § 103(a) that requires consideration of four factors: (1) the "level of ordinary skill in the pertinent art," (2) the "scope and content of the prior art," (3) the "differences between the prior art and the claims at issue," and (4) if in evidence, "secondary considerations" of non-obviousness such as "commercial success, long-felt but unsolved needs, failure of others, etc." *Id.* at 17–18. "While the sequence of these questions might be reordered in any particular case," *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the U.S. Court of Appeals for the Federal Circuit has repeatedly emphasized that "it is error to reach a conclusion of obviousness until all those factors are considered," *WBIP, LLC v. Kohler*, 829 F.3d 1317, 1328 (Fed. Cir. 2016).[11]

B. Level of Ordinary Skill in the Art

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*, 383 U.S. at 17. "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). The "person having

[11] Because neither party address objective evidence of non-obviousness, we focus solely on the first three *Graham* factors.

ordinary skill in the art" is a hypothetical construct, from whose vantage point obviousness is assessed. *In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

Factors pertinent to a determination of the level of ordinary skill in the art include "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Env't Designs, Ltd. v. Union Oil Co. of Cal.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983) (citing *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1381–82 (Fed. Cir. 1983)). "Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case." *Id.*

Petitioner argues that a person having ordinary skill in the art "would have had a bachelor's degree in electrical engineering, computer science, computer engineering, or equivalent field, and at least two years of prior experience with image processing or scanning technology involving transferring and processing of image data to and at a server." Pet. 20 (citing Ex. 1002 ¶ 41). Petitioner further argues that "[a] person with additional education or additional industrial experience could still be of ordinary skill in the art if that additional aspect compensates for a deficit in one of the other aspects of the requirements stated above." *Id.* at 20–21 (citing Ex. 1002 ¶ 41).

Patent Owner did not address the level of skill in its Response. *See* PO Resp.

We are persuaded that Petitioner's proposal is consistent with the problems and solutions in the '571 patent and prior art of record.

Accordingly, we adopt Petitioner's proposed formulation of the level of ordinary skill in the art.

C. Claim Construction

We apply the same claim construction standard used in the federal courts, in other words, the claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b), which is articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). *See* 37 C.F.R. § 42.100(b) (2021). Under the *Phillips* standard, the "words of a claim 'are generally given their ordinary and customary meaning,'" which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips*, 415 F.3d at 1312–13.

Petitioner proposes the construction of various terms. Pet. 21–25. For all of the terms except for "feedback . . . regarding the image of the check with respect to the monitoring criterion" as recited in dependent claim 2, Petitioner proposes using "the constructions urged by [Patent Owner] in the co-pending district court litigation or as the parties agreed." *Id.* For the "feedback" limitation, Petitioner argues that no further construction is necessary. *Id.* at 24–25.

Patent Owner argues that, "[w]ith the exception of 'image monitoring and capture module,' the district court has since adopted each of these constructions (EX1034, 12–13, 40–56) and the Board should apply the same constructions in this proceeding." PO Resp. 27. With regard to the "imaging monitoring and capture module," recited in claims 1 and 9, Patent Owner requests that we adopt the Texas court's claim construction. *Id.* at 28–29.

We discuss the construction of "image monitoring and capturing module" below. For all other terms, because no express construction is needed for our decision, we do not construe them. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

1. The Parties' Arguments

Patent Owner argues that we should adopt the Texas court's claim construction: that the limitation is subject to 35 U.S.C. § 112, ¶ 6 with a claimed function of "image monitoring and capture" and a corresponding structure of "image monitoring and capture module 456 as set forth in the specification; and equivalents thereof." PO Resp. 28 (quoting Ex. 1034, 65 (The Texas Case: Claim Construction Memorandum Opinion And Order)). More specifically, Patent Owner argues that the corresponding structure described in the specification "includes a digital camera, a mobile device operating system that can access live video frames from the camera via APIs [application programing interfaces], and software that can monitor these frames." *Id.* at 31–32 (citing Ex. 1001, 12:55–13:3 (the camera), 5:45–50 (video frames), 12:65–67 (image capture activated by a software call), 11:6–17 (operates through a software abstraction layer), 11:22–30 (software causes analyzing the image and/or capturing the image)); *see also* PO Sur-reply 5–6 (discussing the video frame requirement), 7 (discussing software). Patent Owner further argues that the software resides on the mobile device, as opposed to the camera. PO Sur-reply 4 (citing Ex. 2107, 25 (The Texas Case: Petitioner's Opening Claim Construction Brief)).

According to the Texas court (Ex. 1034, 64–65), the specification states that "the image monitoring and capture module 456 *may* include the camera 207 contained within the mobile device 106. Alternately, the camera 207 may be detachably coupled to the mobile device 106 such as through a secure digital (SD) slot or over any Suitable communications bus, such as USB (universal serial bus)." Ex. 1001, 13:1–6 (emphasis added). The specification also states that "[t]he check processing module 454 *may* be configured, in one example, to cause the image monitoring and capture module 456 to monitor an image of at least one side of a check provided in a field of view of the camera 207 and then capture the image after it passes monitoring criteria." *Id.* at 13:34–38 (emphasis added). According to the specification, "[i]n an implementation, the system *may* instruct a camera associated with the mobile device to monitor and capture an image of the negotiable instrument in conjunction with monitoring criteria." *Id.* at 15:30–33 (emphasis added). Based on the aforementioned citations relied on by the Texas court, Patent Owner argues that the corresponding structure identified by the transitional term "may" can be the structure that defines the module. PO Sur-reply 2–4 (citing Ex. 1034, 64).

Petitioner argues that the term "image monitoring and capture module" is not governed by section 112, paragraph 6 and that "[n]o further construction is necessary." Pet. 23; *see also* Pet. Reply 13–14 (arguing that Patent Owner has consistently argued that the limitation should be given its plain and ordinary meaning in all prior proceedings).

Petitioner also argues that the only structure identified by the Texas court was "image monitoring and capture module 456 as set forth in the specification; and equivalents thereof." Pet. Reply 14–15 (quoting Ex. 1034, 65). According to Petitioner, "[u]nder the [Texas] court's construction, the

corresponding structure requires nothing more than a **camera** (which may be positioned within a **mobile device** as in Acharya/Luo) and related **software**." *Id.* at 15 (citing PO Resp. 64–65).[12]

Petitioner also argues that Patent Owner "seeks to add structural requirements that the district court never suggested, much less ordered." Pet. Reply 16. First, Petitioner argues that video frames are merely "an implementation" and that "[e]mbodiments of the image monitoring and capture module do not require production or monitoring of video frames at all." *Id.* at 17 (quoting Ex. 1001, 5:45–61, 13:7–10). Petitioner further argues that in the Texas case, Patent Owner argues that only a single frame is required. *Id.* (citing Ex. 1039 (The Texas Case: *Markman* Hearing Transcript), 37:18–23, 38:21–39:7; Ex. 1036 ¶¶ 46–48).

Second, Petitioner argues that if the software abstraction layer is required, it is only an alternate embodiment. Pet. Reply 18 (citing Ex. 1001, 11:6–8).

2. Our Analysis

a) The Texas Court's Construction

Our rules state that "any prior claim construction determination concerning a term of the claim in a civil action, or a proceeding before the International Trade Commission, that is timely made of record in the *inter partes* review proceeding will be considered." 37 C.F.R. § 42.100(b). Accordingly, we begin our analysis by considering what the Texas court held. *See* Ex. 1034, 60–65 (relevant claim construction and analysis).

The Texas court determined that "the phrase 'image monitoring and capture' that precedes the word 'module' has not been shown to connote

[12] Unless indicated, all bold emphasis is in the original.

structure and instead recites function." Ex. 1034, 62. According to the Texas court, "[r]ead in the context of the claim as a whole (reproduced above), the term 'image monitoring and capture module' is tantamount to a recital of a 'module for image monitoring and capture' under the circumstances of the present case." *Id.* Thus, according to the Texas court, "the term 'image monitoring and capture module' does not connote sufficient structure to avoid means-plus-function treatment, and [Petitioner] has rebutted the presumption against means-plus-function treatment for this non-means term." *Id.* at 64.

The Texas court also rejected Petitioner's argument that the specification lacked sufficient corresponding structure. Ex. 1034, 64–65. Instead, the Texas court pointed to the following language from the specification as denoting sufficient structure:

> The client apparatus 450 may include one or more software objects operating on a mobile device 106, such as described above. The client apparatus 450 may include a communications module 452, a check processing module 454, and an image monitoring and capture module 456. The client apparatus 450 may receive, in one example, one or more check images 458 as an input and output one or more processed images 460.
>
> In an implementation, the check images 458 may be received following a software call from the check processing module 454 to the image monitoring and capture module 456. In such an implementation, the image monitoring and capture module 456 may include the camera 207 contained within the mobile device 106. Alternately, the camera 207 may be detachably coupled to the mobile device 106
>
> . . . .
>
> * * *
>
> The check processing module 454 may be configured, in one example, to cause the image monitoring and capture module 456

> to monitor an image of at least one side of a check provided in a field of view of the camera 207 and then capture the image after it passes monitoring criteria.

Id. (quoting Ex. 1001, 12:55–13:6, 13:35–38) (citing Ex. 1001, 15:30–33 ("The system may instruct a camera associated with the mobile device to monitor and capture an image of the negotiable instrument in conjunction with monitoring criteria.")). Based on the above, the Texas court determined that "'**image monitoring and capture module**' is a means-plus-function term governed by 35 U.S.C. § 112, ¶ 6, the claimed function is '**image monitoring and capture**,' and the corresponding structure is '**image monitoring and capture module 456 as set forth in the specification; and equivalents thereof**.'" *Id.* at 65.

b) Our Claim Construction

"An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112, ¶ 6 (2018). A claim term that lacks the word "means" triggers a rebuttable presumption that 35 U.S.C. § 112, sixth paragraph, does not apply. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348−49 (Fed. Cir. 2015) (en banc). That presumption can be overcome, however, if it is shown "that the claim term fails to 'recite sufficiently definite structure' or else recites 'function without reciting sufficient structure for performing that function.'" *Id.* at 1349 (quoting *Watts v. XL Sys., Inc.*, 232 F.3d 877, 880 (Fed. Cir. 2000)). "The standard is whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name

for structure." *Id.* (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)). "To determine whether the claim limitation at issue connotes sufficiently definite structure to a person of ordinary skill in the art, we look first to intrinsic evidence, and then, if necessary, to the extrinsic evidence." *TEK Glob., S.R.L. v. Sealant Sys. Int'l, Inc.*, 920 F.3d 777, 785 (Fed. Cir. 2019).

Petitioner has not directed us to sufficient evidence that "image monitoring and capture module" denotes structure. Although Dr. Mowry states that "the Board was correct to construe 'image monitoring and capture module' according to its plain meaning instead of the district court's means-plus-function construction when it instituted this IPR," his opinion is conclusory without any supporting analysis. *See* Ex. 1036 ¶ 42. Accordingly, we give it no weight on this point. *See* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.").

Instead, we are guided by the Federal Circuit, which held that "'[m]odule' is a well-known nonce word that can operate as a substitute for 'means' in the context of § 112, para. 6." *Williamson*, 792 F.3d at 1350. Such a generic description of software "may be used in a claim in a manner that is tantamount to using the word 'means' because they 'typically do not connote sufficiently definite structure' and therefore may invoke § 112, para. 6." *Id.* (quoting *Mass. Inst. of Tech. & Elecs. for Imaging, Inc. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006) (citing Manual of Patent Examining Procedure § 2181)). In this proceeding, the term "module" does not provide any indication of structure and is the equivalent of using the term means.

Nor is there sufficient evidence in the record that the prefix "image monitoring and capture" denotes any structure. Instead, as the Texas court held, those words do no more than denote the function performed by the generic module. *See* Ex. 1034, 62. Nor has Petitioner identified anything in the specification or prosecution history of the '571 patent that might lead us to construe that expression as the name of a sufficiently definite structure so as to take the overall claim limitation out of the ambit of § 112, para. 6. *See* Pet. Reply. That is, the presence of these particular terms does not provide any structural significance to the term "module" in this case.

Accordingly, we conclude that (1) words "image monitoring and capture module" recited in claims 1 and 9 fails to recite sufficiently definite structure, (2) the presumption against means-plus-function claiming is rebutted, and (3) as the Texas court concluded, this limitation is subject to the provisions of 35 U.S.C. § 112, para. 6. *See* Ex. 1034, 61–65.

"Construing a means-plus-function claim term is a two-step process. The court must first identify the claimed function. . . . Then, the court must determine what structure, if any, disclosed in the specification corresponds to the claimed function." *Williamson*, 792 F.3d at 1351–52 (citing *Noah Sys., Inc. v. Intuit Inc.*, 675 F.3d 1302, 1311 (Fed. Cir. 2012)). "Structure disclosed in the specification qualifies as 'corresponding structure' if the intrinsic evidence clearly links or associates that structure to the function recited in the claim." *Id.* at 1352 (citing *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997)).

As discussed above, image monitoring and capture is the function recited in the claims. *See*, *e.g.*, Ex. 1001, 15:30–33 ("[T]he system may instruct a camera associated with the mobile device to monitor and capture

an image of the negotiable instrument in conjunction with monitoring criteria.").

With regard to the structure, we agree with the Texas court's identification of structure. *See* Ex. 1034, 64. That is, the specification links the image capture and monitoring to a software object:

> The client apparatus 450 *may include one or more software objects operating on a mobile device 106*, such as described above. The client apparatus 450 may include a communications module 452, a check processing module 454, *and an image monitoring and capture module 456*. The client apparatus 450 may receive, in one example, one or more check images 458 as an input and output one or more processed images 460.

Ex. 1001, 12:57–64 (emphases added) (cited by Ex. 1034, 64). The specification also links a camera, which may be contained within the mobile device or detached:

> In an implementation, the check images 458 may be received following a software call from the check processing module 454 to the image monitoring and capture module 456. In such an implementation, *the image monitoring and capture module 456 may include the camera 207 contained within the mobile device 106*. Alternately, the camera 207 may be detachably coupled to the mobile device 106. . . .
>
> . . . .
>
> The check processing module 454 may be configured, in one example, to cause the *image monitoring and capture module 456 to monitor an image of at least one side of a check provided in a field of view of the camera 207* and then capture the image after it passes monitoring criteria. . . .
>
> . . . .
>
> . . . [T]he system may instruct *a camera associated with the mobile device to monitor and capture an image* of the negotiable instrument in conjunction with monitoring criteria.

Ex. 1001, 12:65–13:4, 13:35–38, 15:30–38 (cited by Ex. 1034, 64–65) (emphases added). In each of those sections of the specification, the function of "image capture and monitoring" is explicitly linked to structure. *See* Pet. Reply 15 (identifying the camera and software as linked structure); PO Resp. 28 (arguing that "[t]he Board should apply the district court's construction in this proceeding."). [13]

Besides the structure identified above, the parties have identified additional structure; however, as we discuss below, those structures are not linked to the recited and claimed function. First, Petitioner argues that the corresponding structure includes the mobile device. Pet. Reply 15. We disagree. Although the sections of the specification quoted above refers to the mobile device, there is nothing in the quoted sections that link the mobile device to the claimed function. To the contrary, the specification is agnostic as to whether the imaging and capture module is part of the mobile device. Specifically, the specification states that that the camera—which is clearly linked to the image monitoring and capture function—may be either "within the mobile device 106" or "detachably coupled to the mobile device." Ex. 1001, 12:65–13:4.

[13] "If the patentee fails to disclose adequate corresponding structure, the claim is indefinite." *Williamson*, 792 F.3d at 1352 (citing *Noah*, 675 F.3d at 1311–12). Nevertheless, because we are limited to determining patentability based only on 35 U.S.C. §§ 102 and 103, we do not consider whether the specification discloses adequate corresponding structure such that the claim term "image monitoring and capture module" is definite. *See* 35 U.S.C. § 311(b) ("A petitioner in an inter partes review may request to cancel as unpatentable 1 or more claims only on a ground that could be raised under section 102 and 103 and only on the basis of prior art consisting of patents or printed publications.").

Second, we disagree with Patent Owner that the camera must produce video frames. *See* PO Resp. 32 (Ex. 1001, 54–50). Although the specification describes how "[a] frame of video may be obtained and monitored," the specification does not describe how the monitoring or capturing is performed or link the video frame to the claimed function. *See* Ex. 1001, 5:45–50. Moreover, there is nothing in the Texas court's claim construction, which Patent Owner said we should adopt, indicating that the camera must produce a video frame. *See* Ex. 1034, 64–65. Instead, the portion of the specification cited by the Texas court simply requires a camera. *Id.*

Third, we disagree with Patent Owner that structure of the image monitoring and capture module requires a software call from a check processing module. *See* PO Resp. 32 (citing Ex. 1001, 12:65–67). There is nothing in the sentence cited by Patent Owner linking that software call to the function of image monitoring and capture; instead, the sentence simply describes what starts the process of image monitoring and capture. Ex. 1001, 12:65–67.

Fourth, we do not agree with Patent Owner that the image monitoring and capture module must use a software abstraction layer. PO Resp. 32 (citing Ex. 1001, 11:6–17). There is nothing in the cited specification that links that software abstraction layer to the claimed function. *See* Ex. 1001, 11:6–17. Moreover, the specification lists the software abstraction layer as an alternate design and gives other examples, such as a wholly self-contained application sent to the client or software previous downloaded on the client. *See* Ex. 1001, 10:48–11:8. Thus, to the extent that a software abstraction layer is linked to the function—which it is not—so are the other recited software examples.

Fifth, we do not agree that the camera must perform the image monitoring and capture function. *See* PO Resp. 32 (citing Ex. 1001, 11:22–30). Although the section of the specification cited by Patent Owner states how the software object "may" function—"caus[ing] the camera 207 to analyze an image in the field of view with respect to monitoring criteria, provide feedback, and/or take a picture or capture one or more images of the check 108 being deposited"—we do not see the specification as a whole requiring the camera to perform the image monitoring and capturing function. *See* Ex. 1001, 11:20–30. As the section of the specification cited by the Texas court makes clear, the image monitoring and capture module "may include the camera 207." Ex. 1001, 13:1–6 (cited by Ex. 1034, 64). But "may include the camera" implies that the module may not include the camera. That interpretation is also consistent with the language of claim 1, which separately recites the camera and the image monitoring and capture module as different components. Ex. 1001, 21:6–17. Thus, the language of the claim and the specification as a whole is inconsistent with requiring the camera to execute the image monitoring and capture software.

D. Obviousness over Acharya and Luo

Petitioner argues that claims 1–3, 6, 9, 10, and 13 would have been obvious over Acharya and Luo. *See* Pet. 33–73. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that these claims are unpatentable.

1. Acharya

Acharya "relates generally to a system and method for initiating a deposit transaction, where the depositor is a banking customer located at a remote location, where the item is to be deposited without physical transport of the item to a bank and where the item to be deposited is a financial

instrument, e.g. a paper check, from a third party (i.e., other than the bank customer or the paying bank), payable to the depositor, where the banking customer has or creates a digital image of the financial instrument." Ex. 1003, 1:18–26.

Figure 1, not reproduced, depicts a schematic diagram of a system for depositing financial instruments. Ex. 1003, 3:62–63, 4:9–15. Figure 1 shows that Remote Customer Terminal (RCT) 100 is connected to Bank of First Deposit (BOFD) system 110. *Id.* at 4:14–17. RCT 100 can be a telephone, digital camera, fax machine, automated teller machine (ATM), cell phone, personal digital assistant (PDA), or other device, and includes input devices 101, output devices 102, central processing unit (CPU) 103, and memory 104. *Id.* at 4:18–22, 4:32–34. RCT 100 communicates with BOFD system 110 via communication link 120, which can be, e.g., a dedicated line or the Internet. *Id.* at 5:53–58. BOFD system 110 is connected to check clearing systems 130 via communication link 140. *Id.* at 6:32–36.

A method of depositing financial instruments in the context of the system of Figure 1 is depicted in Figure 2, not reproduced, which is a flow diagram illustrating the flow of information from the perspective of a banking customer. Ex. 1003, 3:64–65, 6:52–54. The banking customer may first prepare a digital image of a financial instrument (e.g., a check) using a digital camera and store the image in memory 104. *Id.* at 7:14–22. The banking customer may additionally access software that can recognize data in the digital image and store that in memory 104 along with the digital image. *Id.* at 7:23–30; *see also id.* at 4:65–5:6 ("For example, optical character recognition software may be used in conjunction with the [Digital Image Scanner (DIS)] or the digital camera to convert machine printed

characters on the financial instrument or the digital image of the financial instrument to electronic text. Likewise, intelligent character recognition software may be used to convert handwritten characters on the financial instrument or on the digital image of the financial instrument to electronic text."). "In another embodiment, in addition or alternatively, the banking customer may enter data into the RCT memory 104 using RCT input devices 101 such as the keypad, keyboard or microphone for storage." *Id.* at 7:30–33. "Data may comprise customer identification, customer account number, name of payor, name and routing number of payor's bank, the amount of the financial instrument, an image of the financial instrument, along with other information." *Id.* at 7:37–41.

To deposit the check, the banking customer logs on to BOFD system 110 from RCT 100, selects a "deposit" option from a menu of transaction options, and is prompted to deposit a financial instrument. *Id.* at 6:55–7:7 (steps 200–230). In response to a prompt for additional information (step 240), "the banking customer may submit the data taken from the financial instrument, along with the digital image of the financial instrument, to the BOFD system 110 for processing 250, and may receive acknowledgement from the BOFD system 110 that the transaction is being processed 260." *Id.* at 7:42–47. The banking customer may then receive a response indicating immediate provisional credit for the deposit (step 270). *Id.* at 8:4–8.

2. Luo

Luo describes a technique for capturing an image of an object with straight edges (e.g., a business card) that reduces projective distortion in the image, whereby the image is captured only when a straight edge of the object shown in a camera's preview window is substantially parallel to a

reference line. Ex. 1004, code (57). Luo notes that "today's digital cameras are often integrated into mobile phones, personal digital assistants (PDAs), and laptops," with the result that "people in business can use digital cameras incorporated into mobile phones to quickly and easily capture digital images of their business cards." *Id.* at 4. However, it is "unideal" when one "holds the business card in front of the camera lens with one hand, while holding the camera with the other hand when taking pictures," because of "variable factors such as the distance from the lens to the business card, and the angle of the camera's image plane relative to the front of the business card," such that "the image resulted may contain defects such as projective distortion." *Id.* Figure 2, reproduced below, illustrates an example of Luo's solution:

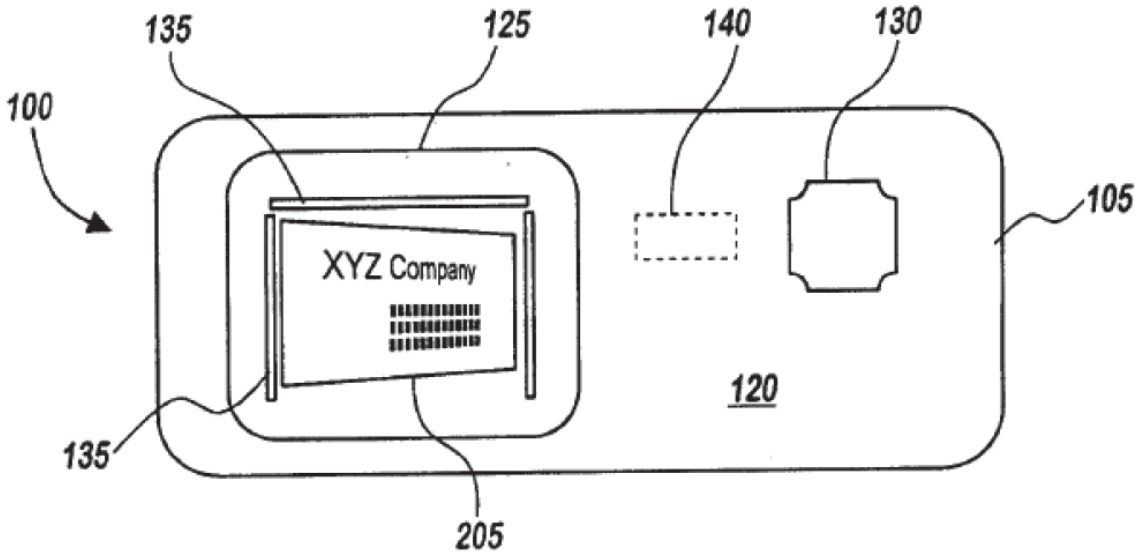

Fig. 2

Figure 2 is a schematic diagram of back 120 of camera system 100. *Id.* at 6.

Back 120 includes preview window 125, which displays an image received by image sensor 115 (shown in Figure 1). Ex. 1004, 6. When mode selection switch 130 is set to a document capture mode, reference line(s) 135 is displayed in preview window 125. *Id.* Reference line 135

guides the user to position image sensor 115 in an appropriate orientation with respect to the business card being captured. *Id.* at 7. "[W]hen the system 100 is in the document capture mode, the system 100 provides the user with an image of a captured object, such as a business card, only when the straight edge 205 of the business card is substantially parallel to the corresponding reference line 135 displayed in the preview window 125." *Id.* at 8. For example, "when the system 100 operates in the document capture mode . . . , the system 100 displays that the object plane 310 and the image plane 320 are not substantially parallel, so the final business card image cannot be captured." *Id.* To implement this, "image edge detection techniques can be used to reliably calculate the angle between a specific reference line 135 and the corresponding straight edge 205 in the document preview image." *Id.* Luo's Figure 5 (a larger version of the image shown in preview window 125 of Figure 2) displays three reference lines 135, but Luo notes that two, three, four, or more lines could be used, and the lines need not be orthogonal. *Id.*

Luo describes "[v]arious techniques" to indicate to the user that the business card is aligned properly, including "an alarm composed of sounds, such as a clicking sound output from the camera system 100," or a "light illuminated in the preview window 125 or the light illuminated elsewhere in the camera system 100." Ex. 1004, 9. "As an alternative, when the straight edge 205 displayed on the preview window 125 is substantially parallel to the corresponding reference line 135, the system 100 can automatically capture the selected image and provide the user with or without instructions." *Id.*

According to Luo, through use of its techniques, "the projective distortion in the image is reduced, and the image is clearer and more

accurate. With reduced projective distortion, it is more likely to perform an accelerated image capture process, such as an optical character recognition process performed on a text image, with high accuracy." Ex. 1004, 10.

3. Analysis of Claim 1

a) Reason to Combine Acharya and Luo

The parties dispute whether a skilled artisan would have had a sufficient reason to combine the teachings of Acharya and Luo. *See* Pet. 33–39; PO Resp. 45–70; Pet. Reply 1–13; PO Sur-reply 8–26.

Petitioner argues that Luo expressly provides reasons why a skilled artisan would have combined Luo's teachings with Acharya's teachings. Pet. 33–35. For example, Luo explains that it is difficult to capture a high-quality image of a document such as a business card with a hand-held digital camera because it is difficult to get the correct alignment and distance from the camera, resulting in projective distortion, or blurring. *Id.* at 34–35 (citing Ex. 1004, 4).[14] Specifically, Luo states:

> [M]any environments today for using digital cameras are not ideal for capturing high-quality images. For example, a user of a digital camera trying to capture a business card image simply holds the business card in front of the camera lens with one hand, while holding the camera with the other hand when taking pictures. But this makes unideal variable factors such as the distance from the lens to the business card, and the angle of the camera's image plane relative to the front of the business card. Therefore, the image resulted may contain defects such as projective distortion.

[14] The Petition cites to the native pagination. However, because the native pagination repeats, the citations have been changed to reflect the pagination added to Exhibit 1004.

Ex. 1004, 4. Patent Owner attempts to limit this disclosure to the situation where a user holds a business card in one hand and operates the camera with the other, and argues that "the situation described in Luo would appear to be avoided entirely by placing the check on a surface in order to capture it," as shown in ImageNet.[15] PO Resp. 63–64; *see also id.* at 24 ("Moreover, as the Board pointed out, the user could simply 'have placed the camera directly above the document to avoid document distortion, as taught by Nepomniachtchi.'" (Quoting Ex. 2101, 50))[16], 49 n.11 ("Dr. Mowry did not evaluate whether ImageNet (or any other remote deposit system in the industry) had issues with projective distortion or blur in captured check images." (Citing Ex. 2116, 30:1–31:13)), 62–63 ("Petitioner's expert conceded at deposition that he has no evidence ImageNet could not address issues of blur and projective distortion." (Citing Ex. 2116, 30:1–31:13)). We do not view Luo's disclosure as so limited; rather, Luo describes a general problem of projective distortion when trying to capture an image of document with a movable hand-held camera that must be aligned manually with the document. We find that an ordinary artisan would have understood that Luo's solution would be beneficial to a user whether the user places the document on a table before capture or holds the document in his or her hand during capture. *See* Ex. 1002 ¶ 76.

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[15] ImageNet is not asserted by Petitioner in this proceeding. Its relevance is marginal, if at all, and only as an example of another solution in the art.

[16] The findings of the Wells Fargo IPR panel on Nepomniachtchi's disclosure of placement of the camera is of marginal, if any, relevance to this proceeding, as Acharya, the reference Petitioner relies on, includes no such description.

As Petitioner observes, Luo solves the problem of projective distortion with a system that uses reference lines in the image preview window to help the user line up the document and automatically captures an image when the document is lined up correctly with the reference lines. Pet. 34–35 (citing Ex. 1004, 8). For example, Luo explains:

> The present invention ensures that the front of the object being imaged is substantially parallel to the image plane 320 of the camera system 100 to reduce the projective distortion of the image. For example, when the system 100 is in the document capture mode, the system 100 provides the user with an image of a captured object, such as a business card, only when the straight edge 205 of the business card is substantially parallel to the corresponding reference line 135 displayed in the preview window 125.

Ex. 1004, 8. Referring to its Figure 5, Luo continues:

> For the purpose of illustration, the image plane 320 of the business card shown is tilted in relative to system 100 so that the top straight edge 205 of the card cannot be substantially parallel to the corresponding top reference line 135. In such positioning, when the system 100 operates in the document capture mode as described above, the system 100 displays that the object plane 310 and the image plane 320 are not substantially parallel, so the final business card image cannot be captured. As is well known in the art, image edge detection techniques can be used to reliably calculate the angle between a specific reference line 135 and the corresponding straight edge 205 in the document preview image.

Id. Thus, we find that Luo describes a technique of comparing edges of a document to guidelines to help a user line up the camera with the document, resulting in an image with less projective distortion, or blurring.

According to Petitioner, Luo explains that, due to its solution, it is easier and more accurate to use optical character recognition to capture text from the higher-quality image. Pet. 34–35 (citing Ex. 1004, 10). Lou's express description supports this argument:

> [T]he camera system 100 can be used to capture only precise, clear text data images, which can be downloaded to another location before any optical character recognition is performed. . . . Therefore, the present invention helps users to accurately and reliably capture an image of the front of an object, where the object plane 310 is substantially parallel to the image plane 320. Therefore, the projective distortion in the image is reduced, and the image is clearer and more accurate. With reduced projective distortion, it is more likely to perform an accelerated image capture process, such as an optical character recognition process performed on a text image, with high accuracy.

Ex. 1004, 10. Petitioner argues that this would have been applicable to Acharya, which describes converting machine printed characters on a digital image of a check using optical character recognition software. Pet. 35 (citing Ex. 1003, 4:67–5:2 ("For example, optical character recognition software may be used in conjunction with the DIS or the digital camera to convert machine printed characters on the financial instrument or the digital image of the financial instrument to electronic text."); Ex. 1002 ¶¶ 76–77).

Dr. Mowry testifies that, "[b]ecause of these difficulties in capturing suitable images using handheld devices, Luo provides a motivation for a person of ordinary skill in the art to modify Acharya using the monitoring, feedback, and capture techniques in Luo [to provide] a high likelihood of obtaining images suitable for image processing, which is desirable." Ex. 1002 ¶ 76. Dr. Mowry's testimony is consistent with the express disclosures in Acharya and Luo and, therefore, is credible.

Acharya expressly identifies technology that it uses to capture information from documents, namely optical character recognition, and Luo expressly describes a technique designed to reduce projective distortion when capturing an image of a document, such that optical character

recognition can be performed more accurately. Dr. Creusere admitted on cross-examination that "correcting geometric distortion will make it easier to perform automatic text recognition." Ex. 1037, 89:1–2. Petitioner contends that its proposed combination would have amounted to applying a known technique to a known device ready for improvement to yield predictable results. Pet. 35–37; *see also KSR*, 550 U.S. at 417 ("[I]f 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."); Ex. 1002 ¶ 78 ("Implementing Acharya's RCT using Luo's camera system would have simply involved applying a technique that was known to a device that was known and ready for improvement, to yield predictable results."). We agree. This appears to be a textbook example of using a technique that improved one device to improve a similar device in the same way. As we preliminarily observed in the Institution Decision (Dec. at 56–57), a combination of Acharya and Luo would have been no more than "[t]he combination of familiar elements according to known methods" and, thus, likely obvious because it "does no more than yield predictable results." *KSR*, 550 U.S. at 416.

Petitioner argues, and Dr. Mowry testifies, that a skilled artisan would have had a reasonable expectation of success, as Luo itself explains that the software that would implement the invention would be easy to produce for a generic processor, which Acharya also employs. Pet. 37–38 (citing Ex. 1003, 4:63–65; Ex. 1004, 11; Ex. 1002 ¶ 81). Other similarities Petitioner and Dr. Mowry note that would lead to a reasonable expectation of success include that both Acharya and Luo describe their respective inventions as implemented on the same types of handheld devices, and the

documents on which both operate have straight edges and are subject to optical character recognition. *Id.* at 38–39 (citing Ex. 1003, 1:21–22, 4:18–20, 4:37; Ex. 1004, 4, 7, 9; Ex. 1002 ¶¶ 82–83). We credit Dr. Mowry's testimony, which is consistent with the disclosures of Acharya and Luo on this point, and find that a skilled artisan would have had a reasonable expectation of success in combining the teachings of Acharya and Luo. Ex. 1002 ¶¶ 81–83.

As we discussed above, Petitioner's evidence of obviousness is particularly strong and straightforward. Nevertheless, Patent Owner offers arguments and evidence in response. Patent Owner groups its arguments into four categories:

> (1) Petitioner's own asserted references—Acharya, Nepomniachtchi, and ImageNet[17]—show that the established method of remote check deposit in the art was to have the customer manually capture or otherwise obtain check images and provide the images and/or check data to the bank for processing.
>
> (2) The alleged "problem" with digital camera imaging described in Luo—misalignment/distortion caused by incorrect positioning of the camera relative to the document—was already accounted for by pre-capture instructions and deposit processing algorithms employed in the art.
>
> (3) A person having ordinary skill in the art would have expected Luo's single-criterion automatic capture technique to be less effective and undesirably burdensome on the mobile processor.
>
> (4) Luo teaches that its alignment guide technique can be applied with both a manual capture implementation and an auto-capture implementation. Petitioner's expert has conceded

[17] Neither Nepomniachtchi nor ImageNet is asserted by Petitioner in this proceeding for this ground. Their relevance is marginal, if at all, and only as examples of other solutions in the art.

> that there is no evidence that the auto-capture implementation has any benefit over the manual capture implementation.

PO Resp. 1–2; *see also id.* at 45–70.

As to the first category of arguments, Patent Owner contends that each of Acharya and Nepomniachtchi teaches remote check deposit methods that employ "a 'manual capture' approach where the customer captures check images using a camera and uploads those images and/or other check data to a bank system for deposit processing." *Id.* at 52 (citing Ex. 1003, 3:12–15; Ex. 1016 ¶ 78; Ex. 1014, 37–39); *see also id.* at 47–48 ("Nepomniachtchi teaches obtaining images suitable for check deposit processing specifically and based on a manually captured image by the user, i.e., without using 'monitoring, feedback, and capture techniques.'" (Citing Ex. 1016 ¶¶ 62–78)). Patent Owner argues that these manual-capture methods "all leave the decision of when to capture the image in the hands of the customer despite recognizing the possibility of image quality issues in captured images, including the same types of distortions described in Luo." *Id.* at 52–53 (citing Ex. 1016 ¶¶ 58, 70). According to Patent Owner, "Petitioner has presented no evidence that this established method of remote check deposit in the art was perceived as inadequate for addressing projective distortion or blur," and, instead, that Petitioner presented evidence that ImageNet was commercially successful in manually capturing mobile check data. *Id.* at 49 (citing Pet. 10–12); *see also id.* at 50 ("Petitioner's expert was asked if he had any actual evidence that the solutions for blur and projective distortion addressed in Nepomniachtchi were any less effective than Luo. He conceded he had none." (Citing Ex. 2116, 19:14–20:2, 21:19–22)).

As to Acharya, Petitioner argues that it is agnostic as to whether images are captured manually or automatically. Pet. Reply 7–8. Patent Owner's citation to Acharya (Ex. 1003, 3:12–15) does not support its contention that Acharya employs a manual capture approach and, instead, merely states that "the banking customer captures the digital image of the financial instrument by the scanner or the digital camera and prepares a file storing the digital image." As Petitioner points out (Pet. Reply 7–8), Dr. Creusere has admitted that Acharya does not state whether images are captured manually or automatically. *See* Ex. 1037, 120:8–20. Thus, Acharya's teachings do not support Patent Owner's argument that manual capture was the established and preferred method for remote check deposit.

As to Patent Owner's argument that Nepomniachtchi and ImageNet show that manual capture was the preferred method for remote check deposit (PO Resp. 52–53, 55–56 (citing Ex. 1016 ¶¶ 58, 70, 78; Ex. 1014, 37–39; Ex. 2110)), simply pointing to examples of art using manual capture does not show that manual capture was established and preferred over automatic capture, or suggest that a skilled artisan would not have pursued other solutions. *Cf. In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) ("The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed in the '198 application. . . . Accordingly, mere disclosure of alternative designs does not teach away."). Patent Owner points to nothing in Nepomniachtchi or ImageNet that criticized, discredited, or would have discouraged automatic capture of check images.

Patent Owner also argues that Acharya teaches other ways in which a customer can deposit a check that do not include image capture, such as the

customer receiving a digital image of a check from the payer or the customer entering data into the system using a keypad or keyboard. PO Resp. 54–55 (citing Ex. 1003, 2:63–66, 3:20–21, 7:5–7, 7:14–19, 7:30–33, 7:47–52). From these examples, Patent Owner concludes that "Acharya's multitude of options for providing images and/or check data to the bank system indicate that the quality of the check image is not of particular importance in Acharya's system." *Id.* at 54 (citing Ex. 2115 ¶ 31). Although Patent Owner cites Dr. Creusere's testimony, that testimony does not support Patent Owner's argument. Nor does any of the other evidence Patent Owner cites. Acharya's description of multiple ways of capturing check data does not lead to a conclusion that the quality of a check image is unimportant in Acharya's system.

Patent Owner also argues that "Petitioner's expert concedes that there is no statement in Acharya that it has any issues with projective distortion or blur." PO Resp. 55 (citing Ex. 2116, 33:16–24); *see also id.* at 49 n.11 ("Dr. Mowry . . . testified that Acharya did not identify any problems with projective distortion or blur in its existing manual capture implementation." (citing Ex. 2116, 33:16–24)); PO Sur-reply 11 ("Acharya does not disclose that its optical character recognition system suffers from projective distortion problems. And any missing information can be typed in by the user." (Citing Ex. 1003, 7:36–41)). Patent Owner does not cite any authority for its implicit argument that a reference must expressly state a problem before it can be ready for improvement. Indeed, the Supreme Court has rejected such a "rigid approach" of requiring a teaching, suggestion, or motivation to combine to be expressed in a reference, in favor of "an expansive and flexible approach" to evaluating obviousness. *KSR*, 550 U.S. at 415. In any case, Luo expressly states that its technique reduces

projective distortion and improves optical character recognition. Ex. 1004, 7. Dr. Mowry testifies that a skilled artisan would have recognized that Luo's solution could be used to improve check processing, as in Acharya's system, in the same manner. Ex. 1002 ¶ 76; *see also KSR*, 550 U.S. at 417 ("[I]f 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."). Dr. Mowry's testimony is consistent with the teachings of the prior art and we credit this testimony.

Patent Owner's second category of arguments is that "The 'Problem' Supposedly Motivating a [Person of Ordinary Skill in the Art] To Combine Acharya/Luo Was Already Addressed by Deposit Processing In The Art." PO Resp. 56–64. According to Patent Owner, a person having ordinary skill in the art considered "projective distortion" a solved problem in view of references like Nepomniachtchi teaching post-capture distortion correction. PO Sur-reply 12–13.

Patent Owner argues that, "to the extent that some check images captured in Acharya's system may be inadequate for optical character recognition, Acharya's system already provides a solution to that problem as part of its deposit processing step," namely by supplementing optical character recognition with the user manually entering missing data. PO Resp. 57 (citing Ex. 1003, 8:16–25). According to Patent Owner, "[t]he petition does not argue that a [person having ordinary skill in the art] would have been motivated to eliminate this step of Acharya's process." *Id.* This argument is not persuasive. It was not incumbent on Petitioner to assert that a skilled artisan would have removed one solution to make room for another, although the benefits of elimination of manual entry would have been self-

evident and a matter of common sense. *See Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009) ("[W]hile an analysis of obviousness always depends on evidence that supports the required *Graham* factual findings, it also may include recourse to logic, judgment, and common sense available to the person of ordinary skill that do not necessarily require explication in any reference or expert opinion."); *KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.").

Moreover, Patent Owner does not cite any authority for the proposition that, simply because a prior art reference describes one solution to a known problem, a skilled artisan would not have considered other solutions to that same problem. *Cf. Fulton*, 391 F.3d at 1201 ("The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed in the '198 application. . . . Accordingly, mere disclosure of alternative designs does not teach away."). The Federal Circuit has explained that:

> a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine. *See* [*Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000)] ("The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another."). Where the prior art contains "apparently conflicting" teachings (i.e., where some references teach the combination and others

> teach away from it) each reference must be considered "for its power to suggest solutions to an artisan of ordinary skill. . . . consider[ing] the degree to which one reference might accurately discredit another."

Medichem, S.A. v. Rolabo, S.L., 437 F.3d 1157, 1165 (Fed. Cir. 2006) (quoting *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991) (alterations by Federal Circuit)).

In this case, Patent Owner's argument actually supports Petitioner's position. As noted above, Patent Owner argues that Acharya itself does not identify projective distortion as a problem. *See* PO Resp. 55. However, as Patent Owner points out, Acharya describes manual entry of data to correct data not captured sufficiently by optical character recognition. *Id.* at 57. Thus, although Acharya does not expressly use the terms "projective distortion" or "blur," it recognizes that its image capture technique might be insufficient for optical character recognition and, thus, was ready for improvement. As Petitioner demonstrates above, techniques such as those taught by Luo would provide such an improvement. *See KSR*, 550 U.S. at 419–20 ("One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.").

Patent Owner also argues that Nepomniachtchi[18] recognized the problem caused by projective distortion and described fixing such distortions at the server receiving the image of a check (rather than at the device capturing the image of the check). PO Resp. 58–60. Patent Owner contends

[18] As noted above, Nepomniachtchi is not asserted by Petitioner in this ground.

that "Nepomniachtchi's technique for correcting projective distortion in captured check images is equally applicable to Acharya's embodiments, whether processing occurs on the mobile device or at the server." PO Sur-reply 13. According to Patent Owner,

> to the extent a [person having ordinary skill in the art] was concerned that images captured via digital camera may contain the distortion taught by Luo, he or she would have understood that type of defect to be addressed by server-side processing (which Acharya is already performing on received check images) and would not see a need to make drastic changes to the image capture process on the customer device.

PO Resp. at 59 (citing Ex. 2115 ¶¶ 33–34);[19] *see also id.* at 8 ("Nepomniachtchi teaches that these image quality issues can be addressed through post-capture processing so that the document can be processed and data extracted successfully."), 23 ("[T]he Board determined that 'Nepomniachtchi as a whole already provides a solution that addresses image distortions.'" (Quoting Ex. 2101, 49))[20]; PO Sur-reply 10 ("[T]here is no competent evidence that a [person having ordinary skill in the art] would look to implement Luo's alignment guide-based autocapture for business

[19] Dr. Creusere cites Exhibit 1003, column 7, line14–33 and column 8, lines 16–9:10 for his conclusion that Acharya teaches server-side check processing that included image correction algorithms. Ex. 2115 ¶ 33. Acharya does not support this testimony, and instead, to the extent Acharya teaches where checks are processed to obtain data, it suggests that check processing happens on the device capturing the image. Ex. 1003, 7:14–33. Dr. Cruesere's testimony on this point lacks credibility and is entitled to no weight. *See* 37 C.F.R. 42.65(a).

[20] The findings of the Wells Fargo IPR panel on Nepomniachtchi's disclosure of correcting for projective distortion at the server is of marginal, if any, relevance to this proceeding, as Acharya includes no such description.

cards in Acharya in an attempt to solve the same 'projective distortion' problem as the check-deposit specific reference Nepomniachtchi." (Citing Ex. 2115 ¶¶ 35–36)). Patent Owner further argues that another reference, Blackson,[21] also teaches techniques for correcting check images at the server receiving the images (rather than at the device capturing the images). PO Resp. 60–61.

Patent Owner argues that "[t]hese references [which we presume are Nepomniachtchi and Blackson] show that the preferred approach to dealing with perspective distortion/misalignment issues in check deposit systems, at the time of the invention, was ***post-capture*** image correction." PO Resp. 61–62. Patent Owner argues that Blackson describes Luo's approach, requiring precise alignment, as inferior. PO Resp. 61–62 (citing Ex. 2108, 2:61–67).

Patent Owner's arguments are misplaced. These arguments largely depend on the teachings of Nepomniachtchi, which Petitioner does not rely on for this ground. Nepomniachtchi might teach techniques to correct for projective distortion at a server that receives an image of a check. But Patent Owner points to no persuasive evidence that Acharya includes that disclosure. Patent Owner's statement that "the preferred approach to dealing with perspective distortion/misalignment issues in check deposit systems, at the time of the invention, was ***post-capture*** image correction," PO Resp. 61–62, is mere attorney argument unsupported by persuasive evidence. We do not find that post-capture image correction was the preferred approach, that post-capture image correction was preferred to preventing distortion at the time of image capture, or that these two techniques would have been

[21] Blackson is not asserted by Petitioner in this proceeding.

mutually exclusive. But even if post-capture image correction were the preferred approach, that would not undermine Petitioner's contentions. *See PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–98 (Fed. Cir. 2014) ("Our precedent, however, does not require that the motivation be the best option, only that it be a suitable option from which the prior art did not teach away."); *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012) ("This court has further explained that just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes." (citing *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994))); *Fulton*, 391 F.3d at 1200 ("[O]ur case law does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention."); *see also Mouttet*, 686 F.3d at 1331 ("A reference may be read for all that it teaches, including uses beyond its primary purpose.").

As to Blackson, Petitioner argues that Blackson is inapposite, as it describes image capture on ATM hardware, rather than mobile devices. Pet. Reply 6 (citing Ex. 2108, 2:65–3:9). We agree with Petitioner. Blackson states that automated banking machines (which we understand to be synonymous with ATMs) have drawbacks in that checks often must be precisely aligned for reading magnetic ink coding (MICR) on the checks. Ex. 2108, 2:60–3:1. One aspect of Blackson's solution is an improved transport system and aligning device for better positioning checks. *Id.* at 5:14–39. Patent Owner does not persuasively explain the relevance of Blackson to check image capture using mobile devices.

Patent Owner further argues that Nepomniachtchi also teaches pre-manual capture techniques for avoiding projective distortion and blur, such as prompting the user to take another picture if the first is blurry. PO Resp.

60 (citing Ex. 1016 ¶¶ 61, 62, 73, 85; Ex. 2101 ¶¶ 49–50); *see also id.* at 10 ("Nepomniachtchi also teaches that the mobile device has the 'ability to identify poor quality images' and 'if the quality of the image is determined to be poor, a user may be prompted to take another image.'" (Quoting Ex. 1016 ¶ 62)), 49–50 ("[T]he Board previously found that this manual capture approach (as reflected in Nepomniachtchi) 'already provides a solution that addresses image distortions,' including '(1) utilizing the user's judgment (e.g., placing the camera directly above the document, rather than at an angle, to avoid image distortion) for the pre-capturing analysis and '(2) performing the image quality analysis on the mobile device to quickly determine whether the image can be accepted, needs correction, or needs retaking while the user is still physically close to the document and before starting another task.'" (Quoting Ex. 2101, 49)). Patent Owner argues that "Dr. Mowry identified no evidence suggesting Nepomniachtchi's projective distortion solution was ineffective." PO Resp. 9 (citing Ex. 2116, 19:14–20:2, 21:19–22)).

Although Patent Owner does not expressly argue that that Nepomniachtchi's and ImageNet's teachings of pre-manual capture and post-capture processing solutions teaches away from a combination of Acharya and Luo, Patent Owner appears to argue that a skilled artisan would have been dissuaded from pursuing that combination because of the solutions provided by Nepomniachtchi and ImageNet. Once again, "mere disclosure of alternative designs does not teach away." *Fulton*, 391 F.3d at 1201. We see no persuasive evidence supporting such a contention or that Nepomniachtchi's and ImageNet's teachings, if applied by Petitioner, would have been incompatible with a combination of Acharya and Luo. Indeed, Patent Owner does not point to any statements in Nepomniachtchi,

Blackson, Yoon, or Mitek (another reference not relied upon by Petitioner for this Ground) that would discourage a user from combining Acharya and Luo, or lead a skilled artisan in a direction divergent from that combination.[22]

In any case, the fact that other solutions to projective distortion exist does not suggest that Luo's solution would be inapplicable to Acharya. As we explain above, Petitioner presents strong evidence that it would be. *See* Pet. 33–39.

As to Patent Owner's third category of arguments, Patent Owner argues that a skilled artisan "would have been discouraged from incorporating Luo's technique into Acharya given the significant associated drawbacks." PO Resp. 65. This is a more explicit argument by Patent Owner that the prior art teaches away from Petitioner's proposed combination. According to the Federal Circuit:

> A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.

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[22] The findings of the Wells Fargo IPR panel relating to the features of Nepomniachtchi and Yoon and the solutions they provide for minimizing projective distortion (Ex. 2101, 42–64) are based on the particular facts of that proceeding, including the express teachings of those references, not present in the references advanced by Petitioner for this Ground, and the particular arguments made by the petitioner in that proceeding. Thus, they are of little, if any, relevance to this proceeding. Patent Owner argues that Dr. Mowry admitted that Nepomniachtchi is directed to the same problem as Acharya and that Nepomniachtchi's methods of addressing projective distortion would be relevant to Acharya. PO Resp. 14 (citing Ex. 2116, 35:1–9, 124:12–23). That is not an admission that the particular features of Nepomniachtchi cited by Patent Owner are taught in or implicitly a part of Acharya.

> The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.

Gurley, 27 F.3d at 553.

First, Patent Owner argues that incorporating Luo's technique into Acharya's system would have imposed "additional processing overhead and complexity on the customer's device as compared to the existing manual capture system" and that "[t]his type of processing, especially when done in real-time, was considered computationally-intensive in 2009." PO Resp. 66 (citing Ex. 2115 ¶ 35). The only evidence Patent Owner offers to support this assertion is the testimony of its expert, who largely copies Patent Owner's argument and does not identify the basis for the testimony. As such, the testimony is entitled to little weight. *See* 37 C.F.R. § 42.65(a); *see also Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) ("It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate."); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) ("Lack of factual support for expert opinion going to factual determinations, however, may render the testimony of little probative value in a validity determination."). We note that Luo describes its technique as implemented on conventional computing equipment on portable devices available prior to 2009 without mention of concerns over processing overhead. Ex. 1004, 11. Patent Owner's evidence is insufficient to establish that concerns over processing overhead would have dissuaded a skilled artisan from pursuing a combination of Acharya and Luo.

Patent Owner argues that the Board, in the Wells Fargo IPR, determined that implementing pre-capture monitoring and auto-capturing features on a mobile device would impose additional computational burdens on that mobile device. PO Resp. 22 (citing Ex. 2101, 26–27, 34). Patent Owner argues that Petitioner ignores this finding. *Id.* at 23. Patent Owner overstates the Board's findings in the Wells Fargo IPR or their relevance to this proceeding.

In the Wells Fargo IPR, a Board panel characterized one of the petitioner's arguments as "one of ordinary skill in the art would have been motivated to combine Nepomniachtchi and Yoon to: (1) reduce the computational burden." Ex. 2101, 25. The petitioner in that proceeding argued that the algorithm Nepomniachtchi performed on the server to correct skew was computationally intensive, and that improving the user's ability to capture the image without skew would have minimized the need to use this algorithm and, accordingly, would have reduced the burden of computations performed by *the mobile device*. *Id.* at 26. Against this backdrop, the Wells Fargo IPR panel determined that adding pre-capture monitoring and auto-capturing features on Nepomniachtchi's mobile device (per the teachings of Yoon) would not have decreased computational burden *on the mobile device*, because Nepomniachtchi teaches correcting skew at the server, not the mobile device. *Id.* at 26–27. Instead, the Board panel accepted Patent Owner's argument that adding such features to Nepomniachtchi's mobile device would increase the computational burden at the mobile device. *Id.* Thus, the Board panel determined that Patent Owner's evidence undermined the petitioner's assertion (not made by Petitioner in this proceeding) that Yoon's teaching would reduce the computation burden at the mobile device:

> Significantly, Petitioner's argument rests on the premise that "the combination lowers the burden of the correction step" so that it would reduce the burden of the computation performed by the mobile device. Nepomniachtchi, however, teaches using the server to perform the correction step in its preferred embodiment. Notably, Nepomniachtchi teaches that "the server may clean up the image by performing auto-rotate, de-skew, perspective distortion correction, cropping, etc." and that "a server based implementation might be employed to off-load processing demands from the mobile device." Any reduction in the correction processing would result in an efficiency gain at the server, not the mobile device. Therefore, Petitioner does not explain sufficiently how adding Yoon's monitoring and capturing features on the mobile device would reduce the computation burden on the mobile device.

Id. at 28 (internal citations omitted). The Board panel further determined that Nepomniachtchi's skew-correction algorithm was computationally intensive because the petitioner's expert admitted as much, and reasoned that "a relevant artisan would have used the *server* to perform the correction processing, instead of the mobile device, in order to avoid excessive burden on the mobile device, slower response times, and user dissatisfaction." *Id.* at 31. Thus, the Wells Fargo IPR panel found that Patent Owner's evidence undermined the petitioner's argument on the particular facts of that proceeding, including the particular technical features of prior art references not asserted here. We do not understand the Wells Fargo IPR panel to have made general findings of teachings away that would be applicable to prior art references not asserted in that proceeding. As such, the Wells Fargo IPR panel's findings are of marginal relevance here.

Second, Patent Owner argues that "alignment of the document relative to the camera is only one of many factors that impact the quality, particularly when capturing an image of a check for deposit," and that

adding Luo's automatic capture to Acharya's system would have ignored those other factors, resulting in images not sufficient for deposit. PO Resp. 67–68; PO Sur-reply 22 ("[T]here is no dispute that the automatic capture technique taught by Luo triggers capture of an image based solely on whether the edges of the document line up with the reference lines displayed on the screen. As Dr. Creusere explains, a [person having ordinary skill in the art] would have been discouraged from using this technique for check image capture because there are a multitude of factors that impact whether a captured check image can be successfully processed for deposit, many of which have nothing to do with alignment or 'projective distortion' that Luo purportedly corrects." (Citing Ex. 2115 ¶¶ 27, 28, 36)). According to Patent Owner, Luo's approach has "two drawbacks":

> (1) Luo's system will automatically capture images when the reference lines are aligned, even if the image is insufficient for deposit for other reasons not analyzed by Luo; and (2) Luo's system will not capture images when the reference lines are not aligned, even if the overall image is sufficient for deposit.

PO Resp. 67. Patent Owner argues that the first alleged drawback "results in an increase in the number of deposit errors" and the second "results in user frustration." *Id.* (citing Ex. 2115 ¶ 36). Patent Owner further argues that

> a [person having ordinary skill in the art] would have expected Luo's single-criterion automatic capture technique to be less effective and undesirably burden[some] to the mobile processor implement[ation] in comparison to [the] existing manual capture technique employed by Acharya and [Nepomniachtchi], and ImageNet, and would have been discouraged from making the combination, particularly in view of the limited and uncertain benefits of doing so described above.

Id. at 51 (citing Ex. 2101, 56).

In support of this argument, Dr. Creusere testifies that, in Petitioner's combination of Acharya and Luo, the camera "would automatically capture a check image when the reference lines are substantially aligned with the edges of the check, regardless of the quality of the image with respect to other factors such as brightness, contrast, focus, background, legibility of critical information such as the MICR line, and so forth." Ex. 2115 ¶ 36 (citing Ex. 1016 ¶¶ 58–62). On the other hand, Dr. Creusere testifies, "the Acharya/Luo combination would also only capture images when the reference lines are at least substantially aligned with the edges of the check, even if the overall image was suitable for deposit." *Id.* According to Dr. Creusere, "[b]oth of these concerns would discourage a person of ordinary skill in the art from making the combination in the first place, particularly given the alternatives available in the art." *Id.* Dr. Creusere does not identify the basis for his testimony that an Acharya/Luo combination would ignore other image quality factors that he states a skilled artisan would have considered "critical." Thus, this testimony is entitled to little weight. It also is inconsistent with Luo, which states that its "camera system 100 can be used to capture only precise, clear text data images, which can be downloaded to another location before any optical character recognition is performed," and that

> the present invention helps users to accurately and reliably capture an image of the front of an object, where the object plane 310 is substantially parallel to the image plane 320. Therefore, the projective distortion in the image is reduced, and the image is clearer and more accurate. With reduced projective distortion, it is more likely to perform an accelerated image capture process, such as an optical character recognition process performed on a text image, with high accuracy.

Ex. 1004, 10. Thus, Luo itself suggests that its image capture technique would have been sufficient to capture images of checks suitable for deposit.

Petitioner responds that Patent Owner's argument that the combination would replace manual capture with autocapture is misplaced because Acharya does not describe how it captures check images. Pet. Reply 7–8. As explained above, we agree. Petitioner also argues that, even if using autocapture, a skilled artisan would still apply judgement and knowledge in obtaining check images. *Id.* at 8–9. Petitioner points to Dr. Creusere, who testified on cross-examination that a skilled artisan would have understood that an image needs to have a sufficient light brightness and could manually adjust the position of a digital camera to achieve sufficient brightness, and that it was general logic and common sense that someone would want an acquired image to be in focus. Ex. 1037, 61:14–62:5, 67:3–7. As noted above, a skilled artisan would have been an experienced engineer. Petitioner also introduces evidence, including testimony from Dr. Mowry, that camera phones in 2008 had features such as autofocus and automatic exposure controls. Reply 8–9 (citing Ex. 1036 ¶¶ 28–34 (citing Ex. 1053 Ex. 1054)). Dr. Creusere admitted as much. Ex. 1037, 67:13–21, 68:1–6. As noted above, a skilled artisan would have been an experienced engineer. We credit Dr. Mowry's testimony that Luo's autocapture feature would have been used with such admittedly known techniques. Ex. 1036 ¶¶ 28–34; *see also KSR*, 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."). Thus, we do not agree that a skilled artisan would have been dissuaded from combining Acharya and Luo.

Patent Owner argues that Wells Fargo IPR panel concluded that, in a combination of Nepomniachtchi and Yoon (once again, references not

asserted for this Ground), the system would automatically capture an image as soon as the borders of the check aligned with the alignment guide, even if the image was not suitable for capture. PO Resp. 68 (citing Ex. 2101, 55); *see also id.* at 25–26 ("[T]he Board agreed that there would be drawbacks to the proposed combination [of Nepomniachtchi and Yoon given that it] would 'automatically capture the image as soon as the borders of the check image aligned with the rectangular alignment guide, whether or not the image was suitable in other respects.' The same criticism would apply to the proposed combination with Luo." (Quoting Ex. 2101, 55)), 26 ("The Board found that a [person haivng ordinary skill in the art] 'would have no reason to expect that a system evaluating only alignment and/or brightness prior to capture would automatically capture check images that were suitable for deposit processing based on all of the criteria identified in Nepomniachtchi' and that 'replacing a user's judgment that is based on numerous factors, with an auto-capture system based solely on alignment, would not minimize the need for retaking the images, but would instead introduce additional errors,' such as capturing images when the check is 'upside down' or does not have 'MICR information [] in the correct location' or has inadequate 'resolution or focus.'" (Quoting Ex. 2101, 56–58) (first alteration added)). The Wells Fargo IPR panel based its findings on admissions by the petitioner in that case that combining Nepomniachtchi and Yoon would replace the user's judgment about whether the image was aligned. Ex. 2101, 54. The Wells Fargo IPR panel also relied on admissions from the expert witness for the petitioner in that proceeding regarding Yoon, a reference not asserted in this proceeding. *Id.* at 57. Thus, the Wells Fargo IPR panel made its findings and conclusions based on the particular record of that proceeding, which considered different prior art and testimony than Petitioner asserts here.

Accordingly, those findings and conclusions are of marginal relevance in this proceeding.

Patent Owner further argues that "Petitioner has stated affirmatively that the prior art lacks the teachings required to determine, by monitoring an image for automatic capture, when the captured image will meet the requirements for deposit." PO Resp. 68–69; *see also* PO Sur-reply 25–26. Here, Patent Owner points to Petitioner's Motion for Summary Judgement of Enablement in the Texas case, which Patent Owner opposed, and Petitioner lost. PO Resp. 56 (citing Ex. 2111, 21); Tr. 45:20–47:9. Although the exhibit provided by Patent Owner is heavily redacted, it appears that, in the Texas case, Petitioner argued that the Specification of the '779 patent[23] did not describe additional monitoring criteria to ensure that a check image is in a form suitable for deposit, and the prior art did not include the teachings missing from the '779 patent. Ex. 2111, 21–25. Thus, at most, Petitioner argued that the prior art did not provide more detail than the '779 patent itself. In any case, Patent Owner opposed that motion and Petitioner did not prevail. Thus, any such statements in Petitioner's Motion for Summary Judgement of Enablement are of marginal value here.

For its fourth category of arguments, Patent Owner contends that Luo describes its automatic capture as an alternative approach to manual capture, and that Luo does not state that automatic capture is necessary to reduce projective distortion or blurring. PO Resp. 69 (citing Ex. 1004, 9). According to Patent Owner, "a [person having ordinary skill in the art] reading Luo would expect that the same benefits could be achieved by simply displaying the reference lines on the screen and providing an

[23] US 8,699,779 B1, which is the subject of IPR2021-01070.

'indication' to the user that the image may be captured when the lines are substantially parallel to the edges of the document, as described in Luo." *Id.* at 69–70 (citing Ex. 1004, 9–10). Patent Owner argues that "Petitioner never explains why a [person having ordinary skill in the art] would have been motivated to go beyond the primary embodiment of Luo and add the automatic capture alternative." *Id.* at 70; *see also* PO Sur-reply 17 ("Petitioner offers no reason why a [person having ordinary skill in the art] would have been motivated to adopt the automatic capture option of Luo, which would indisputably add complexity and overhead to the combination, if the manual capture embodiment already provided the same benefits."). Patent Owner argues that using Luo's reference lines with manual capture, and without automatic capture, "would provide Lou's stated benefits and avoid the downsides [of the combination] described above, such as increased errors and user dissatisfaction due to automatically capturing images at the wrong times." PO Resp. 70 (citing Ex. 2115 ¶ 35); *see also id.* at 52 ("The Petition provides no explanation as to why, even if a [person having ordinary skill in the art] would be motivated to aid an alignment guide monitored by the processor, it would then choose to add auto-capture, which would strip away human ability to ensure that other criteria that are necessary for a successful deposit are satisfied."). Patent Owner argues that "there must be a factual basis for why a [person having ordinary skill in the art] would strip away human judgment regarding the multiple factors that the Reply

acknowledges can result in an image of sufficient quality, and replace it with automatic capture." PO Sur-reply 17–18 (citing Ex. 2115 ¶¶ 30–35).[24]

In response, Petitioner argues that, "as Luo makes clear that, once the mobile device determines that the monitoring criterion is satisfied, automatically capturing an image (instead of manually) is merely a choice between the two equally suitable techniques." Pet. Reply 6 (citing Ex. 1002 ¶ 75).

As we explained above, Acharya does not explain in detail how images of checks are captured (or what role human judgement would play), so Patent Owner does not have a basis to argue that Petitioner's combination would "strip away human judgment" from Acharya's technique. And as we preliminarily observed in the Institution Decision (at 55), Luo describes both the reference lines and the automatic capture feature as beneficial to reducing projective distortion. Specifically, "[t]he reference line 135 is used to guide the user of the system 100 to position the image sensor 115 in an appropriate orientation with respect to, for example, a business card object," Ex. 1004, 7, and "when the straight edge 205 displayed on the preview window 125 is substantially parallel to the corresponding reference line 135, the system 100 can automatically capture the selected image and provide the user with or without instructions," *id.* at 9. Luo's reference lines help the user position the camera in an orientation that will result in the camera

[24] Patent Owner also argues that the Wells Fargo IPR panel was not persuaded that a skilled artisan would have been motivated to add Yoon's automatic capture feature to Nepomniachtchi. PO Sur-reply 16–17 (citing Ex. 2101, 50). The Wells Fargo IPR panel reached its findings and conclusions based on the particular facts of that case, including prior art references not at issue in this proceeding. Thus, they are of marginal, if any, relevance here.

automatically capturing an image of the document. These features work together to capture an image with reduced projective distortion and the current record suggests that the combined features would have improved Acharya in the same way. Ex. 1002 ¶ 112; *see KSR*, 550 U.S. at 417. Moreover, as explained above, we find that the prior art does not teach away from automatic capture of images.

However, even if the evidence suggested that manual capture had advantages over automatic capture (it does not), "just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes." *Mouttet*, 686 F.3d at 1334; *accord Fulton*, 391 F.3d at 1200. Rather, Luo "may be read for all that it teaches, including uses beyond its primary purpose." *Mouttet*, 686 F.3d at 1331. Luo expressly teaches automatic capture used in conjunction with reference lines, and describes the combined solution as one technique to reduce projective distortion in a captured image, resulting in more accurate optical character recognition. Ex. 1004, 9–10. For the reasons given above, we find that this teaching would have been similarly applicable to Acharya's images of checks captured and processed by optical character recognition, and would have improved the optical character recognition in a similar way, resulting in images of checks more likely to be in a form sufficient for deposit. *See KSR*, 550 U.S. at 417.

Patent Owner argues that the combination of Acharya and Luo is a situation in which disadvantages outweigh uncertain benefits. PO Resp. 69 (citing *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1329 (Fed. Cir. 2019)). According to Patent Owner,

> the issue is not whether it is theoretically feasible for a mobile device at the time to perform the processing required to

> implement automatic capture, but whether a [person having ordinary skill in the art] would have found it desirable (on balance) to ***add*** the additional complexity and processing required to continually monitor an image in view and determine the appropriate time to capture the image, as opposed to simply waiting for a manual button input from the user.

PO Sur-reply 23–24 (citing Ex. 2115 ¶ 35; Ex. 2116, 24:11–25:16); *see also id.* at 20–26 (discussing disadvantages). We disagree. As explained above, the benefits of Luo's alignment guide and automatic capture to document capture, such as in Acharya, are not uncertain and, instead, are straightforward and expressly stated in Luo. Patent Owner's evidence of disadvantages is unpersuasive and rests primarily on its analysis of prior art references not asserted by Petitioner and of marginal relevance to this proceeding.

In sum, on the complete record, Petitioner has shown that a skilled artisan would have had reasons with rational underpinning to combine the teachings of Acharya and Luo, with a reasonable expectation of success.

b) Depositing a Check (Limitation [1-pre])/Passes the Monitoring Criteria (Limitation [1b])

(1) Petitioner's Arguments

The preamble of claim 1 recites "[1-pre] [a] non-transitory computer-readable medium comprising computer-readable instructions for depositing a check that, when executed by a processor, cause the processor to." Ex. 1001, 21:6–8. Claim 1 further recites that the instructions cause the processor to "[1b] capture the image of the check with the camera when the image of the check passes the monitoring criterion." Ex. 1001, 21:13–14. In discussing claim construction, Petitioner proposes that we treat the preamble as limiting. Pet. 22, 40–43. In the Institution Decision, we treated the preamble as limiting and advised the parties that "[i]f either party contends

the preamble is not limiting, the construction should be addressed in the Patent Owner's Response or Petitioner's Reply." Inst. Dec. 45 n.20. Neither party argued that the preamble was not limiting and, instead, argued whether the prior art taught a portion of the preamble. *See* PO Resp. 35–45 (arguing prior art does not teach "depositing a check"); Pet. Reply 19–28 (treating "depositing a check" as limiting). Accordingly, we treat the preamble as limiting in the absence of any argument to the contrary.

Petitioner argues Acharya teaches the preamble. Pet. 40–43. Specifically, Petitioner directs our attention to Acharya's RCT 100, which includes a CPU and memory which holds instructions for providing a check to a depository in a form sufficient to allow money to be credited to an account. *Id.* at 40–42. Petitioner further argues that the "instructions, when executed by a processor, cause the processor to perform certain steps including, for example, those provided below in elements [1a]–[1c] when combined with Luo." *Id.* at 42–43.[25]

Petitioner also argues that the combination of Acharya and Luo teaches limitation [1b]. Pet. 53–55. Specifically, Petitioner argues that Acharya "capture[s] the image of the check with the camera." *Id.* at 53. According to Petitioner, Acharya teaches "that 'the banking customer **captures the digital image of the financial instrument**' (EX1003, 3:12-13), 'e.g. a paper check' (*id.*, 1:23), 'by the digital camera' (*id.*, 3:13)." Pet. 53. Petitioner further argues Luo teaches that the image is captured "at or after the moment the image of the check passes the monitoring criterion." *Id.* at 53–54 (citing Ex. 1004, 9, 10).

[25] Petitioner italicizes the names of prior art references. Those italics are omitted in this Decision.

Petitioner also argues that Luo's alignment guides are sufficient for "depositing a check" and "passes the monitoring criterion" limitations. *See* Pet. Reply 19–28. The specific argument relating to "depositing a check" and "passes the monitoring criterion" are as follows.

First, Petitioner argues the challenged claims are system claims and Patent Owner "raises no serious argument that Acharya fails to disclose such computer readable instructions." *Id.* at 20.

Second, Petitioner argues that independent claim 1 requires passing a single monitoring criterion and that it "do[es] not require that passing that criterion guarantee a perfectly readable check image every time." Pet. Reply 20. Petitioner further argues that "Acharya/Luo renders the independent claims invalid by obtaining check data without error based on passing the alignment guide monitoring criteria under at least some conditions." *Id.* at 21 (citing *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016); *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003), Ex. 1036 ¶¶ 55–57). According to Petitioner, "[t]he technical objective of the '571 patent is not to guarantee success under all circumstances, but '[t]o **increase the likelihood** of capturing a digital image of the check 108 that **may be** readable and processed such that the check 108 can be cleared' using '**one or more** monitoring criteria.'" *Id.* at 21 n.13 (first alteration added) (quoting Ex. 1001, 3:54–58).

Third, Petitioner argues that Luo's alignment guides are the same as an expressly disclosed embodiment in the '571 patent. Pet. Reply 23–24 (citing Ex. 1001, 7:38–57).

Fourth, Petitioner argues, because the prior art teaches each of the "passes the monitoring criteria" and "depositing a check" limitations, it is of

no moment that OCRing[26] a check is not like OCRing a business card. Pet. Reply 24 (citing Ex. 1036 ¶ 63); *see also id.* at 24–26. Specifically, Petitioner argues that not all checks include handwritten text and, even if there is handwriting, OCRing handwriting is only a little more difficult than printed text. *Id.* at 24–26 (citing Ex. 1003, 4:66–5:2; Ex. 1037, 126:8–19, 131:1–4, 131:17–136:16; Ex. 1048, Fig. 8; Ex. 1049, Fig. 1, 4:42, 4:49–50; Ex. 1051, 770; Ex. 2105, 2; Ex. 1036 ¶¶ 64–57). Petitioner further argues that MICR characters used on checks were designed to be easily recognized by OCR systems. *Id.* at 26 (citing Ex. 1050, 1:22–32, 5:61–64; Ex. 1037, 139:14–140:0; Ex. 1036 ¶ 68).

Fifth, Petitioner argues there is no inconsistency between it arguing in the Texas case that the claims were not enabled while arguing in this proceeding the claims were unpatentable as obvious. Pet. Reply 26–27. According to Petitioner, "a claim may be both obvious and not enabled." *Id.* at 26 (citing *Par Pharm., Inc. v. TWi Pharms., Inc.*, 120 F. Supp. 3d 468, 479 (D. Md. 2015)); *see also id.* 27–28 (arguing whether the full scope of a claim is enabled is different from whether a single embodiment is obvious in some environments (citing *Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 963 (Fed. Cir. 2014)). Petitioner further argues that "Dr. Creusere refused to state that Acharya/Luo would not work." *Id.* at 27 (citing Ex. 1037, 49:16–50:10).

(2) Patent Owner's Arguments

Patent Owner argues that Luo does not teach or suggest "computer-readable instructions for depositing a check," which requires "providing a check to a depository in a form sufficient to allow money to be credited to an

[26] OCR refers to optical character recognition.

account," and also capturing check images when "the image of the check passes the monitoring criterion," as recited in claim 1. *See* PO Resp. 35–45 (emphasis omitted).

First, Patent Owner argues that "determining that edges of a check align substantially with reference lines is not the same as determining that check data can be electronically obtained from the image without error during electronic processing and clearing (which is what the claim construction requires)." PO Resp. 36. Instead, according to Patent Owner, a person having ordinary skill in the art would have been aware of many different factors that may affect the quality of an image. *Id.* at 36–37 (citing Ex. 1016 ¶¶ 58–62; Ex. 2115 ¶ 28). Patent Owner further argues that, although Petitioner argues that Acharya teaches the preamble, Petitioner does not explain how the combination of Acharya and Luo—which replaces Acharya's manual capture with Luo's automatic capture with reference lines—teaches the limitation. *Id.* at 37–38 (citing Ex. 2122, 42; Ex. 2123, 17:8–25, 56:13–60:14).

Patent Owner also argues that Petitioner's arguments are inconsistent with positions taken in the Texas case. PO Resp. 38–39. Specifically, Patent Owner argues, "Petitioner told the [Texas] court 'alignment with a guide is not, by itself, sufficient for a check to be of sufficiently high quality to be deposited' and thus '[m]eeting the "deposit" requirement of the claims [] would have required identifying ***additional monitoring criteria*** to ensure that the check image is in a form suitable for deposit.'" *Id.* at 38 (quoting Ex. 2111, 17) (first alteration added) (other alterations is in original). Patent Owner further argues that "Petitioner's expert in the district court litigation, Dr. Kia, has similarly opined that 'ensuring alignment with an alignment guide does not suffice to render the check image usable for deposit' as

'numerous other criteria besides alignment must be met before a check image would be depositable.'" *Id.* at 39 (citing Ex. 2120 ¶ 140); *see also id.* at 39–40 (citing Ex. 2120 ¶ 141, 147 (citing additional expert testimony)).

Second, Patent Owner argues Petitioner does not address the purported differences between OCR performed on business cards and OCR performed to extract data from checks. PO Resp. 40–45; *see also id.* at 41–43 (describing the differences between business cards and checks). Specifically, Patent Owner argues that, "[a]t the time of the invention, OCR of handwriting or non-standard fonts was considered much more challenging than recognition of basic text of the type one would find on a business card." *Id.* at 43 (citing Ex. 2105; Ex. 2106; Ex. 2115 ¶ 29). Moreover, according to Patent Owner, prior art systems struggled to OCR business card information. *Id.* at 44 (citing Ex. 2121, 14:23–17:11, 20:8–19, 29:16–33:8, 37:9–22).

(3) Our Analysis

Acharya teaches that RCT memory 104 may be any of a wide variety of media, including "a hard disk, a floppy disk, an optical disk, a magnetic tape, a [random-access memory], a [read-only memory], a [programmable read-only memory], an [erasable programmable read-only memory]." Ex. 1003, 4:53–62. Acharya further teaches that "[c]ertain instructions may also be stored in RCT memory 104 and executed by the CPU 103." *Id.* at 4:63–65. Accordingly, Acharya teaches "a non-transitory computer-readable medium comprising computer-readable instructions . . . that, when executed by a processor, cause the processor to" perform certain tasks, including, as discussed below, the tasks set for in limitations [1a]–[1c]. We note that Patent Owner does not dispute that Acharya teaches that portion of the preamble.

Acharya further teaches "deposit[ing] a financial instrument, such as a third party paper check, using a Remote Customer Terminal (RCT)." Ex. 1003, 2:45–48; *see also id.* at 1:17–22 ("The invention relates generally to a system and method for initiating a deposit transaction . . . e.g. a paper check."). Accordingly, Acharya teaches its computer readable instructions can be used "for depositing a check" as recited in claim 1.

The combination of Acharya and Luo further teaches that the software causes the processor to "[1b] capture the image of the check with the camera when the image of the check passes the monitoring criterion" as recited in claim 1. Specifically, Acharya teaches that a banking customer can use the RCT to capture the image of a paper check by a digital camera. Ex. 1002 ¶ 108; Ex. 1003, 3:11–14 (teaching capturing the image of a financial instrument using a digital camera), 1:18–26 (describing a paper check as a type of financial instrument). Additionally, Luo teaches using reference lines to determine when to automatically capture the image of an object. Ex. 1004, 8 ("the system 100 provides the user with an image of a captured object"), 9 ("[W]hen the straight edge 205 displayed on the preview window 125 is substantially parallel to the corresponding reference line 135, the system 100 can automatically capture the selected image and provide the user with or without instructions."). That is, a person having ordinary skill in the art would have understood that Luo teaches automatically capturing an image "at or after the moment the image of the [document in the field of view]" is "substantially parallel to the corresponding reference line." Ex. 1002 ¶¶ 109–111. When Luo's teaching is applied to Acharya's system, a person having ordinary skill in the art would have understood that aligning the image of a check in the reference lines reduces projective distortion and reduces blur. *Id.* ¶¶ 76, 112. This allows for the capture of "well-focused

and clear document images" to make "the optical character recognition of any text printed in the document effective and reliable." Ex. 1004, 7. Accordingly, a person having ordinary skill in the art would have understood that the combination of Acharya and Luo teaches "capture the image of the check with the camera when the image of the check passes the monitoring criterion" as recited in claim 1.

We do not agree with Patent Owner's arguments regarding these limitations. For example, although we agree with Patent Owner that the combination of Acharya and Luo will not eliminate all potential defects that would prevent an image from being used to deposit of check, Patent Owner's argument is inapposite. So long as the image of the check is sufficient to be deposited at least some of the time, the claims are obvious. *Unwired*, 841 F.3d at 1002 ("[C]ombinations of prior art that sometimes meet the claim elements are sufficient to show obviousness."); *Hewlett–Packard*, 340 F.3d at 1326 ("[A] prior art product that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention."). That is consistent with '571 patent, which states that use of image monitoring criteria is "[t]o increase the likelihood of capturing a digital image of the check 108 that may be readable and processed such that the check 108 can be cleared." Ex. 1001, 3:54–58. Thus, while there may be other defects that can appear in the check image that using reference guides will not prevent (*see* PO Resp. 36–38), all that matters for our analysis is that a sufficient check image is sometimes produced.[27] Petitioner

[27] For that reason, it does not matter that a witness was unable to use a contemporary OCR program to correctly read a business card. *See* PO Resp. 44. The issue is not whether the program is 100% effective, but whether it is sometimes effective. Patent Owner does not contend that Luo is not

has presented sufficient testimony that will happen. *See* Ex. 1002 ¶¶ 72–84; Ex. 1036 ¶ 57.

Similarly, we disagree with Patent Owner's argument that claim 1 requires multiple criteria to ensure that the check can be deposited. *See* PO Resp. 38–40. First, Patent Owner's argument is inconsistent with the words of the claim which use the singular "monitoring criterion." Ex. 1001, 21:13–14. This was confirmed by Patent Owner's expert, Dr. Creusere. *See* Ex. 1037, 40:9–41:2; 52:22–53:10, 57:22–58:14.

Second, the argument is also inconsistent with the prosecution history of the '571 patent. During prosecution, the applicant changed the pending claims from a plurality of monitoring criteria to the singular criterion: "~~plurality of~~ monitoring criterion ~~criteria~~." Ex. 1007, 93[28]; *see also* Ex. 1036 ¶ 58. Because the applicant affirmatively changed the claims during prosecution, we do not now add back a requirement of a plurality of criteria.

Third, we do not find Dr. Kia's testimony from the Texas case particularly relevant or of any assistance in this proceeding. *See* PO Resp. 39–40. The issue Dr. Kia testified about was enablement, not obviousness. *See* Ex. 1047 ¶¶ 143, 147; Ex. 2111. The issue of whether the full scope of the claims is enabled is distinct from whether the prior art combination teaches an embodiment of the claims and nothing prevents a patent claim

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enabled. *See In re Antor Media Corp.*, 689 F.3d 1282, 1287–1288 (Fed. Cir. 2012); *Apple Inc. v. Corephotonics, Ltd.*, 861 F. App'x 443, 450 (Fed. Cir. 2021) (nonprecedential) ("[R]egardless of the forum, prior art patents and publications enjoy a presumption of enablement, and the patentee/applicant has the burden to prove non-enablement for such prior art.").

[28] All citations are to the pagination added to Exhibit 1007.

from being both not enabled and obvious. *See Par Pharm.*, 120 F. Supp. 3d at 479 (finding claims both obvious and enabled). And Dr. Kia is not a witness in this case. Although testimony by a testifying expert in a different proceeding might be relevant for cross-examination, we see little, if any, relevance by the testimony of a person who is not a witness in this proceeding regarding an issue that is not present in this proceeding. Accordingly, we give Dr. Kia's testimony regarding enablement from the Texas case no weight in this proceeding.

Moreover, as Patent Owner conceded at Oral Hearing, during the Texas case, an expert testified on behalf of Patent Owner that the claims were enabled and the jury found the claims enabled. Tr. 46:3–47:18. Having succeeded during the Texas case, if one of the parties should be prevented for taking inconsistent positions, it is Patent Owner. *See New Hampshire v. Maine*, 532 U.S. 742 (2001). But, as discussed above, the issues are different so neither party is estopped and the expert testimony in the Texas case—whether proffered by the successful Patent Owner or the unsuccessful Petitioner—is inapposite here.

We also disagree with Patent Owner's argument regarding issues associated with OCR performed on checks versus business cards. *See* PO Resp. 40–44. As Patent Owner points out, unlike business cards which are printed in text, some checks have a mixture of printed text, handwritten numbers and letters, and magnetic-ink characters. *See* Ex. 2104. However, not all checks have handwriting; "some checks are entirely computer printed." Ex. 1037, 131:1–4; *see also* Ex. 1048, Fig. 8 (published patent application showing a printed check); Ex. 1049, Fig. 1 (patent showing a printed check). Moreover, to the extent that a check includes handwriting, Patent Owner's expert agreed that handwritten text is only "a little more

difficult" than printed text to recognize using OCR. Ex. 1037, 132:15–133:13.

Nor does the evidence show that there would be an issue OCRing MICR characters. *See* PO Resp. 37–38. MICR characters were printed in font E13B, which was "designed to be easily recognized by . . . optical character recognition systems." Ex. 1050, 1:22–32, 5:61–64; Ex. 1036 ¶ 68. Thus, it would not have been especially difficult to OCR the MICR characters. *See* Ex. 1036 ¶ 68.

Accordingly, for the reasons discussed above, we find that Petitioner has sufficiently shown that Acharya teaches the preamble and the combination of Acharya and Luo teach limitation [1b].

c) Image Monitoring and Capture Module

(1) Petitioner's Argument

Claim 1 further recites that the instructions cause the processor to "[1a] monitor an image of the check in a field of view of a camera of a mobile device with respect to a monitoring criterion using an image monitoring and capture module of the mobile device." Ex. 1001, 21:9–12. Petitioner argues that the combination of Acharya and Luo teaches this limitation. Pet. 43–53. Specifically, as discussed in more detail below, Petitioner argues that Luo teaches all of the elements of the limitation, except for "the check," which is taught by Acharya. *Id.*

Petitioner argues that Luo teaches "monitor[ing] an image of the [object]." Pet. 43–45. Specifically, Petitioner argues the, because Luo captures an image of a business card only when the edges of the business card are substantially parallel with reference lines 135, "Luo's system monitors the image in the preview window 125." *Id.*

Petitioner also argues that Luo teaches that the monitoring is done "with respect to a monitoring criterion." Pet. 45–49. Specifically, Petitioner argues that

> Luo teaches monitoring whether a "straight edge 205" of an object whose image is being "displayed in the preview window 125 is substantially parallel to the corresponding reference line 135" and "only when the straight edge 205 shown in the preview window 125 is substantially parallel to the corresponding reference line 135 can the image of the object be captured."

Id. at 46 (quoting Ex. 1004, 10). According to Petitioner, alignment with the reference lines is a "monitoring criterion." *Id.* at 46–49.

Petitioner also argues that Luo teaches that the "image" is "monitor[ed] . . . in a field of view of a camera of a mobile device." Pet. 49–51. Specifically, Petitioner argues that Luo teaches a camera system with image sensor 115 adapted to receive an image and a preview window that functions as a viewfinder to display the image in real time. *Id.*

Petitioner also argues that Luo teaches "using an image monitoring and capture module." Pet. 51–52. Specifically, Petitioner argues that Luo teaches that image sensor 115 may "contain conventional lenses and optics, as well as digital image sensors, such as a charge coupled device (CCD) sensor, a CMOS [complementary metal oxide semiconductor] sensor, and so on." *Id.* at 51 (emphasis omitted) (quoting Ex. 1004, 6). Petitioner further argues that "Luo teaches that 'the embodiments described herein may consist of one or more conventional processors and uniquely stored program instructions that control the operation of one or more processors.'" *Id.* (quoting Ex. 1004, 11). According to Petitioner, a person having ordinary skill in the art would "have recognized that the implementation details taught by Luo would apply to Acharya's 'digital camera' RCT (EX1003, 4:18–20)

as instructions (i.e., software) stored in memory and executed by the CPU 103." *Id.* at 51–52 (citing Ex. 1002 ¶ 104).

Petitioner also argues that Acharya teaches capturing the image of a "check." Pet. 52–53. According to Petitioner, a person having ordinary skill in the art "would have found it obvious to combine Acharya and Luo to 'monitor an image of the check.'" *Id.* at 52 (citing Ex. 1002 ¶ 105).

Petitioner also argues that, even if the "image monitoring and capture module" is a means-plus-function limitation, that does not change the obviousness analysis. *See* Pet. Reply 14–16. Specifically, Petitioner argues that the Petition (at pages 51–52) maps the "image and monitoring capture module" to a camera, a mobile device, and software. *Id.* at 15 (citing Ex. 1004, 4 (mobile device), 6 (camera), 11 (software)).[29]

(2) Patent Owner's Arguments

Patent Owner argues that Luo does not teach a camera or software that accesses and monitors live video frames: "Petitioner does not identify structure disclosed in Luo consisting of a digital camera, a mobile device operating system *that can access live video frames from the camera via APIs*, and software that *can monitor these frames* and determine when to automatically capture the check image." PO Resp. 32 (emphases added). According to Patent Owner, the identification of a processor, software, and a camera is insufficient. *Id.* at 33; *see also* PO Sur-reply 1–2 ("In contrast, as the district court stated in its claim construction order, 'the "image

[29] Petitioner also argues that Luo teaches the limitation under Patent Owner's proposed additional structure. *See* Pet. Reply 16–18. Because we did not adopt those additional structures in our claim construction, we do not address Petitioner's arguments or Patent Owner's responsive arguments in the Sur-reply.

monitoring and capture module 456" is not a general purpose computer but rather is a ***particular disclosed software structure***.'" (Citing Ex. 1034, 65)).

Patent Owner also argues that "Luo's system is not implemented via a mobile operating system." PO Resp. 33. Specifically, Patent Owner argues that

> Luo does not teach that its system is implemented using a mobile device's mobile operating system or employing any of the structures described in the '571 patent specification; nor is it necessary to employ a mobile operating system to analyze check images or preview video frames using a camera system.

Id. at 34 (citing Ex. 2116, 62:25–63:11); *see also* PO Sur-reply 4 ("Luo does not describe control software separate from the camera.").

(3) Our Analysis

Luo teaches "monitor[ing] an image of the check in a field of view of a camera of a mobile device with respect to a monitoring criterion" as recited in limitation [1a]. Specifically, Luo teaches "an improved method and system for capturing the frontal image of an object having at least two substantially straight edges 205." Ex. 1004, 10. "[S]ystem 100 provides the user with an image of a captured object, such as a business card, only when the straight edge 205 of the business card is substantially parallel to the corresponding reference line 135 displayed in the preview window 125." *Id.* at 8. "The reference line 135 is used to guide the user of the system 100 to position the image sensor 115 in an appropriate orientation with respect to, for example, a business card object." *Id.* at 7. When the straight edges of the object are substantially parallel to the reference lines 135, the camera automatically takes a picture. *Id.* at 8–9; Ex. 1002 ¶ 92. The reference lines 135 act as a monitoring criterion that are used to determine when an object is in the correct position in the field of view of the camera in order to

prevent projective distortion. *See* Ex. 1004, 8, 10; Ex. 1002 ¶¶ 93–96, 100–103. We note that the '571 patent describes an alignment guide as an example of monitoring criterion: "[i]n an implementation, the positioning of the check 108 in the image 230 may be compared with an alignment guide." Ex. 1001, 7:38–48; *see also* Ex. 1002 ¶¶ 98–99 (describing the similarity between Luo and the '571 patent's alignment guide). Patent Owner does not contest that Luo teaches these features. *See* PO Resp.

We further find that the combination of Luo and Acharya teaches using Luo's system on a check. As discussed above, a person having ordinary skill in the art would have used Luo's reference lines to improve Acharya's ability to take pictures of checks. *See* section II.D.3.a, *infra*. Because Acharya teaches capturing the image of a check, a person having ordinary skill in the art would have used the combination of Acharya and Luo to capture the images of checks and to make sure that the images pass the monitoring criterion. *See* Ex. 1002 ¶¶ 105–106. Although, Patent Owner challenges whether the combination would have been made, Patent Owner does not dispute that the combination of Acharya and Luo, if made, would capture the image of a check. *See* PO Resp.

We further find that Acharya teaches "using an image monitoring and capture module" as recited in limitation [1a]. Specifically, Luo teaches "a camera housing 105 incorporating . . . an image sensor 115 adapted to receive an image," where the image sensor may "contain conventional lenses and optics, as well as digital image sensors, such as a charge coupled device (CCD) sensor, a CMOS sensor, and so on." Ex. 1004, 6. That is, Luo teaches using a camera. *See id.*; Ex. 1002 ¶ 104; Ex. 1036 ¶ 44. Luo further teaches that "the embodiments described herein may consist of one or more conventional processors and uniquely stored program instructions that

control the operation of one or more processors." Ex. 1004, 11. A person having ordinary skill in the art would have recognized those instructions as software that are stored in memory and executed by the processor. *See* Ex. 1002 ¶ 104; Ex. 1036 ¶ 44. Stated differently, Petitioner has sufficiently shown that the combination of Luo and Acharya teaches a processor executing software to monitor the image of a check in the viewscreen of a camera to determine whether the check meets a criterion (having the edges of the check parallel to a reference guide), and then automatically capturing the image once that criterion has been met. That is, consistent with our claim construction analysis above, those elements provide for the function of image monitoring and capture. *See* Section II.C.2, *supra*.

We do not agree with Patent Owner's arguments which are directed to Patent Owner's proposed identification of recited structure for the claimed "image monitoring and capture module," which we do not agree with. *See* PO Resp. 32–34.

Accordingly, Petitioner sufficiently shows that the combination of Acharya and Luo teaches a processor which will "monitor an image of the check in a field of view of a camera of a mobile device with respect to a monitoring criterion using an image monitoring and capture module of the mobile device" as recited in claim 1.

d) Providing the Image

Claim 1 further recites that the instructions cause the processor to "[1c] provide the image of the check from the camera to a depository via a communication pathway between the mobile device and the depository." Ex. 1001, 21:15–17. Petitioner argues that Acharya teaches this limitation. Pet. 55–57. Specifically, Petitioner argues RCT 100 communicates with BOFD system 100, a depository, via a direct communication link 120. *Id.*

at 55–56. Petitioner also argues that a person having ordinary skill in the art would have understood that RCT 100 sends a copy of the check over communication link 120 to BOFD system 110. *Id.* at 56–57.

Based on the undisputed evidence and reasons set forth in the Petition, including Dr. Mowry's testimony, which are not addressed by Patent Owner (*see* PO Resp.), we find that Acharya teaches this limitation.

e) Conclusion Regarding Claim 1

We have considered the evidence submitted by the parties and determine that Petitioner has shown by a preponderance of the evidence that claim 1 of the '571 patent would have been obvious over Acharya and Luo.

4. Analysis of Claims 2, 3, 6, 9, 10, and 13

Petitioner argues that the combination of Acharya and Luo teaches the additional limitations recited in claims 2, 3, 6, 9, 10, and 13, and that a person having ordinary skill in the art would have combined the teachings of the two references with a reasonable expectation of success. *See* Pet. 58–73.

Besides the challenges discussed above with regard to claim 1, Patent Owner does not dispute in this proceeding Petitioner's argument regarding dependent claim 2, 3, 6, 9, 10, and 13. *See* PO Resp.

Based on the evidence and arguments presented in the Petition, which are not otherwise argued by Patent Owner, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 2, 3, 6, 9, 10, and 13 would have been obvious over the combined teachings of Acharya and Luo.

E. Obviousness over Acharya, Luo, and Nepomniachtchi

Petitioner argues that claims 4 and 5 would have been obvious over Acharya, Luo, and Nepomniachtchi. Pet. 73–78. For the reasons discussed

below, Petitioner has shown by a preponderance of the evidence that claims 4 and 5 are unpatentable.

1. Nepomniachtchi

Nepomniachtchi is entitled "System for Mobile Imaging Capture and Processing of Documents" and is directed "to systems and methods for document image processing that enhances an image for data extraction from images captured on a mobile device with camera capabilities." Ex. 1016, code (54), ¶ 2. Relevant to this proceeding, Nepomniachtchi recites prompting the user to take a picture of both the front and back of a check. *Id.* ¶ 78. Nepomniachtchi also recites prompting the user to take a second picture if the image quality is determined to be poor. *Id.* ¶ 62.

2. Analysis of Claims 4 and 5

Petitioner argues that the combination of Acharya, Luo, and Nepomniachtchi teaches the additional limitations recited in claims 4 and 5, and that a person having ordinary skill in the art would have combined the teachings with a reasonable expectation of success. *See* Pet. 73–78.

Based on the evidence and arguments presented in the Petition, which are not separately argued by Patent Owner (*see* PO Resp.), we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 4 and 5 would have been obvious over the combined teachings of Acharya, Luo, and Nepomniachtchi.

F. Obviousness over Acharya, Luo, and Yoon

Petitioner argues that claim 12 would have been obvious over Acharya, Luo, and Yoon. Pet. 78–83. For the reasons discussed below, Petitioner has shown by a preponderance of the evidence that claim 12 is unpatentable.

1. Yoon

Yoon is entitled "Apparatus and Method for Photographing a Business Card in Portable Terminal" and is directed "to an apparatus and method for allowing a business card to be automatically photographed by detecting the boundary lines of the business card." Ex. 1005, code (54), ¶ 3. Relevant to this proceeding, Yoon recites that image brightness is one of the unideal variable factors that can lower the "probability of satisfactorily recognizing the business card" in order to obtain the information contained in the business card. *Id.* ¶ 7. Yoon addresses this issue by monitoring image brightness when an image is captured by a terminal. *See id.* at Fig. 2.

2. Analysis of Claim 12

Petitioner argues that the combination of Acharya, Luo, and Yoon, teaches the additional limitations recited in claim 12, and that a person having ordinary skill in the art would have combined the teachings with a reasonable expectation of success. *See* Pet. 78–83.

Based on the evidence and arguments presented in the Petition, which are not separately argued by Patent Owner (*see* PO Resp.), we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 12 would have been obvious over the combined teachings of Acharya, Luo, and Yoon.

G. Patent Owner's Motion to Exclude

1. Exhibits 1053, 1054, and 1055

Patent Owner argues that Exhibits 1053–1055, which it describes as web page printouts of articles from a website called "Mobile Gazette" regarding the "Toshiba Portege G910 / G920," "i-Mate Ultimate 9502," and "Sony Ericsson XPERIA X1," respectively, are hearsay under Federal Rule of Evidence 802 and no hearsay exception applies. Mot. Exclude 1–3.

Petitioner argues that there is no dispute that the exhibits are authentic, the exhibits are probative, and the exhibits were relied upon and cited by Dr. Mowry in his testimony. Opp. Exclude 2–5.

In its Reply, Patent Owner argues that, although "an expert is entitled to rely on inadmissible evidence in reaching his or her opinions, an expert's citation to hearsay does not render the underlying information admissible, nor does relevance substitute for admissibility under the Federal Rules." Reply Exclude 1 (citing *Unified Patents Inc. v. American Patents LLC*, IPR2019-00482, Paper 132, at 53 (PTAB Aug. 3, 2022)).

We are persuaded that Exhibits 1053–1055 are admissible.

First, the exhibits are not hearsay. A statement is hearsay if it is one "the declarant does not make while testifying at the current trial or hearing" and "a party offers in evidence *to prove the truth of the matter asserted* in the statement." Fed. R. Evid. 801(c) (emphasis added).[30] In this case, Exhibits 1053–1055 are not offered to prove the truth of the matter asserted in these prior art articles; instead the exhibits are offered for the fact that their contents were in the prior art and available to those of ordinary skill in the art. *See*, *e.g.*, *Joy Techs., Inc. v. Manbeck*, 751 F. Supp. 225, 233 n.2 (D.D.C. 1990), *aff'd*, 959 F.2d 226 (Fed. Cir. 1992) ("A prior art document submitted as a 'printed publication' . . . is offered simply as evidence of what it describes, not for proving the truth of the matters addressed in the document. Therefore, it is not hearsay under Fed.R.Evid. 801(c)."). It does not matter whether the statements in the exhibits are true; what is relevant for our analysis is what was stated in the exhibits during the operative time

[30] With some exceptions that do not apply here, the Federal Rules of Evidence apply to this proceeding. 37 C.F.R. § 42.62(a), (b).

period. *See Ries Biologicals, Inc. v. Bank of Santa Fe*, 780 F.2d 888, 890 (10th Cir. 1986) (statements offered not for their truth or falsity, but for the fact that they were made, are for a non-hearsay purpose).

Second, even if the exhibits were hearsay, they are still admissible. As an expert, Dr. Mowry may base his opinion "on facts or data in the case that the expert has been made aware of" and such sources "need not be admissible for the opinion to be admitted." Fed. R. Evid. 703. Patent Owner has not filed a motion to exclude Dr. Mowry's testimony based on those exhibits. *See* Mot. Exclude. Thus, Dr. Mowry's testimony relying on Exhibits 1053–1055 has been properly admitted. This includes quotes from the documents. *See* Ex. 1036 ¶ 30.

An expert relying on evidence is not, by itself, sufficient for the admission of the evidence. Instead, if the evidence is otherwise inadmissible, such as hearsay, the evidence may only be admitted "if their probative value in helping the [fact finder] evaluate the opinion substantially outweighs their prejudicial effect." Fed. R. Evid. 703. On one hand, to the extent we consider the portions of Dr. Mowry's testimony quoting Exhibits 1053–1055, having the underlying exhibits is helpful to judge Dr. Mowry's credibility. On the other hand, Patent Owner has not identified any prejudice associated with the admission of the exhibits. *See* Mot. Exclude. Indeed, whether we admit or exclude the exhibits, the relevant language is quoted in Dr. Mowry's testimony and in the record, minimizing any potential prejudice. Thus, the probative value of the exhibits that are quoted in admissible testimony substantially outweighs the unidentified prejudice.

Accordingly, Patent Owner's motion to exclude Exhibits 1053–1055 is *denied*.

2. Exhibits 1047 and 1056

Patent Owner argues that Exhibits 1047 and 1056 are "excerpts of an expert report of Dr. Omid Kia, served by Petitioner in [the Texas case]." Mot. Exclude 3. Patent Owner argues that both the exhibits are hearsay under Federal Rule of Evidence 802 and, only with regard to Exhibit 1056, this exhibit is irrelevant under Federal Rules of Evidence 401 and 402 because it is not cited in a brief. *Id.* at 3–4.

Patent Owner also argues that, although Dr. Kia's testimony is not hearsay when offered by Patent Owner, it is when offered by Petitioner. Reply Exclude 2–3. Patent Owner also argues that Petitioner argues in a different IPR proceeding that that uncited exhibits should be excluded. *Id.* at 3–5.

Petitioner argues Patent Owner has already "submitted its own excerpts from Dr. Kia's expert report in this proceeding." Opp. Exclude 5. Petitioner further argues that it did not offer the reports for the truth of the matter asserted, but "instead to show that Patent Owner's selective citations to Dr. Kia's opinions, when viewed in a fuller context, do not conflict with Petitioner's positions in this IPR." *Id.*; *see also id.* at 6–7 (arguing that even though Petitioner did not cite Exhibit 1056, "it provides the Board with the necessary context for Dr. Kia's opinions.").

Federal Rule of Evidence 106 provides that, "[i]f a party introduces all or part of a writing or recorded statement, an adverse party may require the introduction, at that time, of any other part — or any other writing or recorded statement — that in fairness ought to be considered at the same time." Exhibits 1047 and 1056 are portions of the same expert reports as Exhibits 2016 and 2120, respectively, and Exhibits 2016 and 2120 are in the record. Because having more complete copies of the expert report helps us

determine the relevance, if any, of Dr. Kia's testimony, Federal Rule of Evidence 106 supports our admission of Exhibits 1047 and 1056.

The fact that Exhibit 1056 is not cited in the Petition or Reply does not require us to exclude it. Exhibits 1056 and 2120 are, effectively, the same exhibit and Exhibit 2120 was cited in Patent Owner's Sur-reply. *See* PO Sur-reply 18. Because a portion of the expert report (Exhibit 2120) was cited in a paper, it is appropriate for use to consider any portion of the expert report, including the portion found in Exhibit 1056.

Accordingly, Patent Owner's motion to exclude Exhibits 1047 and 1056 is *denied*.

H. Patent Owner's Motion to File Supplemental Information

1. The Parties' Arguments

Patent Owner filed a motion to file two post-trial briefs filed in the Texas case as supplemental information. *See* Mot. SI, Exs. A and B. The first is a brief filed by Petitioner and the second is one filed by Patent Owner. *Id.*

First, Patent Owner argues that Petitioner argues in the Texas case, relying on the testimony of Dr. Kia, that the claims of the '571 patent are not enabled. *Id.* at 1–3. Second, Patent Owner argues that Petitioner is advancing an argument in the Texas case regarding the "image monitoring and capture module" recited in claims 1 and 9 of the '571 patent that is inconsistent with the position Petitioner takes in this proceeding. *Id.* at 3–4. Third, Patent Owner argues that the evidence could not have been obtained earlier and the admitting evidence of inconsistent statements is in the interest of justice. *Id.* at 5.

Petitioner argues that the information is of minimal relevance. Opp. SI 1–4. First, Petitioner argues, because the '571 patent claims can be

both not enabled and obvious, there is no inconsistency. *Id.* at 1–2. Second, Petitioner argues that there is nothing inconsistent with arguing that the "image monitoring and capture module" recited in claims 1 and 9 of the '571 patent is both indefinite in the Texas case and obvious in this proceeding. *Id.* at 2–4.

Third, Petitioner argues that admitting the briefs after the oral hearing is not in the interest of justice. Opp. SI 4–5. With regard to whether the information could have been obtained earlier, Petitioner argues that although the briefs were filed after the oral hearing, Patent Owner has not shown that "the *information* is different from information USAA had in its possession earlier." *Id.* at 5.

2. Our Analysis

The submission of supplemental information is governed by Rule 42.123(a), which prescribes timeliness and relevance requirements. 37 C.F.R. § 42.123(b). Rule 42.123(b) does not, however, preclude consideration of additional criteria beyond timing and relevance and does not prohibit the Board from exercising its discretion to grant or deny motions. *See Redline Detection, LLC v. Star Envirotech, Inc.*, 811 F.3d 435, 443, 446–47 (Fed. Cir. 2015). Nor does Rule 42.123(b) exclude the application of other regulations governing Board proceedings. *Id.* at 446–47 (holding the Board did not abuse its discretion by not allowing Petitioner to submit an expert declaration and other exhibits as supplemental information).

Having reviewed the parties briefs and the proposed supplemental information, we *deny* Patent Owner's motion.

First, the evidence is of marginal, if any, relevance. Patent Owner has already offered Dr. Kia's testimony into evidence. *See* Ex. 2016; Ex. 2120.

Petitioner's arguments regarding that testimony adds nothing to the record. Moreover, as discussed above, there is nothing inconsistent with arguing that the full scope of a claim is not enabled by the specification of a patent while, at the same time, arguing that it would have been obvious to make an embodiment of that claim. *See* Section II.D.3.b.(3).

As for the briefing regarding the scope of the "image monitoring and capture module" recited in claims 1 and 9 of the '571 patent, we do not see any relevance to Petitioner's arguments in the attached motion to the issues in this proceeding. In its post-trial motion, Petitioner did no more than argue that Patent Owner's expert's testimony was conclusory and lacked sufficient explanation:

> [Patent Owner's] lengthy block-quote of Dr. Conte's testimony (Opp. 7) *nowhere explains* what structure in the specification corresponds to the means-plus-function term "image monitoring and capture module," *nor does it explain* how the camera and software in [Petitioner's] system are identical or equivalent to any such structure in the specification. Rather, Dr. Conte simply testified *in conclusory fashion* that [Petitioner's] system had software that controls the camera and causes it to monitor video frames. Mot. 10–11. [Patent Owner] cannot get around *its failure of proof* by simply quoting and adding bold-face type to that conclusory testimony. Opp. 7.

Mot. SI, Ex. A, 2 (emphases added). Whether Patent Owner's arguments in the Texas case—which are not part of the record in this proceeding[31]—are

[31] Indeed, Patent Owner's selective and partial production of material from the Texas case has been less than helpful. Any probative value it might have is substantially outweighed by the partial production. *Cf.* Fed. R. Evid. 403 ("The court may exclude relevant evidence if its probative value is substantially outweighed by a danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence."). Without the entirety of the record, including the positions taken by Patent Owner and its experts,

sufficient have no bearing on whether Petitioner has met its burden in this proceeding.

Weighed against that, at best, marginal relevance, is the timing of the motion. Patent Owner requested permission to file its motion on November 28, 2022, more than a month after the oral hearing. Ex. 3003. Although the specific briefs may not have been available prior to that date, Patent Owner has not shown that the same information—such as the testimony cited in the papers—were not available at an earlier date. To the contrary, the underlying trial record was available months earlier. *See* Ex. 2124 (Dr. Kia's trial testimony dated May 12, 2022); Paper 54 (admitting Dr. Kia's trial testimony as supplemental information). And, we already have multiple expert reports from Dr. Kia discussing enablement. *See* Ex. 2016; Ex. 2120.

Patent Owner has not requested supplemental briefing. As Patent Owner argues with respect to the Motion to Exclude—briefing that preceded the Motion to File Supplement Information—it is prejudicial to admit evidence when a party does not have an opportunity to address the evidence in briefing or at oral argument. *See* Reply Exclude 5 ("But in any event, admitting Exhibit 1056 would be prejudicial to Patent Owner given that Petitioner has not presented any arguments in the record regarding the exhibit, precluding Patent Owner from responding to any such arguments that Petitioner may attempt to raise (improperly) at the oral hearing or otherwise."). We are unaware of any case—and Patent Owner has not

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we are unable to place the portions of the record that Patent Owner directs us to in proper context. Moreover, as discussed earlier, because Petitioner lost in the Texas case, its statements and positions do not estop it from taking different positions in this case. *See* Section II.D.3.b.(3), *infra*.

directed us to one—in which supplemental information was admitted after the oral hearing without supplemental briefing.

Given the minimal, if any, relevance, the earlier availability of the underlying testimony discussed in the briefs, and the prejudice associated with admitting the supplemental information when there is not sufficient opportunity for briefing addressing it, Patent Owner has not shown that admitting the supplemental information is in the interest of justice and Patent Owner's motion is *denied*.

III. CONCLUSION[32]

For the foregoing reasons, we conclude that Petitioner has demonstrated by a preponderance of the evidence the unpatentability of claims 1–6, 9, 10, 12, and 13 of the '571 patent. Specifically, Petitioner has demonstrated by a preponderance of the evidence that claims 1–3, 6, 9, 10, 13 would have been obvious under 35 U.S.C. § 103(a) in light of Acharya and Luo, that claims 4 and 5 would have been obvious under 35 U.S.C. § 103(a) in light of Acharya, Luo, and Nepomniachtchi, and that claim 12 would have been obvious under 35 U.S.C. § 103(a) in light of Acharya, Luo, and Yoon.

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[32] 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).

We also *deny* Patent Owner's motion to exclude Exhibits 1047, 1053, 1054, 1055, and 1056, and we *deny* Patent Owner's second motion to file supplemental information.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–6, 9, 10, 12, and 13 of the '571 patent are held unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude (Paper 62) is *denied*;

FURTHER ORDERED that Petitioner's Motion to File Supplemental Information (Paper 70) is denied; and

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

In summary:

Claims	**35 U.S.C. §**	**Reference(s)/Basis**	**Claims Shown Unpatentable**	**Claims Not shown Unpatentable**
1–3, 6, 9, 10, 13	103(a)	Acharya, Luo	1–3, 6, 9, 10, 13	
4, 5	103(a)	Acharya, Luo, Nepomniachtchi	4, 5	
12	103(a)	Acharya, Luo, Yoon	12	
Overall Outcome			1–6, 9, 10, 12, 13	

IPR2021-01073
Patent 8,977,571 B1

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Paper 68
Entered: January 19, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PNC BANK, N.A.,
Petitioner,

v.UNITED SERVICES AUTOMOBILE ASSOCIATION,

Patent Owner.

IPR2021-01070
Patent 8,699,779 B1

Before DAVID C. MCKONE, SCOTT B. HOWARD,
and JULIET MITCHELL DIRBA, *Administrative Patent Judges*.

MCKONE, *Administrative Patent Judge*.

Final Written Decision
Determining All Challenged Claims Unpatentable
Denying Patent Owner's Motion to Exclude
35 U.S.C. § 318(a); 37 C.F.R. § 42.64(c)

I. INTRODUCTION

A. Background and Summary

PNC Bank N.A. ("Petitioner") filed a Petition (Paper 3, "Pet.") requesting *inter partes* review of claims 1, 2, 7–10, and 15–17 of U.S. Patent No. 8,699,779 B1 (Ex. 1001, "the '779 patent"). Pet. 3. United Services Automobile Association ("Patent Owner") filed a Preliminary Response (Paper 8).[1] Pursuant to our authorization, Petitioner filed a Preliminary Reply (Paper 12)[2] and Patent Owner filed a Preliminary Sur-reply (Paper 16).[3] Pursuant to 35 U.S.C. § 314, we instituted this proceeding. Paper 20 ("Dec.").[4]

Patent Owner filed a Patent Owner's Response (Paper 40, "PO Resp."), Petitioner filed a Reply to the Patent Owner's Response (Paper 43, "Reply"), and Patent Owner filed a Sur-reply to the Reply (Paper 58, "Sur-reply").

Patent Owner filed a motion to exclude evidence (Paper 59, "Mot. Exclude"), Petitioner filed an opposition (Paper 61, "Opp. Exclude"), and Patent Owner filed a reply to the opposition (Paper 63, "Reply Exclude").

An oral argument was held in this proceeding and IPR2021-01073 on October 25, 2022. Paper 67 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Decision is a final written decision under 35 U.S.C. § 318(a) as to the patentability of claims 1, 2, 7–10, and 15–17. Based on the record before us, Petitioner has proved, by

[1] A public version of the Preliminary Response is filed as Paper 9.
[2] A public version of the Preliminary Reply is filed as Paper 14.
[3] A public version of the Preliminary Sur-reply is filed as Paper 18.
[4] A public version of the Institution Decision is filed as Paper 25.

a preponderance of the evidence, that claims 1, 2, 7–10, and 15–17 are unpatentable. Patent Owner's Motion to Exclude is denied as to Exhibits 1053–1055 and dismissed as moot as to Exhibit 1056.

B. Related Matters

The parties represent that Patent Owner has asserted the '779 patent, along with three other patents, in *United Services Automobile Association v. PNC Bank., N.A.*, No. 2:20-cv-00319-JRG (E.D. Tex.) ("the Texas case"). Pet. 3; Paper 4, 2. Patent Owner states that Mitek Systems, Inc., filed a declaratory judgement action alleging non-infringement of the '779 patent in *Mitek Systems, Inc. v. United Services Automobile Association*, No. 2:20-cv-00115-JRG (E.D. Tex.). Paper 4, 2.

The '779 patent also was challenged in *Wells Fargo Bank, N.A. v. United Services Automobile Association*, CBM2019-00005 (institution denied because the '779 patent is not a covered business method patent), *Wells Fargo Bank, N.A. v. United Services Automobile Association*, IPR2019-01083 ("the Wells Fargo IPR") (final written decision determining no challenged claims unpatentable), and *Mitek Systems, Inc. v. United Services Automobile Association*, IPR2020-00976 (institution denied). Pet. 4; Paper 4, 3.

C. The '779 Patent

The '779 patent describes "[a]n alignment guide [that] may be provided in the field of view of a camera associated with a mobile device used to capture an image of a check." Ex. 1001, Abstr. The invention is used in the context of the system of Figure 1, reproduced below:

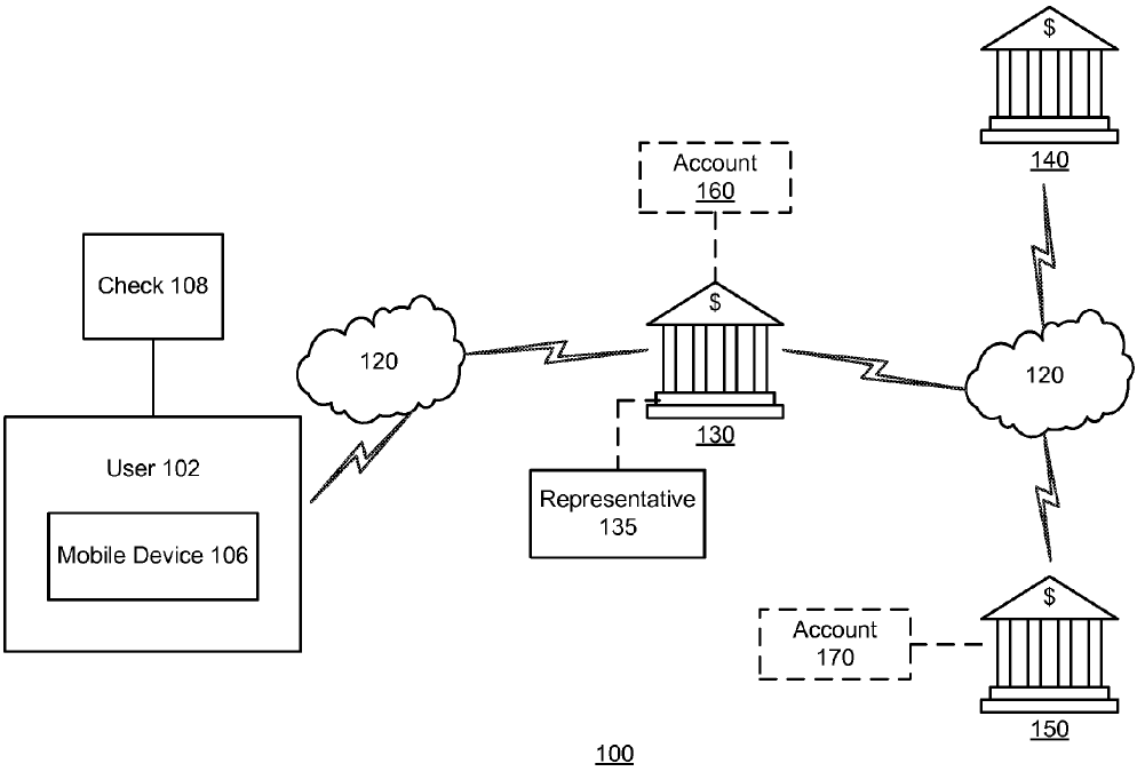

FIG. 1

Figure 1 is a block diagram of a system used to deposit a check. *Id.* at 2:6–8, 2:44–46. User 102, the entity that owns account 160 (e.g., a checking account) held at financial institution 130, deposits check 108 in account 160. *Id.* at 3:5–11. Financial institution 130 processes and/or clears check 108. *Id.* at 3:11–13. Check 108 is drawn from account 170 at financial institution 150. *Id.* at 3:24–27. According to the '779 patent,

> user 102 may deposit the check 108 into account 160 by making a digital image of the check 108 and sending the image file containing the digital image to financial institution 130. For example, after endorsing the check 108, the user 102 may use a mobile device 106 that comprises a camera to convert the check 108 into a digital image by taking a picture of the front and/or back of the check 108. The mobile device 106 may be a mobile phone (also known as a wireless phone or a cellular

> phone), a personal digital assistant (PDA), or any handheld computing device, for example.

Id. at 3:43–52.

The use of mobile device 106 is shown in more detail in Figure 2, reproduced below.

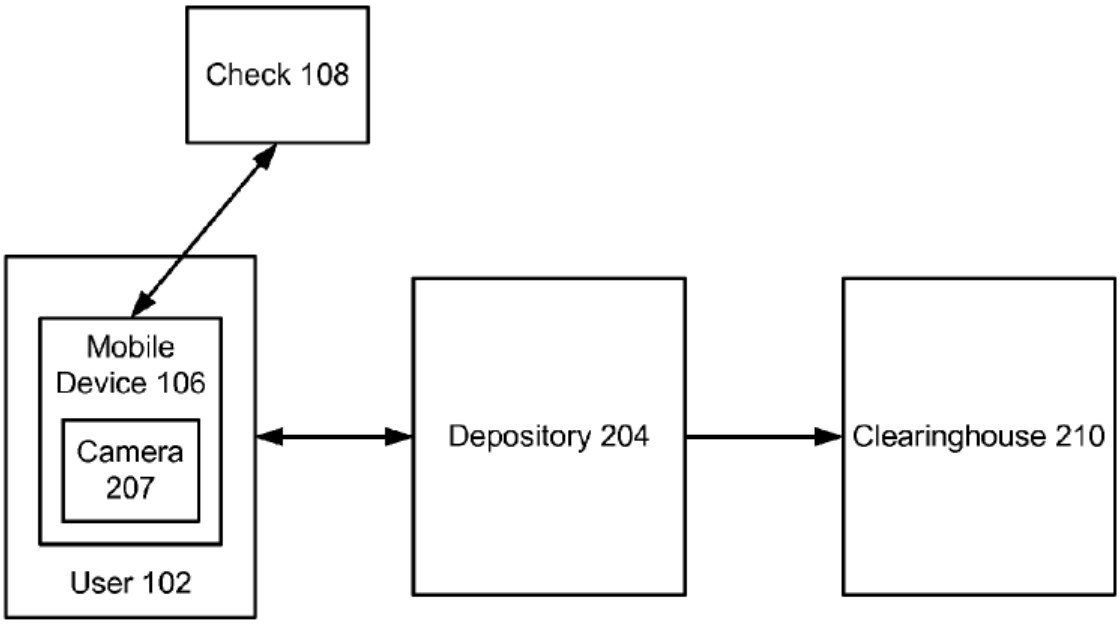

FIG. 2

Figure 2 is a high-level block diagram of a system used to deposit a check. Ex. 1001, 2:9–10, 5:22–24. Mobile device 106 includes camera 207 that can take an image of both the front and back of check 108. *Id.* at 5:30–39. Depository 204 (e.g., the bank where user 102 has an account) receives the images of check 108 and uses clearinghouse 210 to perform check clearing operations (e.g., removing funds from the payor's account and transferring them to the user's bank). *Id.* at 5:49–62.

"To increase the likelihood of capturing a digital image of the check 108 that may be readable and processed such that the check 108 can be cleared, an alignment guide may be provided in the field of view of the camera of the mobile device 106." Ex. 1001, 3:55–59. Figure 3, reproduced below, illustrates an example:

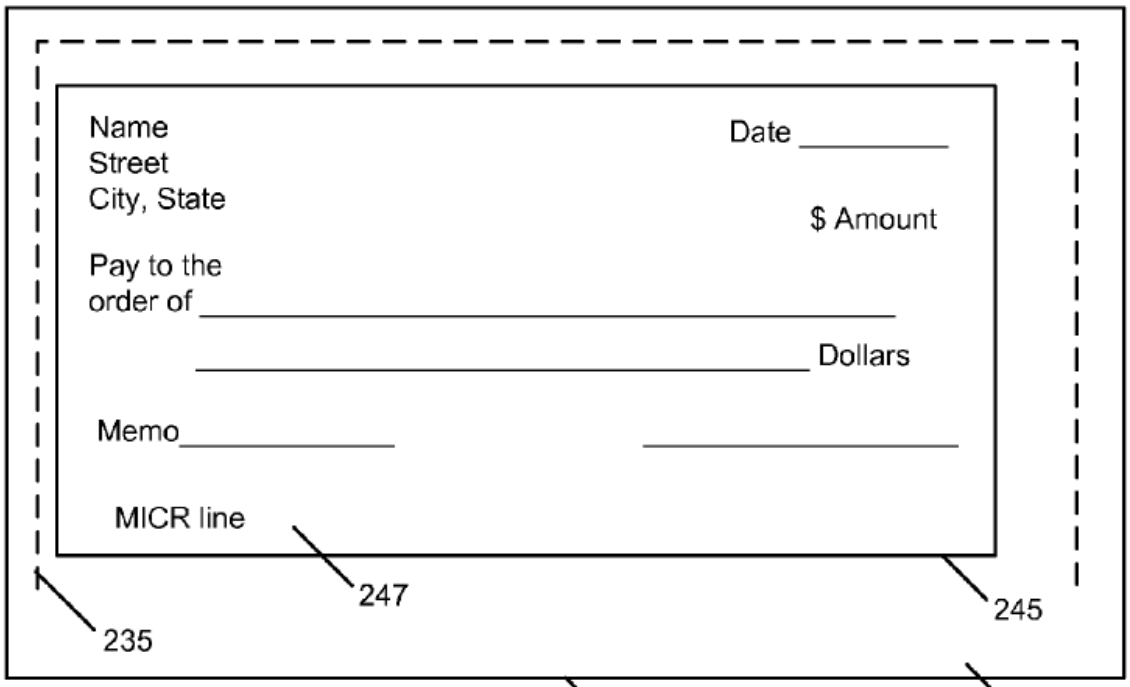

FIG. 3

Figure 3 is a diagram of check image 247, background image 250, and alignment guide 235. *Id.* at 2:11–12, 6:1–3. Alignment guide 235 is overlaid on the camera feed of mobile device 106. *Id.* at 6:3–4. "The alignment guide 235 is provided in FIG.3 as a three sided bounding box (e.g., a rectangle in which one of the line segments or sides is removed), but any shape(s) or indicator(s) may be used, such as vertical bars, parallel lines, a circle, a square, a bounding rectangle, or a self-crop tool, for example." *Id.* at 6:5–10.

Image 230 is provided in the field of view of camera 207 while the user is capturing an image for check 108. Ex. 1001, 6:13–14. User 102 moves camera 207 or check 108 so that check image 247 appears within or lines up with alignment guide 235. *Id.* at 6:14–17. According to the '779 patent,

> When the check image 247 is within the alignment guide 235 (e.g., the edges 245 of the check image 247 are aligned with respect to the alignment guide 235, such as parallel to the associated portion of the alignment guide 235), the check image 247 and the background image 250 (if any) that are within the alignment guide may be captured either automatically (e.g., by the camera or the mobile device under direction of an application running on the camera 207 or the mobile device 106 or the financial institution) or manually (e.g., by the user 102 pressing a button or making a selection on the camera 207 or the mobile device 106).

Id. at 6:21–31.

Claim 1, reproduced below, is illustrative of the claimed subject matter:

> 1. A system for depositing a check, comprising:
>
> a mobile device having a camera, a display and a processor, wherein the processor is configured to:
>
> project an alignment guide in the display of the mobile device, the display of the mobile device displaying a field of view of the camera;
>
> monitor an image of the check that is within the field of view;
>
> determine whether the image of the check aligns with the alignment guide;
>
> automatically capture the image of the check when the image of the check is determined to align with the alignment guide; and

transmit the captured image of the check from the camera to a depository via a communication pathway between the mobile device and the depository.

D. Evidence

Petitioner relies on the references listed below.

Reference		Date	Exhibit No.
Acharya	US 8,768,836 B1	July 1, 2014 (filed Aug. 7, 2007)	1003
Luo[5]	CN 1897644A	pub. Jan. 17, 2007	1004

Petitioner also relies on the Declaration of Todd Mowry, Ph.D. (Ex. 1002, "Mowry Decl.") and the Reply Declaration of Dr. Mowry (Ex. 1036, "Mowry Reply Decl.").

Patent Owner cites extensively to the references listed below (*see, e.g.*, PO Resp. 9–25):

Reference		Date	Exhibit No.
Yoon	US 2007/0262148A1	pub. Nov. 15, 2007	2008
Nepomniachtchi[6]	US 2009/0185241 A1	July 23, 2009	2105

[5] Petitioner relies on a certified translation of the Chinese application.
[6] In the Wells Fargo IPR, the Board considered the teachings of Nepomniachtchi, US 7,778,457 B2, issued August 17, 2012 (Ex. 2012). Patent Owner contends that "The Nepomniachtchi reference discussed here is substantively identical to the Nepomniachtchi patent that was used as the base reference in the prior [Wells Fargo IPR]—both claim priority to the same provisional application—and contain similar disclosures." PO Resp. 9 n.3.

Reference		Date	Exhibit No.
ImageNet	Presentation titled "ImageNet Mobile Deposit" by Mitek Systems	June 2008	1014, pp. 30–44
Blackson	US 7,419,093 B1	Sept. 2, 2008	2113

Patent Owner also relies on the Declaration of Charles Creusere (Ex. 2115, "Creusere Decl.").

E. The Instituted Ground of Unpatentability

Petitioner asserts the following ground of unpatentability (Pet. 7):

References	35 U.S.C. §	Claims Challenged
Acharya, Luo	103(a)[7]	1, 2, 7–10, 15–17

II. ANALYSIS

A. Claim Construction

We construe 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), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

37 C.F.R. § 42.100(b) (2021); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

[7] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the '779 patent was filed before March 16, 2013, the effective date of the relevant amendment, the pre-AIA version of § 103 applies.

Petitioner (Pet. 20–22) represents that the following constructions in the table below were either agreed upon or proposed by Patent Owner in the Texas case. Additionally, as also reflected in the table below, the Texas court construed several of these claim terms in its November 22, 2021, Claim Construction Memorandum Opinion and Order (Ex. 1033):

Claim Term	Agreed Construction or Proposed by Patent Owner	Texas Court's Construction
"depositing a check" (claims 1, 10)	"providing a check to a depository in a form sufficient to allow money to be credited to an account"	
"a system for depositing a check" (claim 1) "a non-transitory computer-readable medium comprising [computer-readable] instructions for depositing a check" (claim 10)	The preambles are limiting	The preambles are limiting Ex. 1033, 40–43
"mobile device" (claims 1, 3, 5, 10)	"computing device capable of being easily moved and that is controlled by a mobile operating system"	"computing device capable of being easily moved and that is controlled by a mobile operating system." Ex. 1033, 43–45

Claim Term	Agreed Construction or Proposed by Patent Owner	Texas Court's Construction
"deposit system" (claim 10)	"a system for providing a check to a depository in a form sufficient to allow money to be credited to an account"	Not addressed by the Texas court Ex. 1033, 66
"capture the image of the check" (claims 1, 10)	No further construction necessary	Plain meaning Ex. 1033, 49–56
"determin[ing] whether the image of the check aligns with the alignment guide" / "the image of the check is determined to align with the alignment guide" (claims 1, 10)	"determining that the alignment of the image of the check is within an acceptable threshold such that the image can be electronically read"	Plain meaning Ex. 1033, 67–72
"when the image of the check is determined to align with the alignment guide" (claims 1, 10)	"at or after the moment the image of the check is determined to align with the alignment guide"	"at or after the moment the image of the check is determined to align with the alignment guide" Ex. 1033, 67–73

Claim Term	Agreed Construction or Proposed by Patent Owner	Texas Court's Construction
"when at least [one edge / a first edge and a second edge / a first edge, second edge, and a third edge] of the image of the check aligns" (claims 7–9, 15–17)	No further construction necessary	"at or after the moment at least [one edge / a first edge and a second edge / a first edge, second edge and a third edge] of the image of the check aligns" Ex. 1033, 67–73

In the Petition, "Petitioner relies on the constructions urged by [Patent Owner] in the co-pending district court litigation or as the parties agreed." Pet. 20.

Patent Owner contends that the District Court in the Texas case has adopted these constructions and urges us to apply them in this proceeding. PO Resp. 30–31 (citing Ex. 1033, 12–13, 40–72).

As both parties apply the constructions in the "Agreed Construction or Proposed by Patent Owner" column in this proceeding, we do so as well. On the current record, any differences between those constructions and the Texas court's constructions do not appear to have an impact on this proceeding. Based on the record before us, we do not find it necessary to provide express claim constructions for any other terms. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that "we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'"

(quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

B. Obviousness of Claims 1, 2, 7–10, and 15–17 over Acharya and Luo

Petitioner contends that claims 1, 2, 7–10, and 15–17 would have been obvious over Acharya and Luo. Pet. 30–73. For the reasons given below, Petitioner has proved by a preponderance of the evidence that these claims would have been obvious over this combination.

A claim is unpatentable under 35 U.S.C. § 103 "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." We resolve the question of obviousness 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.[8] *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

1. Level of Skill in the Art

Relying on Dr. Mowry's testimony, Petitioner contends that a person of ordinary skill in the art "would have had a bachelor's degree in electrical engineering, computer science, computer engineering, or equivalent field, and at least two years of prior experience with image processing or scanning

[8] The record does not include allegations or evidence of objective indicia of nonobviousness.

technology involving transferring and processing of image data to and at a server," and that "[a] person with additional education or additional industrial experience could still be of ordinary skill in the art if that additional aspect compensates for a deficit in one of the other aspects of the requirements stated above." Pet. 19–20 (citing Ex. 1002 ¶ 44). We adopted this level of skill in the Institution Decision. Dec. 38–39. Patent Owner applies this level of skill in its Patent Owner Response. PO Resp. 30. As Petitioner's proposal is consistent with the technology described in the Specification and the cited prior art, we continue to apply this level of skill.

2. Scope and Content of the Prior Art

a) Overview of Acharya

Acharya "relates generally to a system and method for initiating a deposit transaction, where the depositor is a banking customer located at a remote location, where the item is to be deposited without physical transport of the item to a bank and where the item to be deposited is a financial instrument, e.g. a paper check, from a third party (i.e., other than the bank customer or the paying bank), payable to the depositor, where the banking customer has or creates a digital image of the financial instrument." Ex. 1003, 1:18–26. Figure 1, reproduced below, illustrates an example:

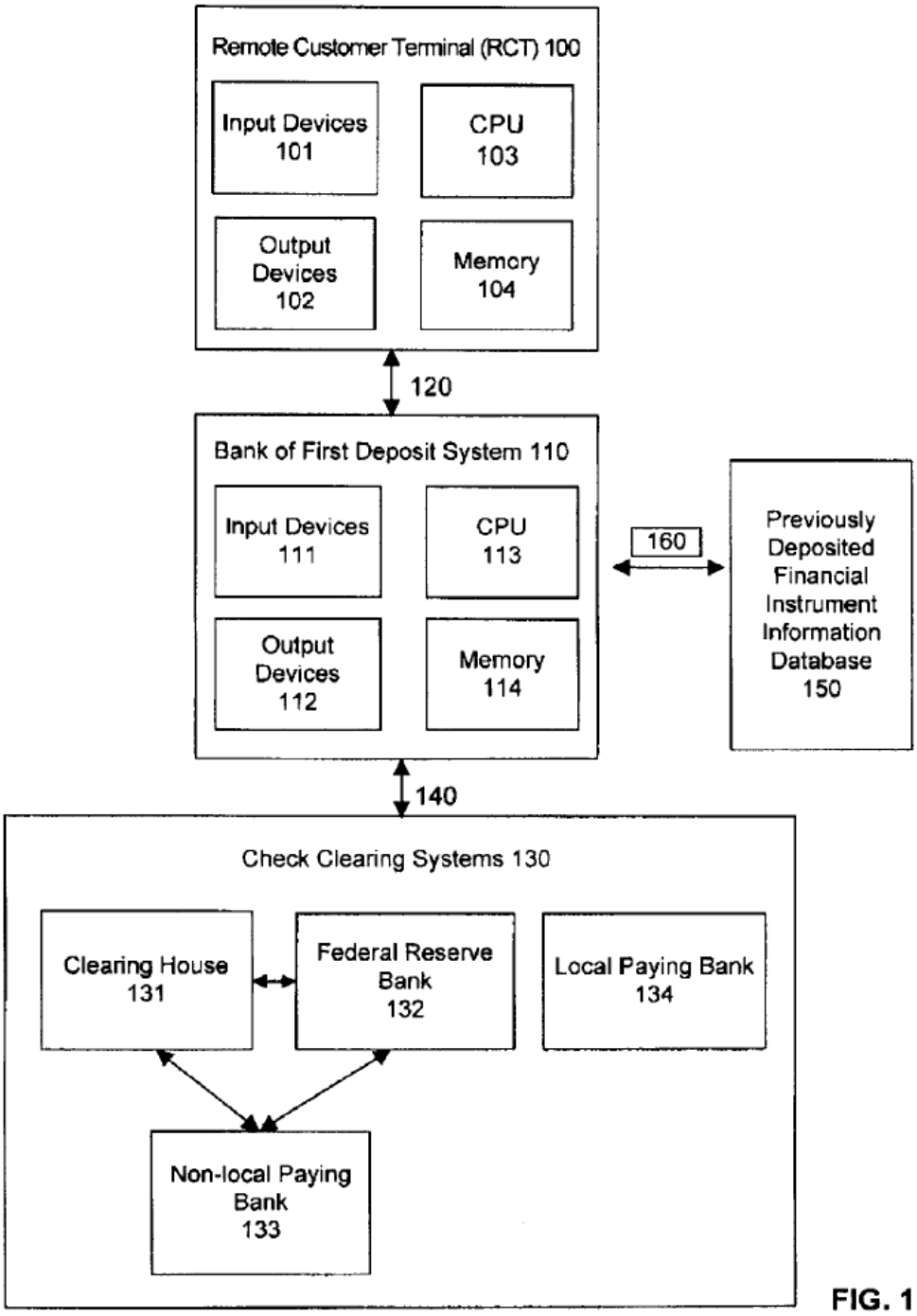

FIG. 1

Figure 1 is a schematic diagram of a system for depositing financial instruments. *Id.* at 3:62–63, 4:9–15.

Remote Customer Terminal (RCT) 100 is connected to Bank of First Deposit (BOFD) system 110. *Id.* at 4:14–17. RCT 100 can be a telephone,

digital camera, fax machine, automated teller machine (ATM), cell phone, personal digital assistant (PDA), or other device, and includes input devices 101, output devices 102, central processing unit (CPU) 103, and memory 104. *Id.* at 4:18–22, 4:32–34. RCT 100 communicates with BOFD system 110 via communication link 120, which can be, e.g., a dedicated line or the Internet. *Id.* at 5:53–58. BOFD system 110 is connected to check clearing systems 130 via communication link 140. *Id.* at 6:32–36.

A method of depositing financial instruments in the context of the system of Figure 1 is depicted in Figure 2, reproduced below:

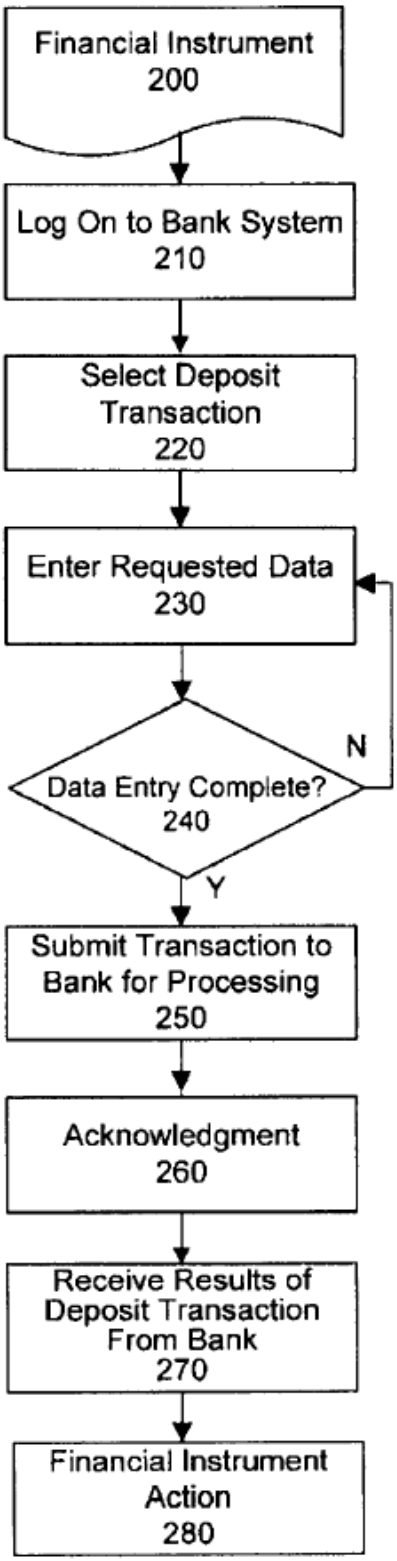

FIG. 2

Figure 2 is a flow diagram illustrating the flow of information from the perspective of a banking customer. *Id.* at 3:64–65, 6:52–54.

The banking customer may first prepare a digital image of a financial instrument (e.g., a check) using a digital camera and store the image in memory 104. *Id.* at 7:14–22. The banking customer may additionally access software that can recognize data in the digital image and store that in memory 104 along with the digital image. *Id.* at 7:23–30; *see also id.* at 4:65–5:6 ("For example, optical character recognition software may be used in conjunction with the [Digital Image Scanner (DIS)] or the digital camera to convert machine printed characters on the financial instrument or the digital image of the financial instrument to electronic text. Likewise, intelligent character recognition software may be used to convert handwritten characters on the financial instrument or on the digital image of the financial instrument to electronic text."). "In another embodiment, in addition or alternatively, the banking customer may enter data into the RCT memory 104 using RCT input devices 101 such as the keypad, keyboard or microphone for storage." *Id.* at 7:30–33. "Data may comprise customer identification, customer account number, name of payor, name and routing number of payor's bank, the amount of the financial instrument, an image of the financial instrument, along with other information." *Id.* at 7:37–41.

To deposit the check, the banking customer logs on to BOFD system 110 from RCT 100, selects a "deposit" option from a menu of transaction options, and is prompted to deposit a financial instrument. *Id.* at 6:55–7:7 (steps 200–230). In response to a prompt for additional information (step 240), "the banking customer may submit the data taken from the financial instrument, along with the digital image of the financial instrument, to the BOFD system 110 for processing 250, and may receive acknowledgement from the BOFD system 110 that the transaction is being processed 260." *Id.* at 7:42–47. The banking customer may then receive a

response indicating immediate provisional credit for the deposit (step 270). *Id.* at 8:4–8.

b) Overview of Luo

Luo describes a technique for capturing an image of an object with straight edges (e.g., a business card) that reduces projective distortion in the image, whereby the image is captured only when a straight edge of the object shown in a camera's preview window is substantially parallel to a reference line. Ex. 1004, Abstr. Luo notes that "today's digital cameras are often integrated into mobile phones, personal digital assistants (PDAs), and laptops," with the result that "people in business can use digital cameras incorporated into mobile phones to quickly and easily capture digital images of their business cards." *Id.* at 1. However, it is "unideal" when one "holds the business card in front of the camera lens with one hand, while holding the camera with the other hand when taking pictures," because of "variable factors such as the distance from the lens to the business card, and the angle of the camera's image plane relative to the front of the business card," such that "the image resulted may contain defects such as projective distortion." *Id.* Figure 2, reproduced below, illustrates an example of Luo's solution:

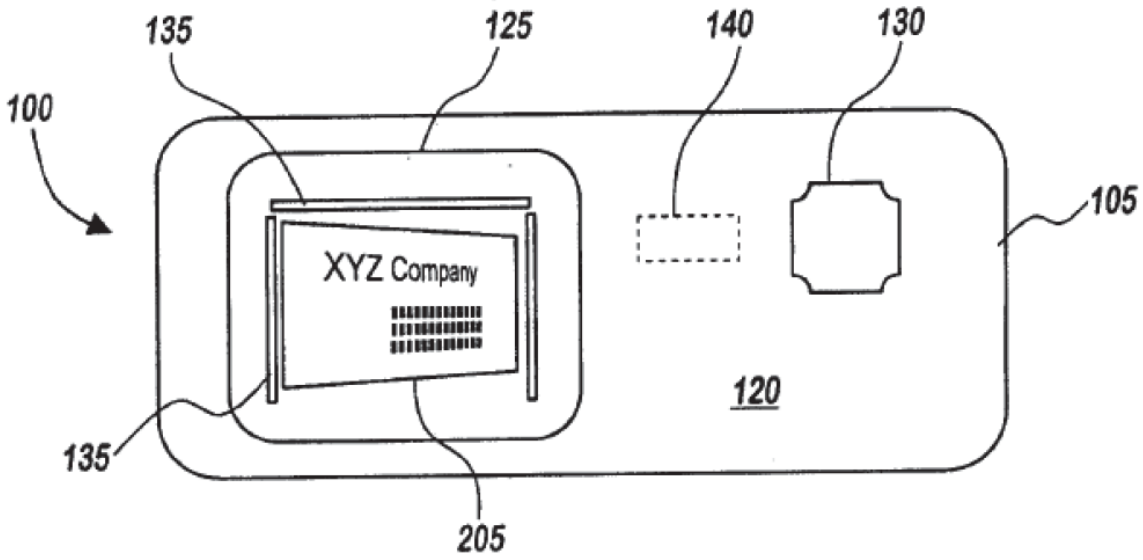

Fig. 2

Figure 2 is a schematic diagram of back 120 of camera system 100. *Id.* at 3.

Back 120 includes preview window 125, which displays an image received by image sensor 115 (shown in Figure 1). *Id.* When mode selection switch 130 is set to a document capture mode, reference line(s) 135 is displayed in preview window 125. *Id.* Reference line 135 guides the user to position image sensor 115 in an appropriate orientation with respect to the business card being captured. *Id.* at 4. "[W]hen the system 100 is in the document capture mode, the system 100 provides the user with an image of a captured object, such as a business card, only when the straight edge 205 of the business card is substantially parallel to the corresponding reference line 135 displayed in the preview window 125." *Id.* at 5. For example, "when the system 100 operates in the document capture mode . . . , the system 100 displays that the object plane 310 and the image plane 320 are not substantially parallel, so the final business card image cannot be captured." *Id.* To implement this, "image edge detection techniques can be used to reliably calculate the angle between a specific reference line 135 and

the corresponding straight edge 205 in the document preview image." *Id.* Luo's Figure 5 (a larger version of the image shown in preview window 125 of Figure 2) displays three reference lines 135, but Luo notes that two, three, four, or more lines could be used, and the lines need not be orthogonal. *Id.*

Luo describes "[v]arious techniques" to indicate to the user that the business card is aligned properly, including "an alarm composed of sounds, such as a clicking sound output from the camera system 100," or "[a] light illuminated in the preview window 125 or the light illuminated elsewhere in the camera system 100." *Id.* at 6. "As an alternative, when the straight edge 205 displayed on the preview window 125 is substantially parallel to the corresponding reference line 135, the system 100 can automatically capture the selected image and provide the user with or without instructions." *Id.*

According to Luo, through use of its techniques, "the projective distortion in the image is reduced, and the image is clearer and more accurate. With reduced projective distortion, it is more likely to perform an accelerated image capture process, such as an optical character recognition process performed on a text image, with high accuracy." *Id.* at 7.

3. Claims 1, 2, 7–10, and 15–17, Differences Between the Claimed Subject Matter and Acharya and Luo; Reasons to Modify or Combine

Petitioner cites Acharya for its disclosure of capturing images of checks suitable for extracting typical check data, but acknowledges that "Acharya does not expressly disclose details of how its system determines that an image is suitable for capture or how to implement the customer prompt for capturing such an image." Pet. 30. Petitioner cites Luo for such implementation details. *Id.* at 30–36.

Patent Owner does not challenge Petitioner's mapping of disclosure in Acharya and Luo to the limitations of claim 1; rather, Patent Owner argues that a skilled artisan would not have combined Acharya and Luo. PO Resp. 31–58.

Below, we address the limitations of claim 1, whether a skilled artisan would have combined Acharya and Luo, and finally the remaining challenged claims.

a) Claim 1

Claim 1 recites "[a] system for depositing a check." Petitioner cites Acharya for a teaching of a system for depositing a check, referring, in particular, to Acharya's Figure 1. Pet. 36–38. Figure 1 (reproduced above) shows Remote Customer Terminal (RCT) 100 communicating with Bank of First Deposit (BOFD) system 110, which, in turn, communicates with check clearing systems 130. Ex. 1003, 5:53–54, 6:32–38. In one example,

> Either when prompted or prior to accessing the BOFD system, the banking customer captures the digital image of the financial instrument by the scanner or the digital camera and prepares a file storing the digital image. Upon prompting by the BOFD system, the banking customer forwards the digital image to the BOFD system along with the data that was either 'recognized' from the digital image of the financial instrument or was input into the RCT by the banking customer. . . .
>
> The automated system can provide immediate provisional credit from the BOFD system to the banking customer, and forward the digital image of the financial instrument and other data to a clearing house in the form of an ECP transaction.

Id. at 3:11–25. We find that this teaches a system for depositing a check.

Claim 1's system includes "a mobile device having a camera, a display and a processor." Petitioner contends that Acharya's RCT 100 is a

mobile device having a camera, a display, and a processor. Pet. 38–39. We agree. For example, "RCT 100 may be a telephone, digital camera, fax machine, personal computer, ATM, cell phone, PDA or any other computer, apparatus, wireless handheld device such as a Blackberry(R) or PalmTreo(R) or system capable of collecting data and communicating with BOFD system 110." Ex. 1003, 4:18–22. RCT 100 may include "certain input devices 101, output devices 102, Central Processing Unit (CPU) 103, and machine-readable electronic memory 104." *Id.* at 4:32–34.

Petitioner contends that Luo provides additional implementation details that would be applicable to the mobile devices described in Acharya. Pet. 39–41. In particular, Petitioner points to Luo's description of camera system 100, including image sensor 115, preview window 125, and processor 140, as providing implementation details for Acharya's RCT 100. *Id.* (citing Ex. 1004, 1, 3, 8, Figs. 1–2). We find that Luo would have provided implementation details applicable to the mobile devices of Acharya, and, for the reasons give below, find that a skilled artisan would have combined the teachings of Acharya and Luo.

Claim 1 further recites that the mobile device's processor is configured to "project an alignment guide in the display of the mobile device, the display of the mobile device displaying a field of view of the camera." Petitioner cites to Luo's description (depicted in Luo's Figure 5, reproduced below) of a preview image of a document displayed in preview window 125 with straight edges 205 of the document shown along with reference lines 135. Pet. 41–44.

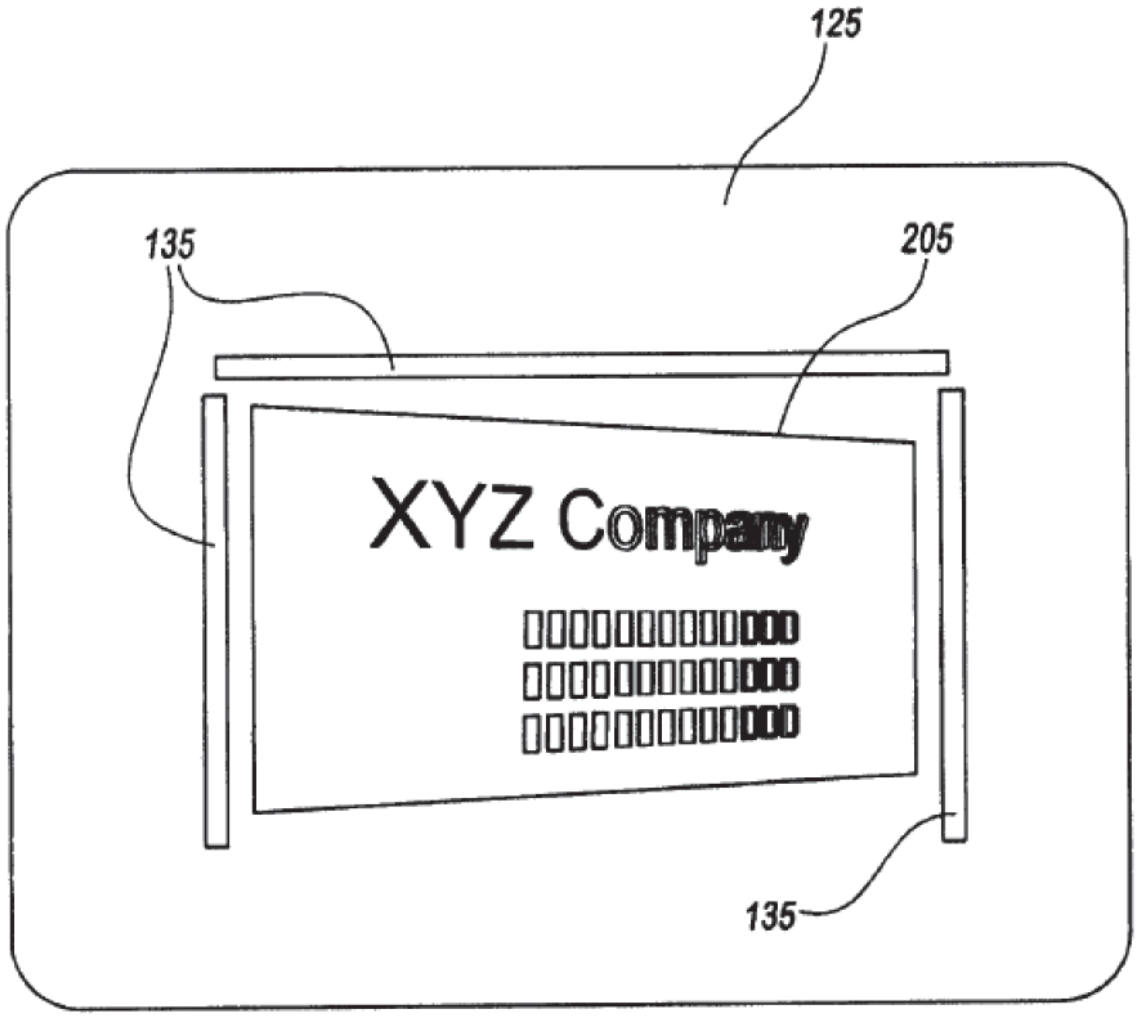

Fig. 5

As shown above, Figure 5 of Luo is a schematic diagram of preview window 125 depicting a preview image of business card 205. Ex. 1004, 2, 5.

Petitioner contends that reference lines 135 are an alignment guide, as they "guide the user of the system 100 to position the image sensor 115 in an appropriate orientation" and serve to "reduce projective distortion" by requiring that "[t]he image of the object is captured only when the straight edge (205) shown in the preview window (125) is substantially parallel to the corresponding reference line (135)." Pet. 42–43 (quoting Ex. 1004, Abstr., 7). We find that reference lines 135, which are shown projected in

preview window 125, teach a mobile device with a processor configured to "project an alignment guide in the display of the mobile device."

As to "the display of the mobile device displaying a field of view of the camera," Petitioner argues that a skilled artisan would have understood Luo's description of "the scene in front of the image sensor 115" to refer to the field of view of the camera. Pet. 44–45 (quoting Ex. 1004, 3; citing Ex. 1003 ¶ 86). We credit Dr. Mowry's uncontroverted testimony and find that the display of Luo's mobile device displays a field of view of its camera.

Claim 1 further recites that the mobile device's processor is configured to "monitor an image of the check that is within the field of view." Petitioner contends that Luo describes monitoring an image of a document that is within its field of view, and cites to Acharya to show that, in the proposed combination, the document would be a check rather than a business card. Pet. 45–49. Dr. Mowry testifies that, to enable Luo's device to capture an image only when the straight edges of the image are substantially parallel with the reference lines, Luo's system monitors the image of the document in preview window 125 to determine whether straight edge 205 of the document is substantially parallel to the corresponding reference lines 135. Ex. 1002 ¶ 89; Pet. 46–47 (citing Ex. 1004, 3, 6). We credit Dr. Mowry's testimony, which is consistent with and supported by Luo's disclosure. As noted above, Acharya teaches capturing an image of a financial instrument such as a check. Ex. 1003, Abstr., 3:12–13; Pet. 48. Thus, we find that the combination of Acharya and Luo teaches this limitation.

Claim 1 further recites that the mobile device's processor is configured to "determine whether the image of the check aligns with the

alignment guide." Petitioner cites to Luo's teaching of calculating the angle between reference lines 135 and straight edges 205 of the preview image of the document and automatically capturing the image when the straight edges and reference lines 135 are substantially parallel. Pet. 49–52 (citing Ex. 1004, 5–6, Fig. 5; Ex. 1002 ¶ 96). Based on this evidence, we find that Luo teaches this limitation.

Claim 1 further recites that the mobile device's processor is configured to "automatically capture the image of the check when the image of the check is determined to align with the alignment guide." Petitioner (Pet. 53–54) cites to Luo's description that "when the straight edge 205 displayed on the preview window 125 is substantially parallel to the corresponding reference line 135, the system 100 can automatically capture the selected image and provide the user with or without instructions." Ex. 1004, 6. Based on this evidence, we find that Luo teaches this limitation.

Claim 1 further recites that the mobile device's processor is configured to "transmit the captured image of the check from the camera to a depository via a communication pathway between the mobile device and the depository." Here, Petitioner relies on Acharya's description of RCT 100 forwarding a digital image of a financial instrument to BOFD system 110 via communication link 120, as shown in Figure 1 (reproduced above). Pet. 54–56 (citing Ex. 1003, 1:59–60, 3:1–3, 3:12–16, 5:53–58; Ex. 1002 ¶¶ 106–108). Based on this evidence, we find that Acharya teaches this limitation.

b) Reasons to Combine Acharya and Luo

As noted above, the parties dispute whether a skilled artisan would have had sufficient reasons to combine the teachings of Acharya and Luo.

Petitioner argues that Luo expressly provides reasons why a skilled artisan would have combined Luo's teachings with Acharya's teachings. Pet. 31–32. For example, Luo explains that it is difficult to capture a high-quality image of a document such as a business card with a hand-held digital camera because it is difficult to get the correct alignment and distance from the camera, resulting in projective distortion, or blurring. *Id.* (citing Ex. 1004, 1). Specifically, Luo states:

> [M]any environments today for using digital cameras are not ideal for capturing high-quality images. For example, a user of a digital camera trying to capture a business card image simply holds the business card in front of the camera lens with one hand, while holding the camera with the other hand when taking pictures. But this makes unideal variable factors such as the distance from the lens to the business card, and the angle of the camera's image plane relative to the front of the business card. Therefore, the image resulted may contain defects such as projective distortion.

Ex. 1004, 1. Patent Owner attempts to limit this disclosure to the situation where a user holds a business card in one hand and operates the camera with the other, and argues that "the situation described in Luo would appear to be avoided entirely by placing the check on a surface in order to capture it," as shown in ImageNet.[9] PO Resp. 50–51; *accord id.* at 27 ("Moreover, as the Board pointed out, the user could simply 'have placed the camera directly above the document to avoid document distortion, as taught by

[9] ImageNet is not asserted by Petitioner in this proceeding. Its relevance is marginal, if at all, and only as an example of another solution in the art.

Nepomniachtchi.'" (quoting Ex. 2108, 53–54))[10], 36 n.8 ("Dr. Mowry did not evaluate whether ImageNet (or any other remote deposit system in the industry) had issues with projective distortion or blur in captured check images." (citing Ex. 2116, 30:1–31:13)), 50 ("Petitioner's expert conceded at deposition that he has no evidence ImageNet could not address issues of blur and projective distortion." (citing Ex. 2116, 30:1–31:13)). We do not view Luo's disclosure as so limited; rather, Luo describes a general problem of projective distortion when trying to capture an image of document with a movable hand-held camera that must be aligned manually with the document. We find that a person of ordinary skill would have understood that Luo's solution would be beneficial to a user whether the user places the document on a table before capture or holds the document in his or her hand during capture. *See* Ex. 1002 ¶ 63.

As Petitioner observes, Luo solves the problem of projective distortion with a system that uses reference lines in the image preview window to help the user line up the document and automatically captures an image when the document is lined up correctly with the reference lines. Pet. 31–32 (citing Ex. 1004, 5). For example, Luo explains:

> The present invention ensures that the front of the object being imaged is substantially parallel to the image plane 320 of the camera system 100 to reduce the projective distortion of the image. For example, when the system 100 is in the document capture mode, the system 100 provides the user with an image of a captured object, such as a business card, only when the straight edge 205 of the business card is substantially parallel to

[10] The findings of the Wells Fargo IPR panel on Nepomniachtchi's disclosure of placement of the camera is of marginal, if any, relevance to this proceeding, as Acharya, the reference Petitioner relies on, includes no such description.

> the corresponding reference line 135 displayed in the preview window 125.

Ex. 1004, 5. Referring to its Figure 5, Luo continues:

> For the purpose of illustration, the image plane 320 of the business card shown is tilted in relative to system 100 so that the top straight edge 205 of the card cannot be substantially parallel to the corresponding top reference line 135. In such positioning, when the system 100 operates in the document capture mode as described above, the system 100 displays that the object plane 310 and the image plane 320 are not substantially parallel, so the final business card image cannot be captured. As is well known in the art, image edge detection techniques can be used to reliably calculate the angle between a specific reference line 135 and the corresponding straight edge 205 in the document preview image.

Id. Thus, we find that Luo describes a technique of comparing edges of a document to guidelines to help a user line up the camera with the document, resulting in an image with less projective distortion, or blurring.

According to Petitioner, Luo explains that, due to its solution, it is easier and more accurate to use optical character recognition to capture text from the higher-quality image. Pet. 31–32 (citing Ex. 1004, 7). Lou's express description supports this argument:

> [T]he camera system 100 can be used to capture only precise, clear text data images, which can be downloaded to another location before any optical character recognition is performed.
>
> . . . Therefore, the present invention helps users to accurately and reliably capture an image of the front of an object, where the object plane 310 is substantially parallel to the image plane 320. Therefore, the projective distortion in the image is reduced, and the image is clearer and more accurate. With reduced projective distortion, it is more likely to perform an accelerated image capture process, such as an optical character recognition process performed on a text image, with high accuracy.

Ex. 1004, 7. Petitioner argues that this would have been applicable to Acharya, which describes converting machine printed characters on a digital image of a check using optical character recognition software. Pet. 31 (citing Ex. 1003, 4:67–5:2 ("For example, optical character recognition software may be used in conjunction with the DIS or the digital camera to convert machine printed characters on the financial instrument or the digital image of the financial instrument to electronic text.")).

Dr. Mowry testifies that, "[g]iven these difficulties in using handheld devices to capture suitable images, a person of ordinary skill in the art would have been motivated to implement Acharya using the reference lines and capture techniques described in Luo in order to achieve a high likelihood of obtaining images that were suitable for image processing." Ex. 1002 ¶ 63. According to Dr. Mowry, Luo's solution is "directly applicable to capturing check images to predictably increase the likelihood of obtaining images that are suitable for" optical character recognition. *Id.* Dr. Mowry's testimony is consistent with the express disclosures in Acharya and Luo and, therefore, is credible.

Acharya expressly identifies technology that it uses to capture information from documents, namely optical character recognition, and Luo expressly describes a technique designed to reduce projective distortion when capturing an image of a document, such that optical character recognition can be performed more accurately. Dr. Creusere admitted on cross-examination that "correcting geometric distortion will make it easier to perform automatic text recognition." Ex. 1037, 89:1–2. Petitioner contends that its proposed combination would have amounted to applying a known technique to a known device ready for improvement to yield predictable results. Pet. 32–34; *see also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398,

417 (2007) ("[I]f 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."); Ex. 1002 ¶ 64 ("Implementing Acharya's RCT using Luo's camera system would have simply involved applying a technique that was known to a device that was known and ready for improvement, to yield predictable results."). We agree. This appears to be a textbook example of using a technique that improved one device to improve a similar device in the same way. As we preliminarily observed in the Institution Decision (Dec. 54), a combination of Acharya and Luo would have been no more than "[t]he combination of familiar elements according to known methods" and, thus, likely obvious because it "does no more than yield predictable results." *KSR*, 550 U.S. at 416.

Petitioner argues, and Dr. Mowry testifies, that a skilled artisan would have had a reasonable expectation of success, as Luo itself explains that the software that would implement the invention would be easy to produce for a generic processor, which Acharya also employs. Pet. 34 (citing Ex. 1003, 4:63–65; Ex. 1004, 8; Ex. 1002 ¶ 66). Other similarities Petitioner and Dr. Mowry note that would lead to a reasonable expectation of success include that both Acharya and Luo describe their respective inventions as implemented on the same types of handheld devices, and the documents on which both operate have straight edges and are subject to optical character recognition. *Id.* at 35 (citing Ex. 1003, 1:21–22, 4:18–20, 4:37; Ex. 1004, 1, 4, 6; Ex. 1002 ¶¶ 67–68). We credit Dr. Mowry's testimony, which is consistent with the disclosures of Acharya and Luo on this point, and find

that a skilled artisan would have had a reasonable expectation of success in combining the teachings of Acharya and Luo. Ex. 1002 ¶¶ 66–68.

Petitioner's evidence of obviousness is particularly strong and straightforward.

Nevertheless, Patent Owner offers arguments and evidence in response. Patent Owner groups its arguments into four categories:

> (1) Petitioner's own asserted references—Acharya, Nepomniachtchi, and ImageNet[11]—show that the established method of remote check deposit in the art was to have the customer manually capture or otherwise obtain check images and provide the images and/or check data to the bank for processing.
>
> (2) The alleged "problem" with digital camera imaging described in Luo—misalignment/distortion caused by incorrect positioning of the camera relative to the document—was already accounted for by pre-capture instructions and deposit processing algorithms employed in the art.
>
> (3) A [person of ordinary skill in the art] would have expected Luo's single-criterion automatic capture technique to be less effective and undesirably burdensome on the mobile processor.
>
> (4) Luo teaches that its alignment guide technique can be applied with both a manual capture implementation and an auto-capture implementation. Petitioner's expert has conceded that there is no evidence that the auto-capture implementation has any benefit over the manual capture implementation.

PO Resp. 1–2; *accord id.* at 32–59.

[11] Neither Nepomniachtchi nor ImageNet is asserted by Petitioner in this proceeding. Their relevance is marginal, if at all, and only as examples of other solutions in the art.

As to the first category of arguments, Patent Owner contends that each of Acharya and Nepomniachtchi teach remote check deposit methods that employ "a 'manual capture' approach where the customer captures check images using a camera and uploads those images and/or other check data to a bank system for deposit processing." *Id.* at 39 (citing Ex. 1003, 3:12–15; Ex. 2105 ¶ 78; Ex. 1014, 37–39); *see also id.* at 34 ("Nepomniachtchi teaches obtaining images suitable for check deposit processing specifically and based on a manually captured image by the user, i.e., without using reference lines or automatic capture." (citing Ex. 2105 ¶¶ 62–78)). Patent Owner argues that these manual-capture methods "all leave the decision of when to capture the image in the hands of the customer despite recognizing the possibility of image quality issues in captured images, including the same types of distortions described in Luo." *Id.* at 39 (citing Ex. 2105 ¶¶ 58, 70). According to Patent Owner, "Petitioner has presented no evidence that this established method of remote check deposit in the art was perceived as inadequate for addressing projective distortion or blur," and, instead, that Petitioner presented evidence that ImageNet was commercially successful in manually capturing mobile check data. *Id.* at 36 (citing Pet. 8–10); *see also id.* at 37 ("Petitioner's expert was asked if he had any actual evidence that the solutions for blur and projective distortion addressed in Nepomniachtchi were any less effective than Luo. He conceded he had none." (citing Ex. 2116, 19:14–20:2, 21:19–22)).

As to Acharya, Petitioner argues that it is agnostic as to whether images are captured manually or automatically. Reply 9–10. Patent Owner's citation to Acharya (Ex. 1003, 3:12–15) does not support its contention that Acharya employs a manual capture approach and, instead, merely states that "the banking customer captures the digital image of the

financial instrument by the scanner or the digital camera and prepares a file storing the digital image." As Petitioner points out (Reply 10), Dr. Creusere has admitted that Acharya does not state whether images are captured manually or automatically. Ex. 1037, 120:8–20. Thus, Acharya's teachings do not support Patent Owner's argument that manual capture was the established and preferred method for remote check deposit.

As to Patent Owner's argument that Nepomniachtchi and ImageNet show that manual capture was the preferred method for remote check deposit (PO Resp. 39, 42–43 (citing Ex. 2105 ¶¶ 58, 70, 78; Ex. 1014, 37–39; Ex. 2112)), simply pointing to examples of art using manual capture does not show that manual capture was established and preferred over automatic capture, or suggest that a skilled artisan would not have pursued other solutions. *Cf. In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) ("The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed in the '198 application. . . . Accordingly, mere disclosure of alternative designs does not teach away."). Patent Owner points to nothing in Nepomniachtchi or ImageNet that criticized, discredited, or would have discouraged automatic capture of check images.

Patent Owner also argues that Acharya teaches other ways in which a customer can deposit a check that do not include image capture, such as the customer receiving a digital image of a check from the payer or the customer entering data into the system using a keypad or keyboard. PO Resp. 40–41 (citing Ex. 1003, 2:63–66, 3:20–21, 7:5–7, 7:14–19, 7:30–33, 7:47–52). From these examples, Patent Owner concludes that "Acharya's multitude of options for providing images and/or check data to the bank system indicate

that the quality of the check image is not of particular importance in Acharya's system." *Id.* at 41 (citing Ex. 2115 ¶ 31). Although Patent Owner cites Dr. Creusere's testimony, that testimony does not support Patent Owner's argument. Nor does any of the other evidence Patent Owner cites. Acharya's description of multiple ways of capturing check data does not lead to a conclusion that the quality of a check image is unimportant in Acharya's system.

Patent Owner also argues that "Petitioner's expert concedes that there is no statement in Acharya that it has any issues with projective distortion or blur." PO Resp. 42 (citing Ex. 2116, 33:16–24); *see also id.* at 36 n.8 ("Dr. Mowry . . . testified that Acharya did not identify any problems with projective distortion or blur in its existing manual capture implementation." (citing Ex. 2116, 33:16–24)); Sur-reply 4 ("Acharya does not disclose that its optical character recognition system suffers from projective distortion problems. And any missing information can be typed in by the user." (citing Ex. 1003, 7:36–41)). Patent Owner does not cite any authority for its implicit argument that a reference must expressly state a problem before it can be ready for improvement. Indeed, the Supreme Court has rejected such a "rigid approach" of requiring a teaching, suggestion, or motivation to combine to be expressed in a reference, in favor of "an expansive and flexible approach" to evaluating obviousness. *KSR*, 550 U.S. at 415. In any case, Luo expressly states that its technique reduces projective distortion and improves optical character recognition. Ex. 1004, 7. Dr. Mowry testifies that a skilled artisan would have recognized that Luo's solution could be used to improve check processing, as in Acharya's system, in the same manner. Ex. 1002 ¶ 63; *see also KSR*, 550 U.S. at 417 ("[I]f 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."). Dr. Mowry's testimony is consistent with the teachings of the prior art and we credit this testimony.

Patent Owner's second category of arguments is that "The 'Problem' Supposedly Motivating a [Person of Ordinary Skill in the Art] To Combine Acharya/Luo Was Already Addressed by Deposit Processing In The Art." PO Resp. 43–51. According to Patent Owner, "a [person of ordinary skill in the art] considered 'projective distortion' a solved problem in view of references like Nepomniachtchi teaching post-capture distortion correction." Sur-reply 5–6.

Patent Owner argues that, "to the extent that some check images captured in Acharya's system may be inadequate for optical character recognition, Acharya's system already provides a solution to that problem as part of its deposit processing step," namely by supplementing optical character recognition with the user manually entering missing data. PO Resp. 44 (citing Ex. 1003, 8:16–25). According to Patent Owner, "[t]he petition does not argue that a [person of ordinary skill in the art] would have been motivated to eliminate this step of Acharya's process." *Id.* This argument is not persuasive for several reasons. It was not incumbent on Petitioner to assert that a skilled artisan would have removed one solution to make room for another, although the benefits of elimination of manual entry would have been self-evident and a matter of common sense. *See Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009) ("[W]hile an analysis of obviousness always depends on evidence that supports the required *Graham* factual findings, it also may include recourse to logic, judgment, and common sense available to the person of ordinary

skill that do not necessarily require explication in any reference or expert opinion."); *KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.").

Moreover, Patent Owner does not cite any authority for the proposition that, simply because a prior art reference describes one solution to a known problem, a skilled artisan would not have considered other solutions to that same problem. *Cf. Fulton*, 391 F.3d at 1201 (Fed. Cir. 2004). The Federal Circuit has explained that:

> a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine. *See* [*Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000)] ("The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another."). Where the prior art contains "apparently conflicting" teachings (i.e., where some references teach the combination and others teach away from it) each reference must be considered "for its power to suggest solutions to an artisan of ordinary skill. . . . consider[ing] the degree to which one reference might accurately discredit another."

Medichem, S.A. v. Rolabo, S.L., 437 F.3d 1157, 1165 (2006) (quoting *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991) (alterations by Federal Circuit)).

In this case, Patent Owner's argument actually supports Petitioner's position. As noted above, Patent Owner argues that Acharya itself does not identify projective distortion as a problem. PO Resp. 42. However, as

Patent Owner points out, Acharya describes manual entry of data to correct data not captured sufficiently by optical character recognition. *Id.* at 44. Thus, although Acharya does not expressly use the terms "projective distortion" or "blur," it recognizes that its image capture technique might be insufficient for optical character recognition and, thus, was ready for improvement. As Petitioner demonstrates above, techniques such as those taught by Luo would provide such an improvement. *See KSR*, 550 U.S. at 419–20 ("One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims.").

Patent Owner also argues that Nepomniachtchi[12] recognized the problem caused by projective distortion and described fixing such distortions at the server receiving the image of a check (rather than at the device capturing the image of the check). PO Resp. 45–47. Patent Owner contends that "Nepomniachtchi's technique for correcting projective distortion in captured check images is equally applicable to Acharya's embodiments, whether processing occurs on the mobile device or at the server." Sur-reply 6–7. According to Patent Owner,

> to the extent a [person of ordinary skill in the art] was concerned that images captured via digital camera may contain the distortion taught by Luo, he or she would have understood that type of defect to be addressed by server-side processing (which Acharya is already performing on received check images) and would not see a need to make drastic changes to the image capture process on the customer device.

[12] As noted above, Nepomniachtchi is not asserted by Petitioner in this proceeding and is of marginal relevance.

PO Resp. at 46 (citing Ex. 2115 ¶¶ 33–34);[13] *see also id.* at 11 ("Nepomniachtchi teaches that these image quality issues can be addressed through post-capture processing so that the document can be processed and data extracted successfully."), 26 ("[T]he Board determined that 'Nepomniachtchi as a whole already provides a solution that addresses image distortions.'" (quoting Ex. 2108, 53))[14]; Sur-reply 3 ("[T]here is no competent evidence that a [person of ordinary skill in the art] would look to implement Luo's alignment guide-based autocapture for business cards in Acharya in an attempt to solve the same 'projective distortion' problem as the check-deposit specific reference Nepomniachtchi."). Patent Owner argues further that another reference, Blackson,[15] also teaches techniques for correcting check images at the server receiving the images (rather than at the device capturing the images). PO Resp. 47–48.

Patent Owner argues that "[t]hese references [which we presume are Nepomniachtchi and Blackson] show that the preferred approach to dealing with perspective distortion/misalignment issues in check deposit systems, at the time of the invention, was ***post-capture*** image correction." *Id.* at 49; *see*

[13] Dr. Creusere cites Exhibit 1003, 7:14–33 and 8:16–9:10 for his conclusion that Acharya teaches server-side check processing that included image correction algorithms. Ex. 2115 ¶ 33. Acharya does not support this testimony, and instead, to the extent Acharya teaches where checks are processed to obtain data, it suggests that check processing happens on the device capturing the image. Ex. 1003, 7:14–33. Dr. Cruesere's testimony on this point lacks credibility and is entitled to no weight. *See* 37 C.F.R. 42.65(a).

[14] The findings of the Wells Fargo IPR panel on Nepomniachtchi's disclosure of correcting for projective distortion at the server is of marginal, if any, relevance to this proceeding, as Acharya includes no such description.

[15] Blackson is not asserted by Petitioner in this proceeding.

also Sur-reply 4 ("[T]he evidence of record is that the motivation would be to use Nepomniachtchi's projective distortion techniques because they are especially directed at remote deposit of checks using mobile devices."). Patent Owner argues that Blackson describes Luo's approach, requiring precise alignment, as inferior. PO Resp. 49 (citing Ex. 2113, 2:61–67).

Patent Owner's arguments are misplaced. These arguments largely depend on the teachings of Nepomniachtchi, which Petitioner does not rely on and which has only marginal relevance to this proceeding. Nepomniachtchi might teach techniques to correct for projective distortion at a server that receives an image of a check. But Patent Owner points to no persuasive evidence that Acharya includes that disclosure. Patent Owner's statement that "the preferred approach to dealing with perspective distortion/misalignment issues in check deposit systems, at the time of the invention, was ***post-capture*** image correction," PO Resp. 49, is mere attorney argument unsupported by persuasive evidence. We do not find that post-capture image correction was the preferred approach, that post-capture image correction was preferred to preventing distortion at the time of image capture, or that these two techniques would have been mutually exclusive. But even if post-capture image correction were the preferred approach, that would not undermine Petitioner's contentions. *See PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–98 (Fed. Cir. 2014) ("Our precedent, however, does not require that the motivation be the best option, only that it be a suitable option from which the prior art did not teach away."); *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012) ("This court has further explained that just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes." (citing *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994))); *Fulton*, 391 F.3d at 1200

("[O]ur case law does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide motivation for the current invention."); *see also Mouttet*, 686 F.3d at 1331 ("A reference may be read for all that it teaches, including uses beyond its primary purpose.").

As to Blackson, Petitioner argues that it is inapposite, as it describes image capture on ATM hardware, rather than mobile devices. Reply 7 (citing Ex. 2108, 2:65–3:9). We agree with Petitioner. Blackson states that automated banking machines (which we understand to be synonymous with ATMs) have drawbacks in that checks often must be precisely aligned for reading magnetic ink coding (MICR) on the checks. Ex. 2113, 2:60–3:1. One aspect of Blackson's solution is an improved transport system and aligning device for better positioning checks. *Id.* at 5:14–39. Patent Owner does not persuasively explain the relevance of Blackson, which is not asserted by Petitioner, to check image capture using mobile devices.

Patent Owner further argues that Nepomniachtchi also teaches pre-manual capture techniques for avoiding projective distortion and blur, such as prompting the user to take another picture if the first is blurry. PO Resp. 47 (citing Ex. 2105 ¶¶ 61, 62, 73, 85; Ex. 2108 ¶ 53); *see also id.* at 12 ("Nepomniachtchi also teaches that the mobile device has the 'ability to identify poor quality images' and 'if the quality of the image is determined to be poor, a user may be prompted to take another image.'" (quoting Ex. 2105 ¶ 62)), 36 ("[T]he Board previously found that this manual capture approach (as reflected in Nepomniachtchi) 'already provides a solution that addresses image distortions,' including '(1) utilizing the user's judgment (e.g., placing the camera directly above the document, rather than at an angle, to avoid image distortion) for the pre-capturing analysis and

'(2) performing the image quality analysis on the mobile device to quickly determine whether the image can be accepted, needs correction, or needs retaking while the user is still physically close to the document and before starting another task.'" (quoting Ex. 2108, 53)). Patent Owner argues that "Dr. Mowry could not identify any evidence suggesting that images captured by customers using Nepomniachtchi or ImageNet could not be processed successfully for deposit. Dr. Mowry also could not identify any evidence suggesting that the projective distortion solution employed by Nepomniachtchi did not work." PO Resp. 13 (citing Ex. 2116, 19:14–20:2, 21:19–22)).

Although Patent Owner does not expressly argue that that Nepomniachtchi's and ImageNet's teachings of pre-manual capture and post-capture processing solutions teaches away from a combination of Acharya and Luo, Patent Owner appears to argue that a skilled artisan would have been dissuaded from pursuing that combination because of the solutions provided by Nepomniachtchi and ImageNet. Once again, "mere disclosure of alternative designs does not teach away." *Fulton*, 391 F.3d at 1201. We see no persuasive evidence supporting such a contention or that Nepomniachtchi's and ImageNet's teachings, if applied by Petitioner, would have been incompatible with a combination of Acharya and Luo. Indeed, Patent Owner does not point to any statements in Nepomniachtchi, Blackson, Yoon, or ImageNet (references not relied upon by Petitioner) that would discourage a user from combining Acharya and Luo, or lead a skilled artisan in a direction divergent from that combination.

To be clear, it might be that a skilled artisan would have had reasons to combine Nepomniachtchi's server-side or pre-manual capture solutions with the teachings of Acharya, although that is not a combination Petitioner

is asking us to evaluate.[16] In any case, the fact that other solutions to projective distortion exist does not suggest that Luo's solution would have been inapplicable to Acharya. As we explain above, Petitioner presents strong evidence that it would have been. Pet. 33–36.

As to Patent Owner's third category of arguments, Patent Owner argues that a skilled artisan "would have been discouraged from incorporating Luo's technique into Acharya given the significant associated drawbacks." PO Resp. 53. This is a more explicit argument by Patent Owner that the prior art teaches away from Petitioner's proposed combination. According to the Federal Circuit:

> A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant.

Gurley, 27 F.3d at 553.

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[16] The findings of the Wells Fargo IPR panel relating to the features of Nepomniachtchi and Yoon and the solutions they provide for minimizing projective distortion (Ex. 2108, 45–69) are based on the particular facts of that proceeding, including the express teachings of those references, not present in the references advanced by Petitioner in this proceeding, and the particular arguments made by the petitioner in that proceeding. Thus, they are of little, if any, relevance to this proceeding. Patent Owner argues that Dr. Mowry admitted that Nepomniachtchi is directed to the same problem as Acharya and that Nepomniachtchi's methods of addressing projective distortion would be relevant to Acharya. PO Resp. 16–17 (citing Ex. 2116, 35:1–9, 124:12–23). That is not an admission that the particular features of Nepomniachtchi cited by Patent Owner are taught in or implicitly a part of Acharya.

First, Patent Owner argues that incorporating Luo's technique into Acharya's system would have imposed "additional processing overhead and complexity on the customer's device as compared to the existing manual capture system" and that "[t]his type of processing, especially when done in real-time, was considered computationally-intensive in 2009." PO Resp. 53 (citing Ex. 2115 ¶ 35). The only evidence Patent Owner offers to support this assertion is the testimony of its expert, who largely copies Patent Owner's argument and does not identify the basis for the testimony. As such, the testimony is entitled to little weight. *See* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight."); *see also Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) ("It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate."); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) ("Lack of factual support for expert opinion going to factual determinations, however, may render the testimony of little probative value in a validity determination."). We note that Luo describes its technique as implemented on conventional computing equipment on portable devices available prior to 2009 without mention of concerns over processing overhead. Ex. 1004, 8. Patent Owner's evidence is insufficient to establish that concerns over processing overhead would have dissuaded a skilled artisan from pursuing a combination of Acharya and Luo.

Patent Owner argues that the Board, in the Wells Fargo IPR, determined that implementing pre-capture monitoring and auto-capturing features on a mobile device would impose additional computational burdens on that mobile device. PO Resp. 25–26 (citing Ex. 2108, 29, 37–38). Patent

Owner argues that Petitioner ignores this finding. *Id.* at 26. Patent Owner overstates the Board's findings in the Wells Fargo IPR and their relevance to this proceeding.

In the Wells Fargo IPR, a Board panel determined that the petitioner in that proceeding did not provide a persuasive reason to combine the teachings of Nepomniachtchi and Yoon. Ex. 2108, 27–28. In that case, the petitioner argued that "one of ordinary skill in the art would have been motivated to combine Nepomniachtchi and Yoon to: (1) reduce the computational burden." Ex. 2108, 28. The petitioner in that proceeding argued that Nepomniachtchi's algorithm to correct skew (which was performed on the server) was computationally intensive, and that improving the user's ability to capture the image without skew would have minimized the need to use this algorithm and, accordingly, would have reduced the burden of computations performed by *the mobile device*. *Id.* Against this backdrop, the Wells Fargo IPR panel determined that adding pre-capture monitoring and auto-capturing features on Nepomniachtchi's mobile device (per the teachings of Yoon) would not have decreased computational burden *on the mobile device*, because Nepomniachtchi teaches correcting skew at the server, not the mobile device. *Id.* at 29. Instead, the Board panel accepted Patent Owner's argument that adding such features to Nepomniachtchi's mobile device would increase the computational burden at the mobile device. *Id.* Thus, the Board panel determined that Patent Owner's evidence undermined the petitioner's assertion (not made by Petitioner in this proceeding) that Yoon's teaching would reduce the computation burden at the mobile device:

> Significantly, Petitioner's argument rests on the premise that "the combination lowers the burden of the correction step" so

> that it would reduce the burden of the computation performed by the mobile device. Nepomniachtchi, however, teaches using the server to perform the correction step in its preferred embodiment. Notably, Nepomniachtchi teaches that "the server may clean up the image by performing auto-rotate, de-skew, perspective distortion correction, cropping, etc." and that "a server based implementation might be employed to off-load processing demands from the mobile device." Any reduction in the correction processing would result in an efficiency gain at the server, not the mobile device. Therefore, Petitioner does not explain sufficiently how adding Yoon's monitoring and capturing features on the mobile device would reduce the computation burden on the mobile device.

Id. at 30–31 (internal citations omitted). The Board panel further determined that Nepomniachtchi's skew-correction algorithm was computationally intensive because the petitioner's expert admitted as much, and reasoned that "a relevant artisan would have used the *server* to perform [Nepomniachtchi's] correction processing, instead of the mobile device, in order to avoid excessive burden on the mobile device, slower response times, and user dissatisfaction." *Id.* at 33. Thus, the Wells Fargo IPR panel found that Patent Owner's evidence undermined the petitioner's argument on the particular facts of that proceeding, including the particular technical features of prior art references not asserted here. We do not understand the Wells Fargo IPR panel to have made general findings of teachings away that would be applicable to prior art references not asserted in that proceeding. As such, the Wells Fargo IPR panel's findings are of marginal relevance here.

Second, Patent Owner argues that "alignment of the document relative to the camera is only one of many factors that impact the quality of a captured image, particularly when capturing an image of a check for deposit processing," and that adding Luo's automatic capture to Acharya's system

would have ignored those other factors, resulting in images not sufficient for deposit. PO Resp. 54–55; Sur-reply 17 ("[T]here is no dispute that the automatic capture technique taught by Luo triggers capture of an image based solely on whether the edges of the document line up with the reference lines displayed on the screen. As Dr. Creusere explains, a [person of ordinary skill in the art] would have been discouraged from using this technique for check image capture because there are a multitude of factors that impact whether a captured check image can be successfully processed for deposit, many of which have nothing to do with alignment or 'projective distortion' that Luo purportedly corrects." (citing Ex. 2115 ¶¶ 27, 28, 36)). According to Patent Owner, Luo's approach has "two drawbacks":

> (1) Luo's system will automatically capture images when the reference lines are aligned, even if the image is insufficient for deposit for other reasons not analyzed by Luo; and (2) Luo's system will not capture images when the reference lines are not aligned, even if the overall image is sufficient for deposit.

PO Resp. 55. Patent Owner argues that the first alleged drawback "results in an increase in the number of deposit errors" and the second "results in user frustration." *Id.* (citing Ex. 2115 ¶ 36). Patent Owner further argues that

> a [person of ordinary skill in the art] would have expected Luo's single-criterion automatic capture technique to be less effective and undesirably burden[some] to the mobile processor implement[ation] in comparison to [the] existing manual capture technique employed by Acharya and [Nepomniachtchi], and ImageNet, and would have been discouraged from making the combination, particularly in view of the limited and uncertain benefits of doing so described above.

Id. at 38.

In support of this argument, Dr. Creusere testifies that, in Petitioner's combination of Acharya and Luo, the camera "would automatically capture

a check image when the reference lines are substantially aligned with the edges of the check, regardless of the quality of the image with respect to other factors such as brightness, contrast, focus, background, legibility of critical information such as the MICR line, and so forth." Ex. 2115 ¶ 36 (citing Ex. 2105 ¶¶ 58–62). On the other hand, Dr. Creusere testifies, "the Acharya/Luo combination would also only capture images when the reference lines are at least substantially aligned with the edges of the check, even if the overall image was suitable for deposit." *Id.* According to Dr. Creusere, "[b]oth of these concerns would discourage a person of ordinary skill in the art from making the combination in the first place, particularly given the alternatives available in the art." *Id.* Dr. Creusere does not identify the basis for his testimony that an Acharya/Luo combination would ignore other image quality factors that he states a skilled artisan would have considered "critical." Thus, we assign little weight to this testimony. It also is inconsistent with Luo, which states that its "camera system 100 can be used to capture only precise, clear text data images, which can be downloaded to another location before any optical character recognition is performed," and that

> the present invention helps users to accurately and reliably capture an image of the front of an object, where the object plane 310 is substantially parallel to the image plane 320. Therefore, the projective distortion in the image is reduced, and the image is clearer and more accurate. With reduced projective distortion, it is more likely to perform an accelerated image capture process, such as an optical character recognition process performed on a text image, with high accuracy.

Ex. 1004, 7. Thus, Luo itself states that its image capture technique would have been sufficient to capture images of high image quality, which suggests that it would have been able to capture images of checks suitable for deposit.

Petitioner responds that Patent Owner's argument that the combination would replace manual capture with autocapture is misplaced because Acharya does not describe how it captures check images. Reply 9–10. As explained above, we agree. Petitioner also argues that, even if using autocapture, a skilled artisan would still apply judgement and knowledge in obtaining check images. *Id*. at 10–11. Petitioner points to Dr. Creusere, who testified on cross-examination that a skilled artisan would have understood that an image needs to have a sufficient light brightness and could manually adjust the position of a digital camera to achieve sufficient brightness, and that it was general logic and common sense that someone would want an acquired image to be in focus. Ex. 1037, 61:14–62:5, 67:3–7. Thus, a skilled artisan would have recognized that a user of the mobile device of Acharya and Luo would still have taken steps to ensure a high quality image, even with automatic capture.

Petitioner also introduces evidence, including testimony from Dr. Mowry, that camera phones in 2008 had features such as autofocus and automatic exposure controls. Reply 11–12; Ex. 1036 ¶¶ 28–34 (citing Exs. 1053–1055). Dr. Cruesere admitted as much. Ex. 1037, 67:13–21, 68:1–6. As noted above, a skilled artisan would have been an experienced engineer. We credit Dr. Mowry's testimony that Luo's autocapture feature would have been used with such admittedly known techniques. Ex. 1036 ¶¶ 28–34; Reply 11–12; *see also KSR*, 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."). Thus, we disagree with Patent Owner's argument that a skilled artisan would have been dissuaded from combining Acharya and Luo.

Patent Owner argues that the Wells Fargo IPR panel concluded that, in a combination of Nepomniachtchi and Yoon (once again, references not

asserted in this proceeding), the system would automatically capture an image as soon as the borders of the check aligned with the alignment guide, even if it the image was not suitable for capture. PO Resp. 55 (citing Ex. 2108, 59); *see also id.* at 29 ("[T]he Board agreed that there would be drawbacks to the proposed combination [of Nepomniachtchi and Yoon] given that it would 'automatically capture the image as soon as the borders of the check image aligned with the rectangular alignment guide, whether or not the image was suitable in other respects.' The same criticism would apply to the proposed combination with Luo." (quoting Ex. 2108, 59)), 29–30 ("The Board agreed with Patent Owner that a [person of ordinary skill in the art] 'would have no reason to expect that a system evaluating only alignment and/or brightness prior to capture would automatically capture check images that were suitable for deposit processing based on all of the criteria identified in Nepomniachtchi' and that 'replacing a user's judgment that is based on numerous factors, with an auto-capture system based solely on alignment, would not minimize the need for retaking the images, but would instead introduce additional errors,' such as capturing images when the check is 'upside down' or does not have 'MICR information [] in the correct location' or has inadequate 'resolution or focus.'" (quoting Ex. 2108, 61)). The Wells Fargo IPR panel based its findings on admissions by the petitioner in that case that combining Nepomniachtchi and Yoon would replace the user's judgment about whether the image was aligned. Ex. 2108, 58. The Wells Fargo IPR panel also relied on admissions from the expert witness for the petitioner in that proceeding regarding Yoon, a reference not asserted in this proceeding. *Id.* at 60–61. Thus, the Wells Fargo IPR panel made its findings and conclusions based on the particular record of that

proceeding, which considered different prior art and testimony than Petitioner asserts here.

Patent Owner further argues that "Petitioner has stated affirmatively that the prior art lacks the teachings required to determine, by monitoring an image for automatic capture, when the captured image will meet the requirements for deposit." PO Resp. 55–60; *see also* Sur-reply 21. Here, Patent Owner points to Petitioner's Motion for Summary Judgement of Enablement in the Texas case, which Patent Owner opposed, and Petitioner lost. PO Resp. 56 (citing Ex. 2114, 21); Tr. 45:20–47:9. Although the exhibit provided by Patent Owner is heavily redacted, it appears that, in the Texas case, Petitioner argued that the Specification of the '779 patent did not describe additional monitoring criteria to ensure that a check image is in a form suitable for deposit, and the prior art did not include the teachings missing from the '779 patent. Ex. 2114, 21–25. Thus, at most, Petitioner argued that the prior art did not provide more detail than the '779 patent itself. In any case, Patent Owner opposed that motion and Petitioner did not prevail. Thus, any such statements in Petitioner's Motion for Summary Judgement of Enablement are of marginal value here.

For its fourth category of arguments, Patent Owner contends that Luo describes its automatic capture as an alternative approach to manual capture, and that Luo does not state that automatic capture is necessary to reduce projective distortion or blurring. PO Resp. 57 (citing Ex. 1004, 6). According to Patent Owner, "a [person of ordinary skill in the art] reading Luo would expect that the same benefits could be achieved by simply displaying the reference lines on the screen and providing an 'indication' to the user when the lines are substantially parallel to the edges of the document, as described in Luo." *Id.* (citing Ex. 1004, 6–7). Patent Owner

argues that "Petitioner never explains why a [person of ordinary skill in the art] would have been motivated to go beyond the primary embodiment of Luo and add the automatic capture alternative." *Id.*; *see also* Sur-reply 11 ("Petitioner offers no reason why a [person of ordinary skill in the art] would have been motivated to adopt the automatic capture option of Luo if the manual capture embodiment already provided the same benefits."). Patent Owner argues that using Luo's reference lines with manual capture, and without automatic capture, "would . . . provide the stated benefits of Luo, [and] would also avoid the downsides of the combination described above, such as increased errors and user dissatisfaction due to automatically capturing images at the wrong times." PO Resp. 57–58 (citing Ex. 2115 ¶ 35); *see also id.* at 38 ("The Petition provides no explanation as to why, even if a [person of ordinary skill in the art] would be motivated to aid an alignment guide monitored by the processor, it would then choose to add auto-capture, which would strip away human ability to ensure that other criteria that are necessary for a successful deposit are satisfied."). Patent Owner argues that "there must be a factual basis for why a [person of ordinary skill in the art] would strip away human judgment regarding the multiple factors that the Reply acknowledges can result in an image of sufficient quality, and replace it with automatic capture." Sur-reply 11 (citing Ex. 2115 ¶ 35).[17]

[17] Patent Owner also argues that the Wells Fargo IPR panel was not persuaded that a skilled artisan would have been motivated to add Yoon's automatic capture feature to Nepomniachtchi. Sur-reply 10–11 (citing Ex. 2108, 54). The Wells Fargo IPR panel reached its findings and conclusions based on the particular facts of that case, including prior art references not at issue in this proceeding. Thus, they are of marginal, if any, relevance here.

In response, Petitioner argues that, "as Luo makes clear that, once the mobile device determines that the alignment guide monitoring criterion is satisfied, capturing an image using autocapture (instead of manual capture) is merely a choice between the two ways Luo gave to capture an image, both of which are equally suitable." Reply 8 (citing Ex. 1002 ¶ 119).

As we explained above, Acharya does not explain in detail how images of checks are captured (or what role human judgement would play), so Patent Owner does not have a basis to argue that Petitioner's combination would "strip away human judgment" from Acharya's technique. And as we preliminarily observed in the Institution Decision (Dec. 54–55), Luo describes both the reference lines and the automatic capture feature as beneficial to reducing projective distortion. Specifically, "[t]he reference line 135 is used to guide the user of the system 100 to position the image sensor 115 in an appropriate orientation with respect to, for example, a business card object," Ex. 1004, 4, and "when the straight edge 205 displayed on the preview window 125 is substantially parallel to the corresponding reference line 135, the system 100 can automatically capture the selected image and provide the user with or without instructions," *id.* at 6. Luo's reference lines help the user position the camera in an orientation that will result in the camera automatically capturing an image of the document. These features work together to capture an image with reduced projective distortion and the current record suggests that the combined features would have improved Acharya in the same way. Ex. 1002 ¶ 83; *see KSR*, 550 U.S. at 417. Moreover, as explained above, we find that the prior art does not teach away from automatic capture of images.

However, even if the evidence suggested that manual capture had advantages over automatic capture (it does not), "just because better

alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes." *Mouttet*, 686 F.3d at 1334; *accord Fulton*, 391 F.3d at 1200. Rather, Luo "may be read for all that it teaches, including uses beyond its primary purpose." *Mouttet*, 686 F.3d at 1331. Luo expressly teaches automatic capture used in conjunction with reference lines, and describes the combined solution as one technique to reduce projective distortion in a captured image, resulting in more accurate optical character recognition. Ex. 1004, 6–7. For the reasons given above, we find that this teaching would have been similarly applicable to Acharya's images of checks captured and processed by optical character recognition, and would have improved the optical character recognition in a similar way, resulting in images of checks more likely to be in a form sufficient for deposit. *See KSR*, 550 U.S. at 417.

Patent Owner argues that the combination of Acharya and Luo is a situation in which disadvantages outweigh uncertain benefits. PO Resp. 56 (citing *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1329 (Fed. Cir. 2019)). According to Patent Owner,

> the added complexity and disadvantages of replacing the user's decision to manually capture with an automatic capture triggered by alignment with a guide is insufficient to motivate a [person of ordinary skill in the art] to make the combination where a [person of ordinary skill in the art] knew of other, simpler solutions to the same problem that did not have the same drawbacks.

Sur-reply 15 (citing *Henny Penny*, 938 F.3d at 1329). We disagree. As explained above, the benefits of Luo's alignment guide and automatic capture to document capture, such as in Acharya, are not uncertain and, instead, are straightforward and expressly stated in Luo. Patent Owner's evidence of disadvantages is unpersuasive and rests primarily on its analysis

of prior art references not asserted by Petitioner and of marginal relevance to this proceeding.

In sum, on the complete record, Petitioner has shown that a skilled artisan would have had reasons with rational underpinning to combine the teachings of Acharya and Luo, with a reasonable expectation of success.

c) Claims 2, 7–10, and 15–17

Claim 10 is independent and recites a "non-transitory computer-readable medium comprising instructions for depositing a check," with instructions that track the functional limitations of claim 1. Petitioner cites to Acharya as teaching a computer-readable medium (memory 104) with computer-readable instructions for depositing a check. Pet. 66–69. We agree, and find that Acharya teaches a computer-readable medium with instructions for depositing a check. Patent Owner does not contest this allegation.

As to the remaining limitations of claim 10, Petitioner largely refers to its analysis of claim 1. *Id.* at 69–71. Patent Owner does not argue claim 10 separately. For the reasons given for claim 1, we find that Acharya and Luo teach each limitation of claim 10 and that a skilled artisan would have had reasons, with rational underpinning, to combine the teachings of Acharya and Luo, with a reasonable expectation of success.

Claim 2 depends from claim 1 and adds "wherein the processor is further configured to obtain financial information pertaining to the check from the captured image of the check." Petitioner cites to Acharya's description of using optical character recognition to recognize information such as the MICR line, routing number, and account number from a check.

Pet. 57–58 (citing Ex. 1003, 2:50–56, 4:63–5:6). Based on this evidence, we find that Acharya teaches the additional limitation of claim 2.

Claims 7, 8, and 9 depend from claim 1 and add that the processor is configured to determine that the image of the check aligns with the alignment guide when at least one, two, and three edges, respectively, align with one, two, and three line portions of the alignment guide. Claims 15, 17, and 16 depend from claim 10 and add substantially the same limitations. As Petitioner points out, Figure 5 of Luo shows three reference lines with which the image of a business card can be aligned. Pet. 58–65. Luo states that "those skilled in the art should recognize that different numbers of reference lines 135 may be used according to different embodiments of the present invention, such as two, three, four or more baselines 135." Ex. 1004, 5. Based on this evidence, we find that Luo teaches the additional limitations of claims 7–9 and 15–17.

Patent Owner does not argue claims 2, 7–9, and 15–17 separately.

4. Conclusion of Obviousness

As explained above, the combination of Acharya and Luo teaches each limitation of claims 1, 2, 7–10, and 15–17. Petitioner has introduced persuasive evidence that a skilled artisan would have had reasons to combine the teachings of Acharya and Luo with a reasonable expectation of success. Patent Owner does not argue or introduce evidence of objective indicia of nonobviousness. In sum, upon consideration of all the evidence, we conclude that Petitioner has proved by a preponderance of the evidence that claims 1, 2, 7–10, and 15–17 would have been obvious over Acharya and Luo.

III. PATENT OWNER'S MOTION TO EXCLUDE

A. Exhibits 1053, 1054, and 1055

Patent Owner argues that Exhibits 1053–1055, which it describes as web page printouts of articles from a website called "Mobile Gazette" regarding the "Toshiba Portege G910 / G920," "i-Mate Ultimate 9502," and "Sony Ericsson XPERIA X1," respectively, are hearsay under Federal Rule of Evidence 802 and no hearsay exception applies. Mot. Exclude 1–3.

Petitioner argues that there is no dispute that the exhibits are authentic, the exhibits are probative, and the exhibits were relied upon and cited by Dr. Mowry in his testimony. Opp. Exclude 2–5.

In its Reply, Patent Owner argues that, although "an expert is entitled to rely on inadmissible evidence in reaching his or her opinions, an expert's citation to hearsay does not render the underlying information admissible, nor does relevance substitute for admissibility under the Federal Rules." Reply Exclude 1 (citing *Unified Patents Inc. v. American Patents LLC*, IPR2019-00482, Paper 132, at 53 (PTAB Aug. 3, 2022)).

We are persuaded that Exhibits 1053–1055 are admissible.

First, the exhibits are not hearsay. A statement is hearsay if it is one "the declarant does not make while testifying at the current trial or hearing" and "a party offers in evidence *to prove the truth of the matter asserted* in the statement." Fed. R. Evid. 801(c) (emphasis added).[18] In this case, Exhibits 1053–1055 are not offered to prove the truth of the matter asserted in these prior art articles; instead the exhibits are offered for the fact that their contents were in the prior art and available to those of ordinary skill in

[18] With some exceptions that do not apply here, the Federal Rules of Evidence apply to this proceeding. *See* 37 C.F.R. § 42.62(a), (b).

the art. *See*, *e.g.*, *Joy Techs., Inc. v. Manbeck*, 751 F. Supp. 225, 233 n.2 (D.D.C. 1990), *aff'd*, 959 F.2d 226 (Fed. Cir. 1992) ("A prior art document submitted as a 'printed publication' . . . is offered simply as evidence of what it describes, not for proving the truth of the matters addressed in the document. Therefore, it is not hearsay under Fed.R.Evid. 801(c)."). It does not matter whether the statements in the exhibits are true; what is relevant for our analysis is what was stated in the exhibits during the operative time period. *See Reis Biologicals, Inc. v. Bank of Santa Fe*, 780 F.2d 888, 890 (10th Cir.1986) (statements offered not for their truth or falsity, but for the fact that they were made, are for a non-hearsay purpose).

Second, even if the exhibits were hearsay, they are still admissible. As an expert, Dr. Mowry may base his opinion "on facts or data in the case that the expert has been made aware of" and such sources "need not be admissible for the opinion to be admitted." Fed. R. Evid. 703. Patent Owner has not filed a motion to exclude Dr. Mowry's testimony based on those exhibits. *See* Mot. Exclude. Thus, Dr. Mowry's testimony relying on Exhibits 1053–1055 has been properly admitted.

An expert relying on evidence is not, by itself, sufficient for the admission of the evidence. Instead, if the evidence is otherwise inadmissible, such as hearsay, the evidence may only be admitted "if their probative value in helping the [fact finder] evaluate the opinion substantially outweighs their prejudicial effect." Fed. R. Evid. 703. On one hand, to the extent we consider the portions of Dr. Mowry's testimony quoting Exhibits 1053–1055, having the underlying exhibits is helpful to judge Dr. Mowry's credibility. On the other hand, Patent Owner has not identified any prejudice associated with the admission of the exhibits. *See* Mot. Exclude. Indeed, whether we admit or exclude the exhibits, the relevant language is

quoted in Dr. Mowry's testimony and in the record, minimizing any potential prejudice. Thus, the probative value of the exhibits that are quoted in admissible testimony substantially outweighs the unidentified prejudice.

Accordingly, Patent Owner's motion to exclude Exhibits 1053–1055 is denied.

B. Exhibit 1056

Patent Owner argues that Exhibit 1056 contains "excerpts of an expert report of Dr. Omid Kia, served by Petitioner in [the Texas case]." Mot. Exclude 3. Patent Owner argues that Exhibit 1056 is irrelevant under Federal Rules of Evidence 401 and 402 because it is not cited in a brief. *Id.* at 3–4. Neither party cites or relies upon Exhibit 1056 in its briefs, and we do not rely on that exhibit in this Decision. Accordingly, we dismiss Patent Owner's motion to exclude Exhibit 1056 as moot.

IV. CONCLUSION[19]

Petitioner has shown by a preponderance of the evidence that claims 1, 2, 7–10, and 15–17 would have been obvious. Patent Owner's Motion to

[19] 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).

Exclude is denied as to Exhibits 1053–1055 and dismissed as moot as to Exhibit 1056.

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 7–10, 15–17	103(a)	Acharya, Luo	1, 2, 7–10, 15–17	
Overall Outcome			1, 2, 7–10, 15–17	

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED, based on a preponderance of the evidence, that claims 1, 2, 7–10, 15–17 are unpatentable;

FURTHER ORDERED that Petitioner's Motion to Exclude (Paper 59) is *denied* as to Exhibits 1053–1055 and *dismissed as moot* as to Exhibit 1056;

FURTHER ORDERED, because this is a final written decision, the parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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