Trials@uspto.gov
571-272-7822

Paper 47
Date: May 10, 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.

IPR2022-00076
Patent 10,769,598 B1

Before MICHAEL R. ZECHER, TERRENCE W. McMILLIN, and JULIET MITCHELL DIRBA, *Administrative Patent Judges.*

DIRBA, *Administrative Patent Judge*.

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

On May 11, 2022, we instituted an *inter partes* review of claims 1–20 of U.S. Patent No. 10,769,598 B1 (Ex. 1001, "the '598 patent"). Paper 20 ("Inst. Dec."). Having considered the full record at trial, and for the reasons explained below, we determine that Petitioner has shown that claims 1 and 8–20 of the '598 patent are unpatentable, but that Petitioner has not shown that claims 2–7 of the '598 patent are unpatentable.

I. BACKGROUND

A. History of this Proceeding

On November 17, 2021, PNC Bank N.A. ("Petitioner") filed a Petition requesting *inter partes* review of claims 1–20 of the '598 patent (Paper 3, "Pet."), and Petitioner submitted a declaration from Dr. Todd Mowry in support (*see* Ex. 1002). During the preliminary proceeding, United Services Automobile Association ("Patent Owner") filed a preliminary response (Paper 10), Petitioner filed a pre-institution reply (Paper 14), and Patent Owner filed a pre-institution sur-reply (Paper 18).[1] On that record, we determined that Petitioner had demonstrated a reasonable likelihood that it would prevail in establishing the unpatentability of at least one challenged claim, and we instituted an *inter partes* review of all challenged claims on all asserted grounds. Inst. Dec. 46–47.

During trial, Patent Owner filed a Response (Paper 26, "PO Resp."), and in support, Patent Owner submitted testimony from Dr. Charles Creusere (*see* Ex. 2031). Petitioner then filed a Reply (Paper 33, "Pet. Reply"), which relied on an additional declaration from Dr. Mowry

[1] Papers 9, 13, and 16 are the confidential, sealed versions of these three papers. *See* Inst. Dec. 2 n.1, 45–46.

(*see* Ex. 1029). Finally, Patent Owner filed a Sur-reply (Paper 42, "PO Sur-reply"). In addition, Patent Owner twice deposed Dr. Mowry and filed the corresponding transcripts (*see* Ex. 2020; Ex. 2047), and Petitioner deposed Dr. Creusere and filed the corresponding transcript (*see* Ex. 1033).

An oral hearing in this proceeding was held on February 9, 2023, and a transcript of the hearing is included in the record. Paper 46 ("Tr.").

B. Related Matters

The parties indicate that Patent Owner asserted the '598 patent against Petitioner in *United Services Automobile Association v. PNC Bank, N.A.*, 2:21-cv-00246 (E.D. Tex.) ("*PNC III*"). Pet. 2; Paper 6, 2. The parties identify two other district court litigations pending between the parties: *United Services Automobile Association v. PNC Bank N.A.*, Case No. 2:20-cv-00319 (E.D. Tex.) ("*PNC I*") and *United Services Automobile Association v. PNC Bank N.A.*, Case No. 2:21-cv-00110 (E.D. Tex.), which was consolidated with *PNC I*. Pet. 2–3; Paper 6, 2–3 (Patent Owner's Mandatory Notices).

The parties identify no other PTAB proceedings that challenge the '598 patent, but identify the following proceedings that involve related patents:[2]

Challenged Patent	Case No.	Petitioner
US 10,013,605	CBM2019-00029	Wells Fargo Bank, N.A.
	IPR2020-01742	Mitek Systems, Inc.
	IPR2021-01399	PNC Bank N.A.

[2] The parties' mandatory notices also identify thirteen other Board proceedings involving the parties that challenge unrelated patents, which we do not list here. *See* Pet. 2–3; Paper 6, 2–3.

Challenged Patent	Case No.	Petitioner
US 10,402,638	IPR2020-01516	Wells Fargo Bank, N.A.
	IPR2022-00049	PNC Bank N.A.
	IPR2022-00050	PNC Bank N.A.

Of these, IPR2020-01516 was terminated during the preliminary proceeding, and the Board denied institution of the other five petitions.

C. The Grounds

We instituted trial on the following grounds of unpatentability:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–16, 18–20	103(a)[3]	Garcia[4], Byrne[5], Singfield[6]
17	103(a)	Garcia, Byrne, Singfield, Adusumilli[7]

See Pet. 7; Inst. Dec. 3.

[3] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. The '598 patent claims priority to an application filed before that date, so we refer to the pre-AIA version of § 103. *Accord* Pet. 5 & n.1. Our findings and analysis would be the same under the current version of the statute.

[4] WO 2005/043857 A1, published May 12, 2005 (Ex. 1003). Petitioner relies on a certified translation of this publication, which also appears in Exhibit 1003.

[5] US 2006/0249567 A1, filed Feb. 9, 2006, published Nov. 9, 2006 (Ex. 1004).

[6] US 2005/0097046 A1, published May 5, 2005 (Ex. 1005).

[7] US 2003/0097592 A1, published May 22, 2003 (Ex. 1007).

D. Summary of the '598 patent

The '598 patent is titled "Systems and Methods for Remote Deposit of Checks." Ex. 1001, code (54). The application leading to this patent was filed on September 19, 2017, claiming priority via continuation applications to an application filed on October 31, 2006. *Id.* at codes (22), (63).

The '598 patent explains that there are advantages and disadvantages to using a check to purchase goods or services. *See* Ex. 1001, 1:30–2:20. One disadvantage is that "receiving a check may put certain burdens on the payee, such as the time and effort required to deposit the check," because "depositing a check typically involves going to a local bank branch and physically presenting the check to a bank teller." *Id.* at 2:10–15. To address this, the '598 patent provides a method "for remotely redeeming a negotiable instrument," such as a check, using "a customer's general purpose computer." *Id.* at 2:41–44, 2:63–66.

Figure 1 (reproduced below) depicts a system in which the described method may be employed. Ex. 1001, 3:26–27, 3:66–67.

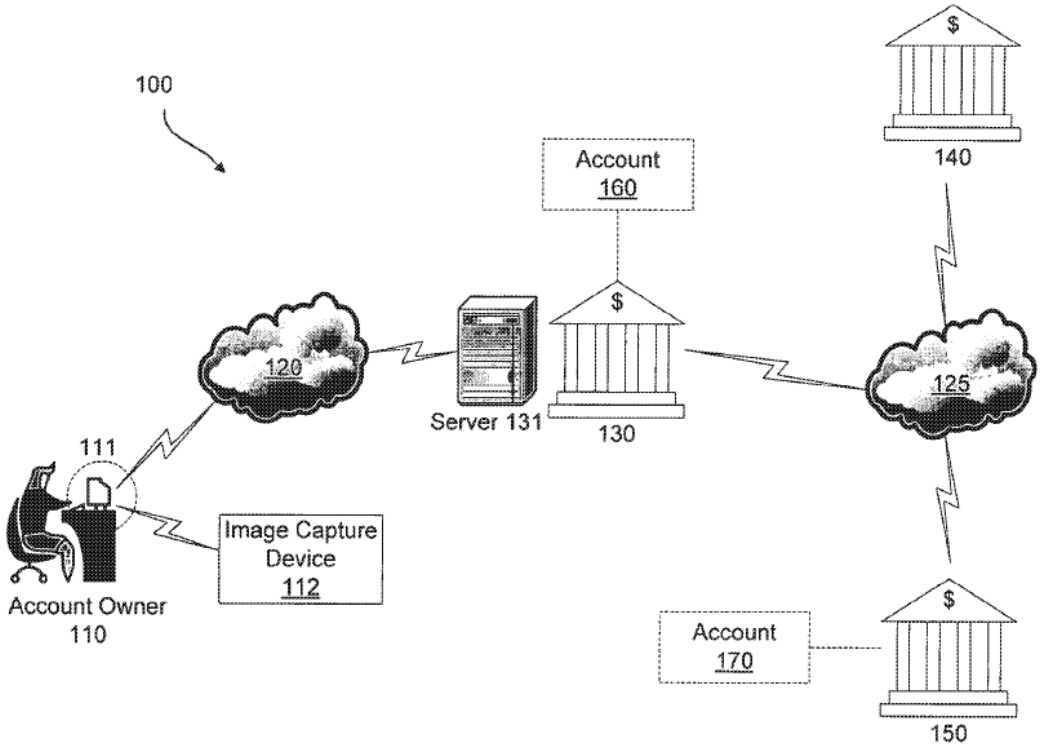

FIGURE 1

Figure 1 (shown above) illustrates system 100, which includes: (a) general purpose computer 111 and image capture device 112 associated with account owner 110 (e.g., a bank customer at his private residence), and (b) several financial institutions 130, 140, and 150 (e.g., banks). *Id.* at Fig. 1, 3:65–4:5, 7:19–25. In operation, account owner 110 generates an image of a check with image capture device 112 and sends the image to financial institution 130 via general purpose computer 111. *Id.* at 4:6–10, 9:57–61. After receiving the check image, financial institution 130 processes the check image, communicates with other financial institutions (e.g., 140 and 150) to clear the check, and deposits the check value into owner 110's account 160. *Id.* at 9:64–10:2, 10:3–25.

Figure 5 (reproduced below) is a block diagram of components of financial institution electronics 500 (also referred to as "server 500") and account owner's computer 530. Ex 1001, 10:36–44.

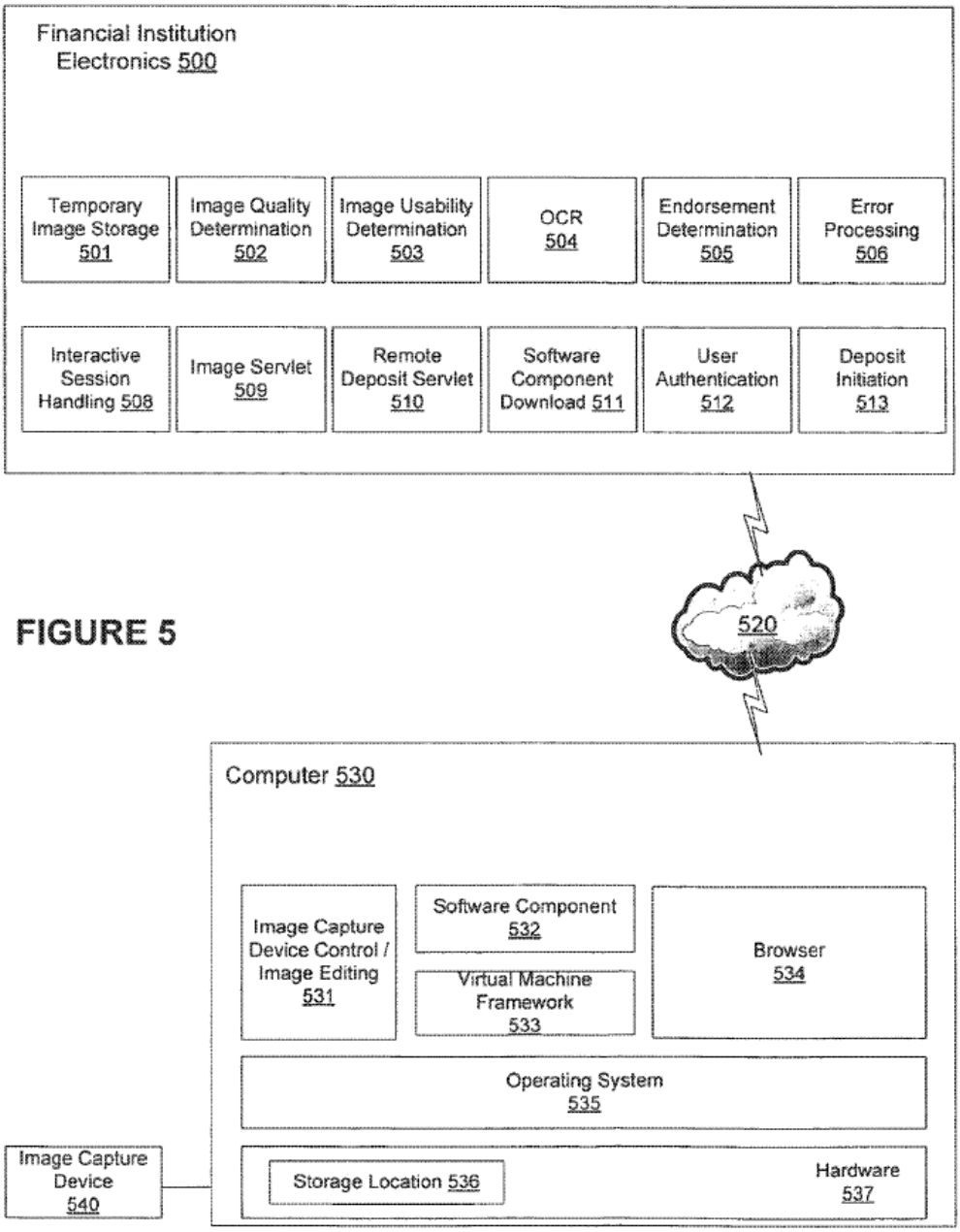

FIGURE 5

Figure 5 (shown above) is a block diagram illustrating the components of server 500 and computer 530. *Id.* at 3:39–43, 10:36–38. Server 500 provides a software component 532 to computer 530, which "allows the financial institution to control certain aspects of check image creation and delivery by the computer 530." *Id.* at 10: 45–52. Server 500 also includes, among other things, a subsystem for user authentication 512, which may require a username and password from the user (*id.* at 10:58–60); remote

deposit servlet 510 for receiving "an identification of an account for deposit of a check[] and an amount of said check" (*id.* at 11:1–5); image servlet 509 for receiving an image of the check from computer 530 (*id.* at 11:16–19); subsystems 502, 503 to analyze the check image for quality and usability (*id.* at 11:28–40); OCR 504 for performing optical character recognition (*id.* at 11:55–57); subsystem 505 to verify that the check is endorsed (*id.* at 12:42–44); and error processing 506 to check for errors, determine if a check was previously deposited, and compare an OCR amount with the amount provided by the customer (*id.* at 12:1–8, 12:18–21).

E. Challenged Claims

Petitioner challenges all 20 claims of the '598 patent. Of these, claims 1, 10, and 15 are independent. Claim 1 is illustrative and recites:

> 1. [p] A method of facilitating remotely depositing funds into a user's account with a bank's computing system and without using an Automatic Teller Machine (ATM), comprising:
>
> [a] providing a remote deposit application for download to a customer device, wherein the remote deposit application comprises computer-executable instructions that, when executed by a processor, provide a user-interface and control a camera associated with the customer device to facilitate capturing at least one electronic image of a check;
>
> [b] receiving at the bank's computing system, via the user-interface on the customer device: authentication data, an electronic identification of an account for receipt of a value associated with the check, an electronic indication of the value associated with the check, and the at least one electronic image of the check;
>
> [c] determining whether the check was previously deposited using the at least one electronic image of the check; and

> [d] initiating and/or logging a first deposit of the value to the account via the bank's computing system unless the bank's computing system determines from the at least one electronic image of the check that the check was previously deposited.

Ex. 1001, 15:39–62 (reference letters added).

II. ANALYSIS

A. Legal Standards

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The legal question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of obviousness or nonobviousness.[8] *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966). One seeking to establish obviousness based on more than one reference also must articulate sufficient reasoning with rational underpinnings to combine teachings. *See KSR*, 550 U.S. at 418.

In an *inter partes* review, the petitioner has the burden of proving unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e). The burden of persuasion does not shift to the patentee. *Dynamic*

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[8] The record does not include allegations or evidence of objective indicia of nonobviousness. *See* Tr. 46:21–47:1.

Drinkware, LLC v. Nat'l Graphics, Inc., 800 F.3d 1375, 1378 (Fed. Cir. 2015).

We implement procedures to facilitate a just, speedy, and inexpensive resolution of the proceeding (*see* 37 C.F.R. § 42.1(b)), and to that end, we place limitations on the contents of reply and sur-reply briefs and the parties' oral hearing presentations. Any arguments presented in the Reply or Sur-reply that are not fairly responsive to arguments raised in the preceding merits brief are untimely and forfeited. *See id.* § 42.23(b) (limiting scope of replies and sur-replies); Trial Practice Guide[9] 73–74 (explaining that "replies and sur-replies can help crystalize issues for decision" but cannot "proceed in a new direction with a new approach" or belatedly raise new issues or evidence); *see also* Trial Practice Guide 73 (explaining that a petitioner "may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability"). Similarly, any arguments for patentability that Patent Owner did not raise in the Response are forfeited. *See* Paper 21 (Scheduling Order), 8 (cautioning Patent Owner that "any arguments not raised in the response may be deemed waived");[10] Trial Practice Guide 52; *see also In re NuVasive, Inc.*, 842 F.3d 1376, 1380–82 (Fed. Cir. 2016) (holding that argument raised in the preliminary response but not raised in a patent owner response was waived). We limited the parties' oral hearing presentations to arguments made in their

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[9] PTAB Consolidated Trial Practice Guide (Nov. 2019), *available at* https://www.uspto.gov/TrialPracticeGuideConsolidated.

[10] *See In re Google Tech. Holdings LLC*, 980 F.3d 858, 862–63 & n.8 (Fed. Cir. 2020) (explaining that "forfeiture is the failure to make the timely assertion of a right" and noting that the court and parties have sometimes used the term "waiver" when applying the doctrine of forfeiture).

briefs. Paper 39 (Order Setting Argument), 2–3; *see* Trial Practice Guide 85–86. Any new arguments raised at oral hearing are untimely and also forfeited. *See also Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293, 1301 (Fed. Cir. 2016) (holding Board erred by relying on argument first presented at oral hearing).

B. The Level of Ordinary Skill in the Art

Our reviewing court has explained that "the level of skill in the art is a prism or lens through which a judge, jury, or the Board views the prior art and the claimed invention." *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (citing *Al-Site Corp. v. VSI International, Inc.*, 174 F.3d 1308, 1324 (Fed. Cir. 1999)). "This reference point prevents these factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness." *Id.*

Petitioner asserts that the level of ordinary skill in the art corresponds to "a bachelor's degree in electrical engineering, computer science, computer engineering, or equivalent field" and "two years of prior experience with image capturing/scanning technology, involving transferring and processing of image data to and at a server." Pet. 14 (citing Ex. 1002 ¶ 45). Petitioner further asserts that "[l]ess work experience may be compensated by a higher level of education and vice versa." *Id.* For purposes of the Institution Decision, we adopted Petitioner's proposal (Inst. Dec. 16), and neither party alleges that a different level of ordinary skill should be applied in this proceeding (*see* PO Resp. 5; Pet. Reply).

In this Decision, we again adopt the level of ordinary skill proposed by Petitioner. We are satisfied that it generally comports with the level of

skill necessary to understand and implement the teachings of the '598 patent and the asserted prior art. *Accord* Inst. Dec. 15–16.

C. Claim Construction

We interpret claim terms using "the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b)." 37 C.F.R. § 42.100(b). Under the principles set forth by our reviewing court, the "words of a claim 'are generally given their ordinary and customary meaning,'" as would have been understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)).

In the Petition, Petitioner states that it is unnecessary to construe any claim terms or phrases (Pet. 12–14), but for two phrases in claim 1, Petitioner specifically argues that the prior art teaches or suggests the phrase under each of two alternate meanings (*id.* at 34–35, 37). In the Institution Decision, we agreed with Petitioner's primary understanding of these phrases and, as a result, did not reach the alternative contentions. Inst. Dec. 33 n.18, 38 n.21.

At trial, Patent Owner states that claim construction is unnecessary to resolve the issues disputed in this proceeding. PO Resp. 6; Tr. 46:4–16. Petitioner agrees, but contends that Patent Owner's arguments regarding dependent claim 3 are premised on a narrowing construction of one of its terms. Tr. 15:4–16:2. Patent Owner contends that the plain and ordinary meaning of the terms in that claim should apply. *Id.* at 46:12–16.

We agree that it is not necessary to expressly construe any claim terms or phrases in this proceeding. *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))).

D. Summary of Asserted Prior Art

1. Garcia (Ex. 1003)[11]

Garcia describes a method of transmitting a digital image of a check from a mobile device to a financial institution (such as a bank) for validation, processing, and storage. Ex. 1003, Abstr., 1:6–13, 4:1–18. In this way, a check can be "deposit[ed] into the existing account at a banking institution . . . by a user using a mobile device that incorporates a camera." *Id.* at 4:14–16. According to Garcia, its "system achieves greater simplicity, speed, and security . . . in depositing checks[] by replacing the traditional check reader with a multi-purpose mobile device." *Id.* at 7:18–22; *see id.* at 7:22–8:14 (further explaining these benefits).

Figure 1 (reproduced below) illustrates an example mobile device and financial institution that can use Garcia's method. Ex. 1003, 9:11–18.

[11] The English translation of Garcia begins on page 28 of Exhibit 1003. Unless otherwise noted, we follow the parties' convention and cite to pages and lines within the English translation.

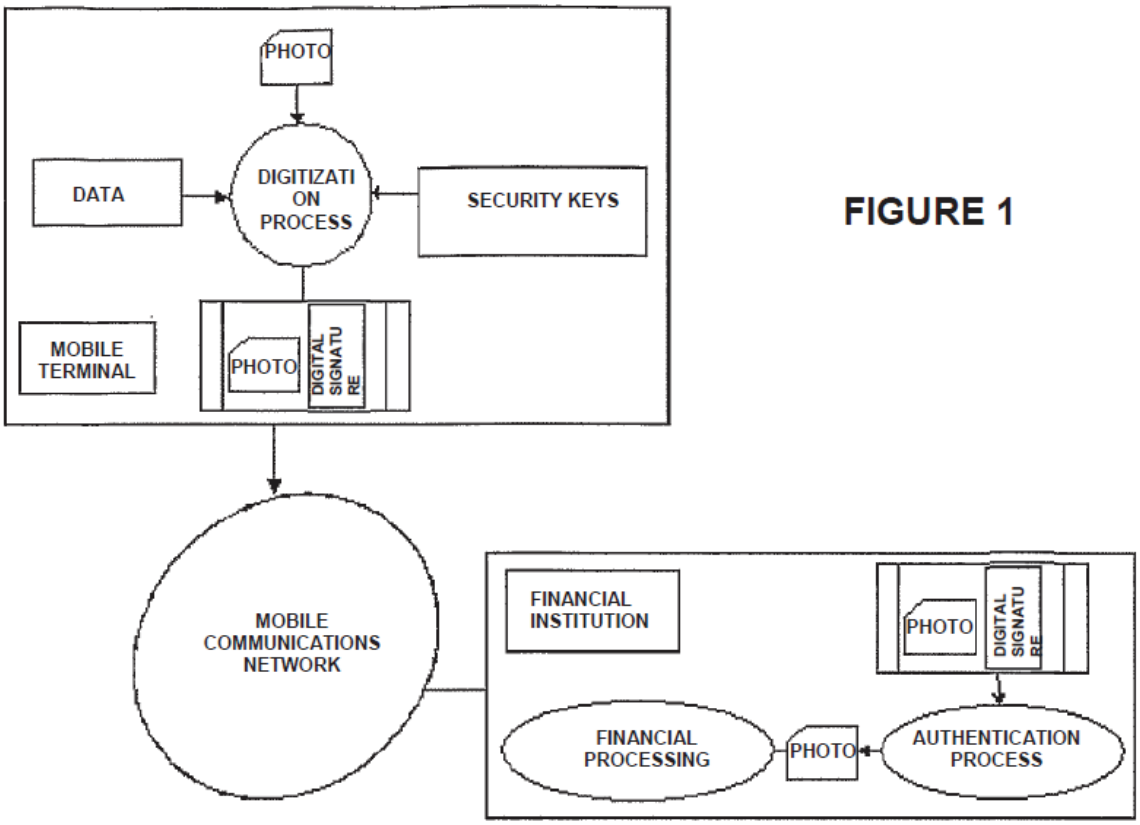

FIGURE 1

Figure 1 (shown above) includes a mobile terminal and a financial institution that are connected via a mobile communications network.

In Garcia's method, a "user opens a computer application in the mobile telephone in which an interactive session is established with the receiving institution." Ex. 1003, 9:21–10:3; *see also id.* at 5:9–13. Then, the user enters "user recognition data, consisting of security keys for the user's identification and authentication . . . as well as data associated with the document itself, such as the amount." Ex. 1003, 5:14–20; *see also id.* at 10:4–9. The mobile device captures a digital image of the document and transmits both the digital image and the user recognition data to the institution. *Id.* at 5:21–6:5; *see also id.* at 10:10–18. The institution "[r]ecogniz[es], verif[ies], and electronically treat[s] and process[es] the information received" using computer equipment. *Id.* at 6:8–10, 11:7–19.

Ultimately, the institution deposits the amount of the check into the user's account. *Id.* at 4:9–18.

2. Byrne (Ex. 1004)

Byrne "provides a browser plug-in that allows a bank customer to scan checks using a personal computer and deposit the checks via the browser to a bank account." Ex. 1004 ¶ 3; *see also id.* ¶ 42 (explaining that the description refers to a scanner but "the invention covers . . . any type of capturing device").

According to Byrne, "[a]pplication software can be packaged in two basic forms," which it refers to as a "fat application" (which "stays on [the] machine") and a "thin client" (which is "downloaded with each invocation of the application software"). Ex. 1004 ¶¶ 45–46. Byrne prefers thin clients, which provide "security with ease and speed of software maintenance." *Id.* ¶ 46; *see also id.* ¶ 45 (discussing the disadvantages of fat applications).

Figure 1 of Byrne is reproduced below.

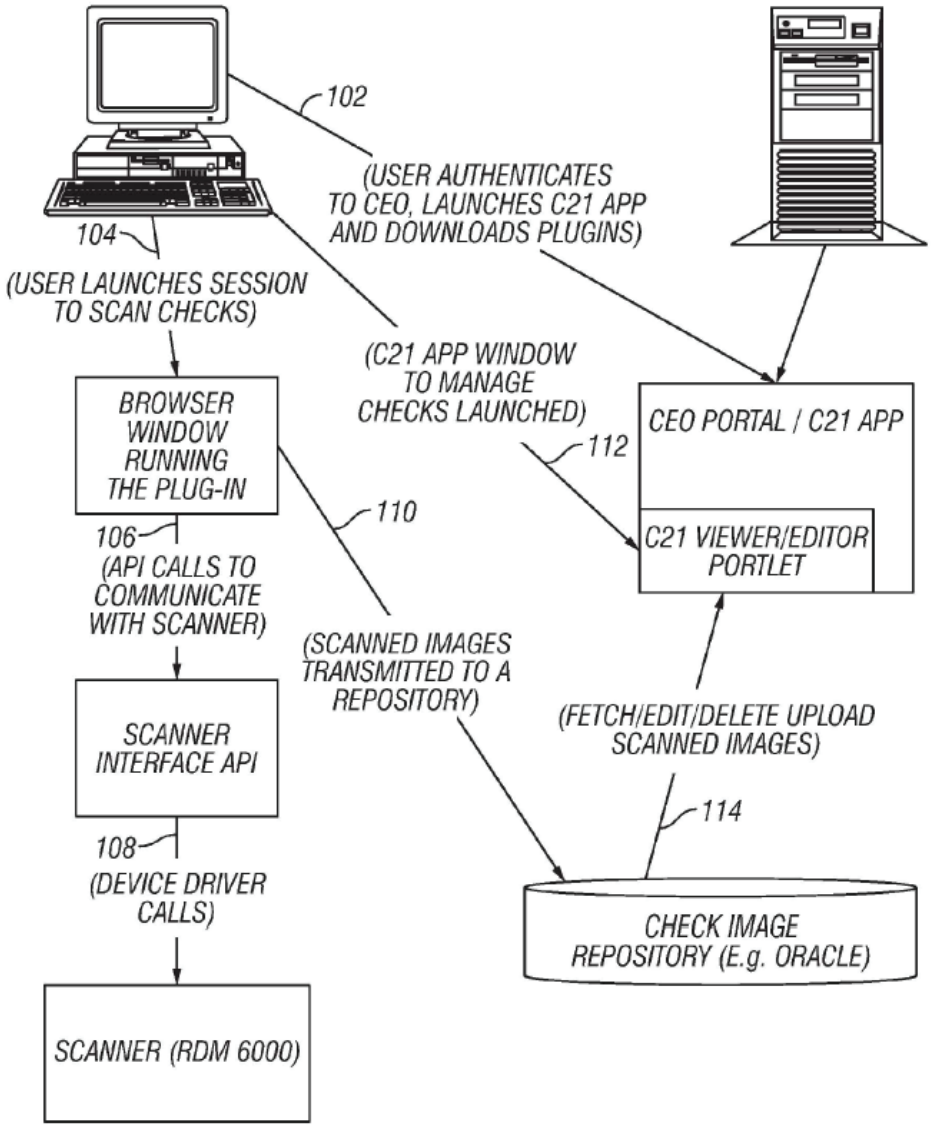

FIG. 1

Figure 1 of Byrne (shown above) is a flow diagram of Byrne's method of remotely depositing a check using a thin client application. Ex. 1004 ¶¶ 34, 47. In this method, a client personal computer (PC) authenticates with a desktop deposit application ("C21 App") (step 102). *Id.* ¶ 47. "After authentication, C21 App is launched and the appropriate desktop plug-in(s) is downloaded onto the client PC." *Id.* Then, "[t]he user launches a session for scanning checks from the browser window running the plug-in(s)" (step

104). *Id.* ¶ 48. "Scanner interface APIs [application program interfaces] are called from the browser plug-in(s) for communicating with a scanning device that is communicably connected to the PC" (step 106), and "[t]he scanner APIs make device driver calls to the scanner" (step 108). *Id.* After a check is scanned, "the browser window running the plug-in(s)" transmits the images to C21 App (step 110), and C21 App allows the user to view and edit commands related to stored check images (step 112) and to perform functions such as fetch, edit and delete on the images (step 114).

3. Singfield (Ex. 1005)

Singfield describes "a method and apparatus for [w]irelessly depositing paper checks that are deposited from [a] home computer, desktop office computer, [or] mobile device that is Internet capable" using an "online account management system (OMS), which acts as a virtual teller." Ex. 1005 ¶ 4. In Singfield, an endorsed check is scanned, and the resulting image is transmitted to the OMS via a wireless network. *Id.* After receiving the check image, the OMS verifies the check data with the user. *Id.* ¶¶ 26, 29, 57; *see*, *e.g.*, *id.* ¶ 26 ("[T]he check information is then verified by the user/depositor (check amount, check date, check routing number, checking account number, bank on check) . . . ."). In addition, the OMS verifies "that [the] check hasn't been cashed before continuing processing for check cashing . . . to prevent fraud and future attempts to cash the same check." Ex. 1005 ¶ 44; *see also id.* ¶ 24 & claim 20. "Once approved for deposit, the bank system records the check data received in the encrypted check image . . . to deposit the funds into the depositpr's [sic] account," and "the OMS virtually voids the check (through documenting the check data in the system) to prevent future deposits of the same check." *Id.* ¶¶ 50, 57.

4. Adusumilli (Ex. 1007)

Adusumilli relates to network security. Ex. 1007, Abstr. Adusumilli states that "[a]uthentication is a security function and process by which a system validates users and computers that interact with the system." *Id.* ¶ 136. "One method for authenticating a device is through the use of digital certificates," which "ensure the legitimate online transfer of confidential information, money or other sensitive materials by means of public encryption technology." *Id.* ¶ 139.

E. Obviousness Ground Based on Garcia, Byrne, and Singfield

Petitioner contends that the subject matter of independent claims 1, 10, and 15 and dependent claims 2–9, 11–14, 16, and 18–20 would have been obvious over Garcia, Byrne, and Singfield. Pet. 18–72.

Patent Owner contends that a person of ordinary skill in the art would not have been motivated to combine the references as proposed to yield the invention recited in the independent claims. PO Resp. 6–62. In addition, Patent Owner separately addresses dependent claim 2 (*id.* at 62–63), dependent claim 3 (*id.* at 63–64), and dependent claim 7 (*id.* at 64–66).

1. Independent Claim 1

Petitioner relies upon Garcia as the base reference, arguing that it discloses a mobile device with a computer application that establishes an interactive session with a payee bank to deposit a check remotely. Pet. 19 (citing Ex. 1003, 9:19–10:18). According to Petitioner, Garcia does not provide some of the implementation details (*id.*), and a person of ordinary skill in the art would have been motivated to implement Garcia such that (1) Garcia's application is implemented by a thin client application that is

downloaded onto Garcia's mobile device and provides a user-interface and controls a camera, as disclosed by Byrne, and (2) Garcia's financial institution performs duplicate check detection, as disclosed by Singfield (*id.* at 28). *See also id.* at 18–28 (explaining rationale). Petitioner submits that the resulting combination of Garcia, Byrne, and Singfield teaches all the limitations of claim 1. *Id.* at 28–40.

Patent Owner disputes Petitioner's arguments that an ordinary artisan would have modified Garcia in either of those two ways (PO Resp. 21–62), and Patent Owner also argues that an ordinary artisan would not have been motivated to combine Garcia, Byrne, and Singfield with a reasonable expectation of success to create a mobile phone-based remote deposit capture system (*id.* at 6–21). We address the former arguments in connection with the implicated claim limitations (i.e., elements 1[a] and 1[c]–1[d]), and we address the latter arguments in Section II.E.1.ii.

i. Limitation-by-Limitation Analysis

1[p]: "A method of facilitating remotely depositing funds into a user's account with a bank's computing system and without using an Automatic Teller Machine (ATM)"

Petitioner relies on Garcia for the preamble of claim 1. Pet. 28–31. According to Petitioner, Garcia's mobile device captures a digital image of a check and transmits the image to a financial institution, and the financial institution deposits the check into the user's account after processing it. *Id.* at 29–31 (citing Ex. 1003, Abstr., 1:7–13, 7:18–8:13, 9:9–10:18, 11:1–10, 11:12–15, 11:20–12:1, 12:20–22, Fig. 1).

Patent Owner does not dispute these contentions. *See* PO Resp.

We find that Garcia teaches the preamble.[12] *See* Pet. 28–31. Garcia describes a method for remotely depositing a check by transmitting a check image from a user's mobile device to a payee bank for automatic processing. *E.g.*, Ex. 1003, Abstr., 1:5–13, 4:10–5:9, 9:19–10:18.

> *1[a]: "providing a remote deposit application for download to a customer device, wherein the remote deposit application comprises computer-executable instructions that, when executed by a processor, provide a user-interface and control a camera associated with the customer device to facilitate capturing at least one electronic image of a check"*

For element 1[a], Petitioner relies on a combination of Garcia and Byrne. Pet. 31–32. Petitioner contends that Garcia discloses the claimed "remote deposit application" because Garcia expressly states that the "user opens a computer application in the mobile telephone" for establishing an interactive session with the financial institution. *Id.* at 31 (quoting Ex. 1003, 9:21–10:3; citing Ex. 1003, 4:14–16, 5:2–3; Ex. 1002 ¶ 87). Petitioner contends that Garcia also discloses "capturing at least one electronic image of a check," as required by element 1[a], because Garcia's "mobile device [] incorporates a digital camera [that is] able to take a digital photograph of one or both sides of said document." *Id.* at 32 (quoting Ex. 1003, 12:7–9; citing Ex. 1003, 4:11–15, 5:21–22) (emphasis omitted; alterations Petitioner's).

As for Byrne, Petitioner contends that Byrne teaches "providing a remote deposit application for download to a customer device," as claimed, because Byrne's "desktop deposit plug-in(s) is downloaded onto the client

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[12] We need not determine whether the preamble is limiting because Petitioner has sufficiently shown that Garcia discloses this aspect of the claim. *See Vivid Techs.*, 200 F.3d at 803.

PC" to facilitate remote check deposit. Pet. 19–20, 31–32 (quoting Ex. 1004 ¶ 47; citing Ex. 1004 ¶¶ 3, 13, 46–48) (emphasis omitted). Petitioner also contends that Byrne's downloaded plug-in provides a user-interface and controls the image capture device, as this limitation also requires. *Id.* at 20, 32 (citing Ex. 1004 ¶¶ 33, 41–42, 48, claim 1).

Petitioner further contends that a person of ordinary skill in the art would have been motivated to implement Garcia's computer application using a downloaded thin client, such as Byrne's plug-in. Pet. 20–25. According to Petitioner, Garcia does not expressly disclose implementation details (*id.* at 19), such as "how the handheld mobile device obtains the computer application" (*id.* at 20–21), but "a [person of ordinary skill in the art] would have readily understood that there were well-known ways of doing so in 2006, including, for example, as taught by Byrne" (*id.* at 21 (citing Ex. 1002 ¶ 64)). Petitioner further submits that, as shown by Byrne, a thin client implementation improves ease of software maintenance and support, and it also improves security. *Id.* (citing Ex. 1004 ¶¶ 46–47); *see also* Ex. 1002 ¶ 65.

Petitioner also contends that a person of ordinary skill in the art would have had a reasonable expectation of success in implementing this combination because: Garcia and Byrne are both directed to similar methods of remote check deposit; the ordinary artisan would have known that thin clients were suited for mobile devices; downloading software applications to a mobile device was "well-known"; and the ordinary artisan would have known that the distribution technique would not have affected the application's operations and functionality. Pet. 22–24 (citing Ex. 1002 ¶¶ 68–72; Ex. 1003, 9:21–10:3, 10:10–18; Ex. 1004 ¶¶ 47–48, 174–175, 177–178); *see also id.* at 21–22 (citing Ex. 1002 ¶ 65). Petitioner further

contends that the proposed combination applies a known technique to a known device to yield a predictable result (*id.* at 21–22 (citing Ex. 1002 ¶¶ 64–66)), and that the proposed combination would have been obvious to try because "[t]here were a finite number of identified, predictable solutions" (*id.* at 24–25 (citing Ex. 1002 ¶ 73; Ex. 1004 ¶ 45)).

Patent Owner disputes Petitioner's arguments regarding the motivation to combine Garcia and Byrne to yield the subject matter of element 1[a]. PO Resp. 21–43. In particular, Patent Owner argues that an ordinary artisan would not have implemented Garcia's application with Byrne's thin client because mobile web browsers at the time were not capable of utilizing a downloadable plug-in. *Id.* at 23–26 (citing Ex. 2031 ¶¶ 33–36; Ex. 1004 ¶ 59; Ex. 2020, 231:22–232:3; Ex. 1018, 8). Patent Owner also argues that Petitioner fails to show that such a downloadable plug-in would have been able to provide a user interface and control a camera, as the claim requires. *Id.* at 26–31 (citing Ex. 2031 ¶¶ 34–36; Ex. 1004 ¶¶ 48, 102, 152; Ex. 2020, 29:24–30:4, 60:23–61:7, 159:7–22, 253:18–19; Ex. 2013, 1–2); *see also id.* at 33–34. In addition, Patent Owner argues that Byrne relies upon a specialized scanner, does not describe a mobile phone, and requires the user's device to perform significant processing and repeatedly download the thin client software. *Id.* at 31–36 (citing Ex. 1004 ¶¶ 13, 48, 152, Fig. 6; Ex. 2046, 13; Ex. 2020, 249:12–24, 253:15–19), 38–43 (citing Ex. 1004 ¶¶ 46, 136, 148; Ex. 2020, 144:19–21, 147:20–148:1, 241:22–242:18, 245:2–21; Ex. 2031 ¶¶ 33–37, 41–44).[13]

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[13] Patent Owner also argues that Dr. Mowry abandoned his rationale for combining Garcia and Byrne (*see* PO Resp. 34, 36–38; *see also id.* at 42), but Patent Owner refers to reduction of bandwidth requirements, which is provided in connection with dependent claim 2 rather than claim 1 (*see*

Having considered the parties' arguments and evidence, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Garcia and Byrne as proposed by Petitioner and that the resulting combination teaches element 1[a]. We begin by explaining why the combination teaches these claimed aspects, and then we explain why we are persuaded that an ordinary artisan would have been motivated to make this combination.

Garcia teaches or suggests most of the requirements of element 1[a]. In particular, Garcia discloses "a remote deposit application . . . [on] a customer device, wherein the remote deposit application comprises computer-executable instructions that, when executed by a processor," perform certain steps, as claimed (*see* Ex. 1003, 9:19–10:3), and Garcia suggests that those steps include "provid[ing] a user-interface and control[ling] a camera associated with the customer device to facilitate capturing at least one electronic image of a check," as claimed (*see id.* at 9:19–10:18). In particular, Garcia states that the "user opens a computer application in the mobile telephone in which an interactive session is established with the receiving institution" (i.e., the payee bank), and the mobile device "[c]aptur[es] the digital image" of the check and then "[t]ransmit[s] the digital image . . . to the [financial] institution." *Id.* at 9:19–10:18. In addition, Garcia states that the mobile device "must allow" receipt of user input and capture and transmission of the check's image. *See id.* at 9:19–10:18; *see also*, *e.g.*, *id.* at 5:1–6:10. From this, we find that Garcia suggests that its application provides a user-interface and controls the

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Ex. 1002 ¶ 115; *cf. id.* ¶¶ 60–73). Accordingly, we discuss this aspect of Patent Owner's argument in connection with claim 2. *See infra* § II.E.3.

camera. *See also id.* at 5:1–6:20 (describing interactive session where mobile phone collects information and image), 7:15–17 (requiring "constant communication between the user and the financial institution . . . during the entire process"), 9:19–10:18 (describing order of steps). However, Garcia does not include an explicit teaching to that effect, and it does not teach or suggest that the remote deposit application is "provid[ed] . . . for download," as element 1[a] also requires.

But Byrne teaches these elements. In particular, Byrne describes "providing a browser plug-in that allows a bank customer to scan checks using a personal computer and deposit the checks via the browser to a bank account." Ex. 1004 ¶ 3. Byrne expressly states that this "desktop deposit plug-in(s) is downloaded onto the client PC" (*id.* ¶ 47), and Byrne's "browser software plug-in [] provide[s] an interface between the user and an enterprise" and calls "APIs . . . for communicating with a scanning device that is communicably connected to the PC" (*id.* ¶¶ 41, 48; *see also id.* at claim 1, ¶ 42 (explaining that it discusses "a personal computer" and "a scanner," but "the invention covers any thin client . . . and any type of capturing device")). Thus, Byrne teaches "providing a remote deposit application for download to a customer device" that "provide[s] a user interface and control[s]" an image capture device, as element 1[a] requires.

We are persuaded that it would have been obvious to combine these aspects of Byrne with Garcia to yield the subject matter of element 1[a]. Garcia states that the mobile phone includes "a computer application," but it does not specify the type of computer application or how the mobile device acquired it. *See* Ex. 1003, 9:19–10:3; *see also, e.g.*, *id.* at 11:1–6. We agree with Petitioner (*see* Pet. 21) that an ordinary artisan would have been

motivated to use techniques known in the art to supply these missing implementation details, such as those taught by Byrne.

In particular, we are persuaded that a person of ordinary skill in the art would have been motivated to implement Garcia's application by downloading, onto the mobile device, a thin client application, as disclosed by Byrne. *See* Pet. 19–25. Byrne touts the benefits of downloading a thin client rather than storing an application on a user's device (Ex. 1004 ¶¶ 45–46; *see also id.* ¶¶ 47–48), and Dr. Mowry testifies that an ordinary artisan would have understood downloading a thin client to be a well-known way of distributing software in the relevant time period and suited for mobile devices (Ex. 1002 ¶¶ 64–65, 70). In addition, Dr. Mowry testifies that a thin client improves security and ease of software maintenance. *Id.* ¶ 65 (citing Ex. 1004 ¶¶ 46–47); *see also* Ex. 1033, 140:11–141:2 (Dr. Creusere agreeing that thin clients "dramatically simplif[y]" software maintenance), 143:13–20 (agreeing that security is important for financial data); Ex. 1005 ¶¶ 20–21 (evidence that the general background knowledge in the art identifies security as a concern for remote check deposit).[14] In addition, we agree with Petitioner (*see* Pet. 21–22; Ex. 1002 ¶¶ 66, 72) that an ordinary artisan would have understood such an implementation to apply a known

[14] Patent Owner's argument that security and software maintenance would have instead weighed against the proposed combination (*see, e.g.*, PO Surreply 9–10) is untimely because it was not advanced in the Response and is not fairly responsive to the Reply. *See supra* § II.A; Pet. Reply 15–16 (noting that the Response had not addressed these issues). Moreover, even if this argument had been properly raised, it would not be persuasive because Patent Owner does not identify persuasive evidence to support its position. *See, e.g.*, *Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017) ("Attorney argument is not evidence.").

technique (Byrne's downloading thin client software) to a known device (Garcia's mobile phone) with predictable results.

We are also persuaded that a person of ordinary skill in the art would have been motivated to implement Garcia's application such that the application provides a user-interface and controls the image capture device, as disclosed by Byrne. *See, e.g.*, Pet. 22–23. Garcia suggests that the application should perform these functions (*see* Ex. 1003, 5:1–6:10, 9:19–10:18), and we credit Dr. Mowry's testimony that an ordinary artisan would find this desirable (*see* Ex. 1002 ¶¶ 65, 67). Moreover, the references lend themselves to the combination because Garcia and Byrne both describe remotely depositing a check via the Internet using software on a user's device that opens an interactive session, and both perform substantially similar steps. *See* Pet. 22–23; Ex. 1003, 9:21–10:3, 10:10–18, 11:7–15; Ex. 1004 ¶¶ 41, 48, 174–175, 177–178. Finally, Dr. Mowry testifies that the ordinary artisan would have had a reasonable expectation of success in implementing the combination, and he provides supporting analysis and evidence. Ex. 1002 ¶¶ 68–72; *see also* Ex. 1029 ¶¶ 38–39. We credit this testimony from Dr. Mowry because it draws reasonable inferences and is supported by the cited evidence.

Patent Owner argues that the differences between a desktop PC-based system (as used by Byrne) and mobile phone (as in Garcia) would have militated against the combination (PO Resp. 23–34), but we disagree. Specifically, Patent Owner focuses on the specific plug-in and APIs described in Byrne, arguing that these could not have been used in a mobile device (*see id.*; Ex. 2031 ¶¶ 35–36), but these arguments miss the mark. *See* Pet. Reply 11. Petitioner does not propose combining Garcia with Byrne's ActiveX control plug-in or scanner APIs specifically; rather, Petitioner

contends that an ordinary artisan would have been motivated to implement Garcia with a downloadable thin client given Byrne's disclosure of such software and its applicability in connection with remotely depositing a check (*see* Pet. 19–25). We agree that an ordinary artisan would have read Byrne as generally disclosing use of a thin client for remote check deposit (i.e., software downloaded to the user's device when needed) (*see, e.g.*, Ex. 1004 ¶ 42), and Patent Owner's arguments improperly assume that an ordinary artisan would have needed to bodily incorporate Byrne's specific PC-based solution into Garcia's mobile device. *See MCM Portfolio LLC v. Hewlett-Packard Co.*, 812 F.3d 1284, 1294 (Fed. Cir. 2015) ("[T]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference . . . ." (quoting *In re Keller*, 642 F.2d 413, 425 (CCPA 1981)). Relatedly, Patent Owner's arguments regarding Byrne's scanners (*see* PO Resp. 31–34) are unavailing because Petitioner relies upon Garcia's camera—not Byrne's scanner—to teach the claimed "camera" (*see* Pet. 32).

To the extent Patent Owner relies on these differences to contend that an ordinary artisan would not have had a reasonable expectation of success (*see* PO Resp. 23–34),[15] these arguments are unavailing. We are persuaded

[15] Patent Owner neither clearly makes nor sufficiently explains such a contention. Petitioner submits that any such argument would be in conflict with the scope of the disclosure provided by the Specification of the '598 patent (*see* Pet. Reply 9–10), and Patent Owner does not substantively respond (*see* PO Sur-reply 15). At the oral hearing, Patent Owner appeared to agree that an ordinary artisan *would* have been able to create a downloadable software application that controlled a mobile device camera so long as the software's operation was specified. *See* Tr. 22:14–23; *see also id.* at 27:7–14 (clarifying that Patent Owner decided to focus its Sur-

that an ordinary artisan would have been able to download a thin client onto a mobile device. *See* Ex. 1002 ¶¶ 65, 70 (Dr. Mowry testifying that thin clients were known to be suited for and compatible with mobile devices and citing Exhibits 1017–1019 in support); Ex. 1029 ¶¶ 27–28 (Dr. Mowry explaining that an ordinary artisan could have written software to be downloaded to a mobile device as a thin client); *see also* Pet. Reply 10–11. Also, we find that an ordinary artisan would have expected that the downloaded thin client could both control a mobile device's camera and provide a user interface. *See* Ex. 1029 ¶¶ 27–29; *see also* Pet. Reply 11–13; Ex. 1033, 120:17–21 (Dr. Creusere agreeing that some mobile devices provided APIs), 125:12–126:1 (Dr. Creusere agreeing that Nokia used Symbian operating system); Ex. 1047, 1 (providing instructions for using camera API in Symbian developer library). Although Patent Owner argues that some of Dr. Mowry's evidence "teaches the opposite" of what he claims (*see* PO Resp. 26 (citing Ex. 2031 ¶¶ 35–36)), we find that Dr. Mowry's evidence supports his testimony. *See* Ex. 1029 ¶¶ 38–39 (Dr. Mowry responding to Dr. Creusere's critiques of Exhibit 1018); Ex. 1033, 167:12–171:17 (Dr. Creusere providing substantially the same understanding of the discussed portions of the exhibit); *see also* Pet. Reply 17–18. Ultimately, we assign more weight to Dr. Mowry's testimony on these points because it is supported by documentary evidence and analysis. In contrast, Dr. Creusere's testimony is at least partially premised on the erroneous assumption that Byrne's plug-in would be bodily incorporated into Garcia. *See* Ex. 2031 ¶¶ 35–36.

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reply on motivation to combine rather than reasonable expectation of success).

As for Patent Owner's arguments regarding the processing and bandwidth required to repeatedly download a thin client (*see* PO Resp. 34–42), we do not agree that the Petition fails to sufficiently address these factors in its discussion of independent claim 1. We disagree that Petitioner relied upon any of these factors to substantiate its rationale to combine for this claim (*see* PO Resp. 36–39, 42), and the mere existence of tradeoffs does not necessarily undercut a motivation to combine. *Cf. Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 795 (Fed. Circ. 2021) (stating that "simultaneous advantages and disadvantages do not necessarily obviate motivation to combine" (cleaned up)); *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004) (The "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."). Moreover, on this record, we determine that the tradeoffs associated with Petitioner's proposal would not have undermined an ordinary artisan's motivation to implement Garcia's application with a downloaded thin-client that controls the camera and provides a user interface, as disclosed by Byrne. *See* Pet. Reply 17–18 (noting that there is no evidence of teaching away). Although the thin client would need to be downloaded by the mobile device each time (*see* PO Resp. 39–40; Ex. 2031 ¶ 34), we are persuaded that this would have been a predictable and acceptable tradeoff given the benefits identified by Petitioner (e.g., security and ease of maintenance). *See* Ex. 1029 ¶ 37;[16] *cf.* PO Sur-reply 13

[16] Petitioner introduced evidence in response to Patent Owner's argument that an ordinary artisan would have been discouraged from making the proposed combination by tradeoffs identified by Patent Owner. As a result, the evidence is properly presented for this purpose.

(identifying no contradictory evidence). Also, we do not agree with Patent Owner's argument that additional processing by the mobile device would have discouraged the combination because we do not agree that there would have been a material increase in the mobile phone processing required by Petitioner's proposed combination for this claim. *Cf.* Ex. 2031 ¶ 34 (Dr. Creusere simply testifying that Petitioner's proposal "has a processing cost" and desktop PCs had more processing power than mobile phones). Patent Owner's argument is at least partially premised on an erroneous assumption that the thin client would need to perform all operations associated with Byrne's plug-in (*see* PO Resp. 34–36), but as noted above, Petitioner does not propose bodily incorporation of Byrne's plug-in.

Finally, as explained below (*infra* § I.E.1.b), we disagree with Patent Owner's arguments that (1) Garcia discloses that its application is a web browser, (2) the Petition contends that Garcia's application is a web browser, and (3) Garcia includes all implementation details. *See* PO Resp. 40–41; PO Sur-reply 7–10.

To the degree Patent Owner argues that an ordinary artisan would have instead been motivated to implement Garcia by using the mobile phone's pre-installed web browser and camera software (*see* PO Sur-reply 6–11), this is an untimely argument because it was not raised in Patent Owner's Response and is not fairly responsive to Petitioner's Reply. As a result, this argument is forfeit. *See supra* § II.A (addressing proper scope of Sur-reply).

But, even if this argument had been properly presented, it would not have been persuasive for two reasons. First, even if the individual steps identified by Garcia could have been performed by different applications (*cf.* Ex. 2031 ¶ 30; Ex. 2047, 38:25–39:17), Garcia indicates that its application

performs all steps (*see* Ex. 1003, 9:19–10:18). *Accord* Inst. Dec. 30. However, in the relevant time period, mobile phones did not have pre-installed software that could perform all steps, as a web browser could not capture images. *See* Ex. 1029 ¶ 35 n.10. Second, and more fundamentally, we evaluate whether Petitioner's proposal would have been obvious, not whether it would have been the "most" obvious implementation of Garcia. *See Dome Patent L.P. v. Lee*, 799 F.3d 1372, 1381 (Fed. Cir. 2015) ("[J]ust because 'better alternatives' may exist in the prior art 'does not mean that an inferior combination is inapt for obviousness purposes.'" (quoting *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012))); *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197–98 (Fed. Cir. 2014) (stating that "the motivation [need not] be the best option, only that it be a suitable option from which the prior art did not teach away"); *see also In re Fulton*, 391 F.3d at 1200 (The "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.").

1[b]: "receiving at the bank's computing system, via the user-interface on the customer device: authentication data, an electronic identification of an account for receipt of a value associated with the check, an electronic indication of the value associated with the check, and the at least one electronic image of the check"

For element 1[b], Petitioner relies on the Garcia-Byrne combination. Pet. 33–36. Petitioner contends that Garcia teaches that the financial institution receives information from the mobile device, including the user's security keys, a user-entered check amount, and a digital image of the check. *Id.* (citing Ex. 1003, 5:4–6:5, 11:7–12, 11:15–17, 12:4–22). From this,

Petitioner asserts that Garcia teaches "receiving at the bank's computing system . . . authentication data, . . . an electronic indication of the value associated with the check,[17] and the at least one electronic image of the check," as required by this limitation. *See id.*

Petitioner contends that Byrne teaches the remaining requirements of this limitation. Pet. 33–34. Specifically, according to Petitioner, Byrne's plug-in "provide[s] an interface between the user and an enterprise," as explained above. *Id.* at 33 (quoting Ex. 1004 ¶ 41; citing Pet. 19–25). Petitioner also contends that Byrne discloses the claimed "identification of an account" because Byrne's user selects an account for deposit and the client prepares an HTTP POST that includes an identification of the account. *Id.* at 34 (citing Ex. 1004 ¶¶ 173, 174,[18] 176, 184; Ex. 1002 ¶ 96). Petitioner asserts that an ordinary artisan would have been motivated to incorporate this feature of Byrne into Garcia. *Id.* (citing Pet. 19–25).

Patent Owner does not dispute these contentions. *See* PO Resp.

We find that the Garcia-Byrne combination teaches element 1[b]. *See* Pet. 33–34. Garcia's user enters a username and password, captures a digital image of the check, enters the check amount, and may enter other data associated with the check (such as the check number). Ex. 1003, 5:14–22; *see also id.* at 10:4–13, 12:4–13. Then, Garcia's mobile device transmits the

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[17] Petitioner contends that an ordinary artisan would have understood "receiving . . . an electronic indication of the value associated with the check" to mean "receiving an indication of the check amount distinct from the amounts visible in the check image." Pet. 34. Because we agree that Petitioner's interpretation falls within the scope of this limitation, we do not reach Petitioner's alternative theory. *Accord* Inst. Dec. 33 n.18.

[18] The Petition cites paragraph 74, but quotes from paragraph 174. *See* Pet. 34. We have corrected this apparent typographical error.

image and the manually-entered data to a payee bank (*id.* at 6:3–5), and the payee bank "recogniz[es], verif[ies]," and "process[es] the information" in order to "automatically process the deposit of the check in question into the service user's account" (*id.* at 11:7–10, 12:13–22). As discussed above in connection with element 1[a], we are persuaded that an ordinary artisan would have been motivated to combine Garcia and Byrne such that Garcia's mobile device includes a user-interface for communicating with the payee bank. *See also, e.g.*, Ex. 1004 ¶ 41. In addition, we are persuaded that an ordinary artisan would have been motivated to implement the Garcia-Byrne combination such that the information sent from the mobile device to the payee bank via the user interface identifies the user's account. *See id.* ¶¶ 173, 176, 184; *see also* Ex. 1003, 12:13–22 (stating that Garcia's system deposits the check into the user's account).

1[c]: "determining whether the check was previously deposited using the at least one electronic image of the check"

Petitioner relies on Singfield for element 1[c]. Pet. 36 (citing Ex. 1002 ¶ 99). Petitioner quotes Singfield, which describes "'a preinstalled tracking system . . . to prevent' '[m]ultiple deposit (i.e., fraudulent activity) of the same check' by 'monitor[ing], and log[ging] **every check image received**' and '**recogniz[ing] similar deposit requests**.'" *Id.* (quoting Ex. 1005 ¶ 24) (alterations and emphasis Petitioner's). Petitioner also quotes Singfield's statement that a "computer program . . . **verifies** the check information (check number, check amount, routing and account number, signature) does not exactly match any previous deposits linked to the user's account." *Id.* (quoting Ex. 1004, claim 20; citing Ex. 1004 ¶¶ 44, 50, claim 14) (alterations and emphasis Petitioner's). Petitioner further contends that

"it would have been obvious to use Singfield's method for duplicate check detection in Garcia/Byrne's method for remote check deposit." *Id.*; *see also id.* at 25–28 (articulating rationale to combine Singfield with Garcia and Byrne).[19]

Patent Owner argues that Singfield does not disclose using a check image for duplicate detection, but instead uses the MICR[20] line information read by a specialized magnetic reader. PO Resp. 44–45 (citing Ex. 1005 ¶¶ 24, 48, claim 20; Ex. 2020, 94:8–12, 95:10–12, 102:12–18; Ex. 2027, 13; Ex. 2028, 16), 48–50 (citing Ex. 1005, claims 2, 20; Ex. 2020, 119:12–18, 120:12–17, 133:5–12). In support, Patent Owner also argues (1) Dr. Mowry could not identify any reference that showed the successful extraction of MICR information from an image captured by a mobile consumer device, (2) Singfield does not state how its OMS performs duplicate check detection, (3) all embodiments of Singfield require a magnetic reader for the MICR line, and (4) Singfield discusses reading the MICR line magnetically. *Id.* at 45–48 (citing Ex. 2020, 37:2–14, 94:8–12, 108:8–10, 133:5–12; Ex. 1005 ¶¶ 24, 48, claim 20). Patent Owner also submits that Singfield discloses obtaining check information from other sources, such as via manual input by a user or teller. *Id.* at 49–51 (citing Ex. 1005 ¶¶ 4, 50, claim 20; Ex. 2020, 111:12–15, 111:25–112:6, 118:5–10, 119:12–18, 120:12–17). Patent Owner also contends that Singfield's statements that a

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[19] We address the rationale to combine Singfield with Garcia and Byrne in connection with element 1[d].

[20] MICR is an acronym for magnetic ink character recognition. *See* Ex. 1002 ¶ 35. Typically, a MICR line (found at the bottom of a check) includes a string of numbers that identify the bank's routing number, customer's account number, and check number. *Id.*

user "verif[ies]" information does not mean that the information was not first manually entered by the user and submits that Singfield makes no mention of optical character recognition. *Id.* at 51–53 (citing Inst. Dec. 36; Ex. 1005 ¶¶ 4, 23, 26). Finally, Patent Owner addresses the disclosure in paragraph 24 and claim 20 of Singfield. *Id.* at 53–56 (citing Inst. Dec. 36; Ex. 1005 ¶¶ 24, 57, claim 20; Ex. 2031 ¶¶ 38–40; Ex. 2020, 113:8–12, 122:6–123:5).

Having considered the parties' arguments and evidence, we are persuaded that a person of ordinary skill in the art would have understood Singfield to disclose element 1[c]. Singfield's OMS determines whether a check was previously deposited. Ex. 1005 ¶¶ 24, 44, claim 20. For example, Singfield "verif[ies] . . . that [the] check hasn't been cashed before continuing processing for check cashing . . . to prevent fraud and future attempts to cash the same check/multiple checks." *Id.* ¶ 44.

In addition, Singfield discloses using *the check image* for duplicate detection. *See* Ex. 1005 ¶ 24, claim 20. Singfield claims:

> A computer program of claim 2 further comprising of an ability that prevents duplicate deposits . . . through a preauthorization that verifies the check information (check number, check amount, routing and account number, signature) does not exactly match any previous deposits linked to the user's account . . . .

Id. at claim 20. In short, Singfield's "computer program" determines whether a check was previously deposited using "the check information," which includes the "signature" (*id.*), and thus, an ordinary artisan would have understood that the computer program uses the check image for at least this purpose. *See* Ex. 1029 ¶ 43 (*cited in* Pet. Reply 20); *accord* Inst. Dec. 36.

Patent Owner argues that Singfield's claim does not disclose use of the check image by the bank's computing system because Singfield "gives the option of a live teller" for certain aspects of its method. PO Resp. 54; *see* PO Sur-reply 20–22. We disagree. An ordinary artisan would have understood these operations to be performed by the recited "computer program." *See* Ex. 1005, claim 20. Further, to the degree Patent Owner argues that an ordinary artisan would have had a different understanding of this passage because it was infeasible to compare signatures (*see* PO Resp. 54–56), we disagree for three reasons. First, such an argument is premised on the unfounded assumptions that the signatures of all check images would be compared (presumably because it would be the only piece of information used). *See id.* However, Singfield also uses other check information in its duplicate detection, and we perceive no reason why it would need to compare the signatures of each check in the database. *See* Ex. 1005, claim 20. Second, the cited evidence indicates that signature comparison was, in fact, feasible. *See* Ex. 1029 ¶¶ 46–47; Ex. 2020, 122:6–123:5 (Dr. Mowry testifying that signature comparison could happen in "a number of ways"); *cf.* Ex. 2031 ¶¶ 39–40 (*cited by* PO Resp. 54–56).

Third, another passage in Singfield also indicates that check images are used for duplicate detection. In particular, Singfield also teaches use of check images for duplicate detection in paragraph 24:

> 2. Multiple deposit (ie. fraudulent activity) of the same check . . . should be an extremely difficult task or execution. The online account management system [OMS] will monitor, and log every check image received, requested for deposit, and transaction cleared for deposit. OMS will have a preinstalled tracking system, which will recognize similar deposit requests and transactions that are requested, to prevent fraud.

Ex. 1005 ¶ 24. We find that the most natural reading of this paragraph is that Singfield uses the "monitor[ed] and log[ged]" check image for duplicate detection to prevent fraud. *See also id.* ¶ 25 (beginning next paragraph by noting that "[t]he data from the image received and transmitted requires a variety of specified details . . . to be recognized, confirmed, and verified"). Although Patent Owner argues that Singfield does not sufficiently explain the details of its duplicate detection (*see* PO Resp. 46, 53–56), Patent Owner fails to explain the import of those purportedly missing details.

Patent Owner's other arguments are inapposite. *See* PO Resp. 44–53. Patent Owner argues (1) Singfield uses a magnetic reader to obtain the MICR information, and this information is required for duplicate detection (*id.* at 44–48) and (2) Singfield contemplates manual entry of check information by the user or the teller (*id.* at 49–52). But, there are two critical flaws in these arguments. First, even if Patent Owner were correct on all points, we would still find that Singfield discloses duplicate detection using the check image, for the reasons we have explained. *See* Ex. 1005 ¶ 24, claim 20. It does not matter whether Singfield *also* discloses the use of non-image information for detecting duplicates (such as information entered by a person or extracted from a magnetic read), and Patent Owner does not show that any of the other cited disclosures undermine our understanding of the salient portions of Singfield.

Second, these arguments fail to account for Petitioner's proposed combination and attack the references individually. *See* Pet. Reply 19–20; *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (arguments individually attacking the references in an obviousness combination are not persuasive) (citing *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986) ("Non-obviousness cannot be established by

attacking references individually where the rejection is based upon the teachings of a combination of references.")). Patent Owner does not dispute that Singfield discloses duplicate detection, instead arguing that it does not disclose use of the *check image* for that process (*see* PO Resp. 43–56), and the use of the check image is inherent in Petitioner's proposed combination. In particular, in the proposed combination, Garcia's mobile phone transmits the check image to the payee bank for verification and processing, Garcia uses the check image for that verification and processing, and duplicate detection is performed as part of that. *See infra* §§ II.E.1.i.1[d] (addressing combination of Garcia and Singfield), II.E.1.ii (finding that Garcia suggests extracting check information from the check image using its required OCR).

Anticipating this issue, Patent Owner argues that Petitioner must show that Singfield alone teaches element 1[c] because "Petitioner does not rely on Garcia or Byrne as supplying this claimed element either explicitly or inherently." PO Resp. 43 (citing Ex. 2020, 262:25–263:7).[21] We disagree with Patent Owner's assessment of the Petition. For element 1[c], the Petition begins with a contention that "Garcia/Byrne/Singfield teaches this limitation," and then it cites to Singfield's disclosure as well as the Petition's discussion of the proposed combination. Pet. 36 (citing *id.* at 25–28). In addition, the Petition specifically proposes that Garcia's payee bank performs Singfield's duplicate check detection. *Id.* at 25–28. As a result, under Petitioner's proposal, Garcia's server receives the check image and performs duplicate detection (using Singfield's method) based on that

[21] Dr. Mowry's testimony does not support Patent Owner's assertion; instead, he simply testifies: "Garcia does not discuss duplicate detection. That is taught by Singfield." Ex. 2020, 262:25–263:7.

image. *See id.* However, even if we were to read the Petition as Patent Owner proposes, we would still find that Petitioner has shown that Singfield teaches element 1[c], as explained above, and that Petitioner has shown that it would have been obvious to combine Singfield's duplicate check detection with Garcia and Byrne, as proposed, to yield the requirements of element 1[d] as explained further below.

> *1[d]: "initiating and/or logging a first deposit of the value to the account via the bank's computing system unless the bank's computing system determines from the at least one electronic image of the check that the check was previously deposited"*

For element 1[d], Petitioner relies on Garcia and Singfield. Pet. 37–40. Petitioner points to Garcia for "initiating . . . a first deposit of the value to the account via the bank's computing system"[22] because Garcia's financial institution "automatically process[es] the deposit of the check in question into the service user's account," which entails initiating a deposit of the check's value. *Id.* at 37 (emphasis omitted; second alteration Petitioner's) (quoting Ex. 1003, 12:9–22; citing Ex. 1002 ¶ 102), 39 (citing Ex. 1003, 11:7–12; Ex. 1002 ¶ 106). Petitioner contends that Singfield teaches initiating the deposit "unless" the bank's computing system determines that the check was previously deposited. *Id.* at 39–40 (citing

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[22] We do not address Petitioner's alternative contention that Singfield teaches "logging" (Pet. 37–39) because we are persuaded by Petitioner's contention that the phrase "initiating and/or logging" is satisfied by "initiating" (*see id.* at 37). *Cf. Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001) ("When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art."); *accord* Inst. Dec. 38 n.21.

Ex. 1005 ¶¶ 44, 50, claims 14 and 20). For example, "Singfield discloses that 'before [the] entire transaction process begins' and before 'funds are verified for deposit,' a 'computer program' 'verifies that no like items have been deposited (i.e. check number, check amount, date, etc.).'" *Id.* at 39 (quoting Ex. 1005, claim 20) (emphasis omitted; alterations Petitioner's).

Petitioner further contends that it would have been obvious "to incorporate Singfield's method and software for duplicate check detection in Garcia/Byrne's method for remote check deposit." Pet. 40 (citing *id.* at 25–28). Specifically, according to Petitioner, Garcia states that its financial institution verifies and validates check images, but Garcia fails to provide details of this operation. *Id.* at 25 (citing Ex. 1003, 1:7–8, 4:11–15,[23] 11:9–10). From this, Petitioner argues that, in order to implement Garcia, a person of ordinary skill in the art would have been motivated to incorporate Singfield's "well-known validation technique." *Id.* at 25–26 (citing Ex. 1002 ¶¶ 74–76); *see also id.* at 28 (citing Ex. 1002 ¶ 79). Petitioner asserts that Singfield's teaching is "complementary," "efficient," and "would have reduced financial losses due to fraud." *Id.* at 26–27 (citing Ex. 1005 ¶ 44; Ex. 1002 ¶ 76). Petitioner further asserts that the combination applies a known technique to a known system to yield predictable results. *Id.* at 28 (citing Ex. 1002 ¶ 79). Finally, Petitioner contends that a person of ordinary skill in the art would have had a reasonable expectation of success. *Id.* at 27–28 (citing Ex. 1002 ¶¶ 77–78; Ex. 1005 ¶ 4).

Patent Owner contends that Petitioner fails to show that an ordinary artisan would have been motivated to modify Garcia and Byrne with

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[23] The Petition cites to Garcia at page 1, lines 11–15, but the quoted text appears on page 4, lines 11–15. We have corrected this typographical error.

Singfield with a reasonable expectation of success. PO Resp. 56–62. According to Patent Owner, Byrne teaches that the "turn-around time" for the server's processing should be one second or less, this delay was "an important concern to a [person of ordinary skill in the art]," and the combination with Singfield "would make impossible the 1-second goal of Byrne for analyzing a check." *Id.* at 56 (citing Ex. 1004, Fig. 6 (block 618)), 58 (citing Ex. 2031 ¶¶ 39–40). In addition, Patent Owner argues that Dr. Mowry "was unable to say whether it would still be possible to satisfy this 1-second turnaround time if duplicate [check] detection were added into the Garcia/Byrne system." *Id.* at 56–57 (citing Ex. 2020, 122:20–123:5, 267:11–17, 268:3–16). Patent Owner also argues that Dr. Mowry does not sufficiently address "the alternative solution" of "requiring the customer to mail in the physical check to complete the deposit," or whether an ordinary artisan would have been motivated to accept the increased processing burden required by the combination. *Id.* at 57–58 (citing Ex. 2023, 7; Ex. 2020, 177:4–22, 178:5–14). Patent Owner also contends that Singfield uses a scanner rather than a camera to obtain a check image (*id.* at 59–60), and as a result, an ordinary artisan would not expect the combination to be successful (*id.* at 60–62 (citing Ex. 2020, 87:2–11; Ex. 2024; Ex. 2031 ¶¶ 43, 46)).

Having considered the parties' arguments and evidence, we are persuaded that an ordinary artisan would have been motivated to combine Singfield with Garcia and Byrne, as proposed, and that the combination discloses element 1[d].

Garcia teaches that its financial institution verifies and processes the check image and then deposits the check amount into the user's account. *E.g.*, Ex. 1003, 11:7–19, 12:9–22. Singfield discloses "determining whether the check was previously deposited using the at least one electronic image of

the check" (*see supra* § II.E.1.i.1[c]), and Singfield discloses that a deposit is initiated "unless" the software determines that the check was previously deposited (*e.g.*, Ex. 1005 ¶¶ 44, 50, claim 20).

We are persuaded that a person of ordinary skill in the art would have been motivated to perform Singfield's duplicate check detection at Garcia's financial institution, as proposed by Petitioner. Garcia indicates that the financial institution validates a check before deposit, but Garcia does not provide details of this operation. *E.g.*, Ex. 1003, 4:11–15, 11:7–19. Singfield describes a method of validating a check by verifying that it was not previously deposited (*e.g.*, Ex. 1005 ¶¶ 24, 44), and we are persuaded that a person of ordinary skill in the art would have been motivated to use Singfield's duplicate check detection method to implement Garcia's validation process. In particular, Dr. Mowry explains (and we agree) that an ordinary artisan would have been motivated to incorporate duplicate check detection to reduce financial losses due to fraud and would have been motivated to use Singfield's approach because it was efficient. Ex. 1002 ¶ 76. Moreover, we are persuaded that the proposed combination would have merely been a combination of a known technique with a known system to yield predictable results. *See* Pet. 28. In addition, Dr. Mowry also testifies that an ordinary artisan would have had a reasonable expectation of success in making the proposed combination (Ex. 1002 ¶¶ 77–78), and we credit this testimony.

Patent Owner's contrary arguments (*see* PO Resp. 56–62) are unavailing. Initially, we disagree with Patent Owner's argument that the Petition is defective because it did not address the speed and processing power of the resulting system. *See id.* at 56–58. Once again, the mere existence of tradeoffs does not necessarily undercut a motivation to

combine. *See Intel*, 21 F.4th at 795 (stating that "simultaneous advantages and disadvantages do not necessarily obviate motivation to combine" (cleaned up)). Moreover, Patent Owner's argument that the Petition fails to address Garcia's "alternative solution" (*see* PO Resp. 58) is inapposite. Garcia does not disclose an alternative solution in which a physical check is mailed (*see infra* § I.E.1.ii), and such a solution would have been contrary to Garcia's disclosure. *See* Ex. 1003, 12:17–22 (stating that payee bank uses image and additional data to "automatically process the deposit of the check in question into the service user's account"); *see also, e.g.*, *id.* at 2:1–14 (identifying problem in the prior art's requirement that the physical document be "present[ed] or sent" to the bank).

We have considered the speed tradeoff alleged by Patent Owner (*see* PO Resp. 56–58; PO Sur-reply 22–24), but we find that an ordinary artisan would have been motivated to make the proposed combination notwithstanding this consideration. Byrne indicates a preference for the server to perform its processing in one second (*see* Ex. 1004, Fig. 6, block 618), and an ordinary artisan would want the system to respond quickly (*e.g.*, Ex. 2020, 268:8–16); however, an ordinary artisan would have understood speed to be a well-known tradeoff for additional processing and would not have viewed a one-second turn-around time as a strict requirement. Also, we find that an ordinary artisan would have found the additional delay required to perform Singfield's duplicate check detection to have been minor and justified in order to minimize losses due to fraud. Indeed, the evidence shows that performing a comparison of two signatures, for example, would take less than a second (*see* Ex. 1029 ¶¶ 46–47 (addressing image comparison)), and Patent Owner's contrary argument appears to be premised on the misplaced assumption that the payee bank

would need to compare the images of *all* checks (*see supra* § II.E.1.i.1[c] (addressing errors in this argument)).[24] In addition, as explained below (*infra* § II.E.1.ii), we are persuaded that Garcia suggests using OCR to extract MICR information from an image of the check, and in the proposed combination, minimal additional processing would have been required to compare the MICR information with past deposits to check for duplicates (as Singfield also discloses).

Patent Owner's argument that Petitioner fails to show that an ordinary artisan would have used a signature in a duplicate check detection process (PO Sur-reply 20, 22–23) is also unavailing. This argument again fails to account for Petitioner's proposed combination, in which Garcia's mobile phone transmits the check image to the payee bank for verification and processing, and that processing includes duplicate check detection using the check image. *See supra* § II.E.1.i.1[c]. But, even if we were to require Petitioner to show that Singfield alone discloses element 1[c], this argument would still be unavailing. Petitioner proposes a combination of Garcia and Byrne with Singfield's method, and Singfield teaches duplicate check detection that uses the signature, as discussed above. *See* Pet. 25–28. We are persuaded by Petitioner's arguments that an ordinary artisan would have incorporated Singfield's duplicate check detection (including its signature comparison) in Garcia's system.

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[24] Also, to the degree Patent Owner argues that there is no motivation to perform duplicate check detection in the user's mobile device (*see* PO Resp. 58 (citing Ex. 2031 ¶ 39); PO Sur-reply 24), this argument is inapposite because Petitioner proposes that the payee bank would perform the duplicate check detection.

We further disagree with Patent Owner's arguments (*see* PO Resp. 59–62) that the differences between a scanner and a camera would have discouraged the combination. For the reasons explained below (*infra* § II.E.1.ii), these arguments are fatally flawed because they fail to account for the disclosure of Garcia, which specifically teaches using a mobile phone to capture a check image for remote deposit. *E.g.*, Ex. 1003, 1:5–13, 4:10–5:9. In short, Garcia, by itself, is strong evidence that a person of ordinary skill in the art would have expected to be able to remotely deposit a check using a mobile phone. Also, we do not agree with Patent Owner's assumption that an ordinary artisan, when looking to implement Garcia, would only have looked to references that used a mobile phone to remotely deposit a check.

Finally, in Sur-reply, Patent Owner introduces a new argument that a slight difference in the positioning of the check would shift the location of the signature, causing an image comparison to fail even if the signatures are duplicates. PO Sur-reply 23–24 (citing Ex. 2031 ¶ 42). This argument was not presented in the Response and is not fairly responsive to the Reply, so it is untimely and forfeit. *See supra* § II.A. Indeed, although Patent Owner tries to fault the Petitioner for not addressing paragraph 42 of Dr. Creusere's declaration (PO Sur-reply 23), the Response itself does not address it (or even cite to it) (*see* PO Resp.). Petitioner need not respond to an argument that was never made.

ii. Rationale to Combine

Patent Owner contends that a person of ordinary skill in the art "would not have been motivated with a reasonable expectation of success to combine Garcia/Byrne/Singfield to create a mobile phone-based remote

deposit capture system." PO Resp. 6 (capitalization altered); *see also id.* at 6–21. In support, Patent Owner argues that Garcia teaches a complete and enabled system that uses "a common internet browser application," and Patent Owner submits that Dr. Mowry's testimony confirms this. *Id.* at 7–8 (citing Ex. 1003, Abstr., 5:1–5, 9:20–10:3; Ex. 2020, 19:15–20, 22:6–10, 23:3–11, 84:10–18, 85:1–6, 86:4–8; Ex. 2031 ¶ 31). Patent Owner also argues that Garcia requires the physical check to be sent to the payee bank, as was the state of the art at the time. *Id.* at 8–9 (citing Ex. 1003, 11:17–19;[25] Ex. 2031 ¶¶ 31–32; Ex. 2023, 7; Ex. 2038); *see also id.* at 18–19 (arguing that the testimony of other experts retained by Petitioner supports this understanding of Garcia (citing Ex. 2020, 275:5–10; Ex. 2026, 92:19–93:13)).

Patent Owner also argues that mobile check deposit was considered unworkable and non-obvious at the relevant time period because there were technological challenges associated with capturing a check image using a camera phone, rather than using a traditional check scanner. PO Resp. 9–17. In support, Patent Owner points to the testimony of Mr. David Peterson, Petitioner's expert in *PNC III*, and Dr. Omid Kia, Petitioner's expert in *PNC I*. *Id.* (citing Ex. 2025 ¶¶ 4–21; Ex. 2026, 42:6–19, 42:21–43:5, 43:9–44:2, 67:25–68:9, 69:1–18, 124:20–25; Ex. 2035, 2; Ex. 2036, 937:6–12, 938:10–939:18, 941:13–25, 943:4–7).[26] Patent Owner further argues that

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[25] We add this citation because Patent Owner quotes this portion of Garcia.

[26] In addition, Patent Owner states that Dr. Creusere explains why there would not have been a motivation to combine or a reasonable expectation of success, and that an inventor discussed the algorithms developed to address these problems. PO Resp. 17 (citing Ex. 2031 ¶¶ 43–46; Ex. 2045, 274:24–277:17). However, we do not address arguments made only in the exhibits. *See* 37 C.F.R. § 42.6(a)(3) ("Arguments must not be incorporated by

Dr. Mowry fails to address the differences between camera phones (used by Garcia) and specialized scanners (used by Byrne and Singfield) and refused to address Mr. Peterson's and Dr. Kia's contrary testimony. *Id.* at 18–21 (citing Ex. 2020, 200:14–17, 208:20–25, 208:9–13; 216:2–5).

Having considered the parties' arguments and evidence, we are persuaded by Petitioner's contentions that it would have been obvious to combine Garcia, Byrne, and Singfield as proposed, notwithstanding Patent Owner's arguments to the contrary.

Garcia describes a method for remotely depositing a check using a mobile device. *E.g.*, Ex. 1003, 1:5–13, 4:10–5:9. Garcia teaches that a user "opens a computer application in the mobile telephone," which establishes an interactive session with the payee bank. *Id.* at 9:19–10:3. Then, using the mobile device, Garcia's user enters a username and password, captures a digital image of the check, enters the check amount, and may enter other data associated with the check (such as the check number). *Id.* at 5:14–22, 10:4–13. The image and the manually-entered data are transmitted to a payee bank (*id.* at 6:3–5, 10:16–18), and the payee bank "recogniz[es], verif[ies]," and "process[es] the information" (*id.* at 6:8–10, 11:7–10).

Unsurprisingly, Garcia does not specify all of its implementation details. For example, Garcia states that the mobile phone includes "a computer application," but does not specify the type of computer application, its functionality, or how the mobile device acquired it. *See* Ex. 1003, 9:19–10:3; *see also, e.g.*, *id.* at 11:1–6. Also, Garcia does not explain in detail how the payee bank recognizes, verifies, and processes the

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reference from one document into another document."); *see also* Trial Practice Guide 35–36.

check deposit, but instead simply states that the payee bank has the "means" to do so, which "consist basically of computer equipment connected to the Internet that has an optical character recognition (OCR) system, a code authentication system and means of transmitting data to the institution's document processing system." *Id.* at 11:7–19.

We are persuaded that a person of ordinary skill in the art would have been motivated to use techniques that were known in the art, such as Bryne's downloaded thin client and Singfield's duplicate check detection, to supply the implementation details missing from Garcia. In particular, as explained in connection with element 1[a], we are persuaded that a person of ordinary skill in the art would have been motivated to implement Garcia's application by downloading, onto the mobile device, a thin client application that provides a user-interface and controls the image capture device, as disclosed by Byrne. Also, as explained in connection with element 1[d], we are persuaded that a person of ordinary skill in the art would have been motivated to implement Garcia's verification process using Singfield's duplicate check detection.

Patent Owner's arguments to the contrary are unavailing.

First, we disagree with Patent Owner's argument that Garcia discloses using "a common internet browser" as the application. PO Resp. 6–8; *see also id.* at 40–41 (arguing that Garcia's device was pre-installed with the application).[27] As an initial matter, neither the word "browser" or the term "Internet browser" appear in Garcia. *See* Ex. 1003. But, even if the

[27] Patent Owner inaccurately states that "Petitioner characterizes [Garcia's application] as an Internet browser." PO Resp. 41 (citing Pet. 23); *see also id.* at 22. The Petition includes no such contention. *See* Pet. 21–23.

functionality of Garcia's disclosed application "*could* have been performed by a typical mobile web browser in 2006," as Dr. Creusere testifies, there is insufficient support for his conclusion that an ordinary artisan would have understood the application "*to be* a web browser opening an HTTPS connection to the banking institution's website." Ex. 2031 ¶ 30 (emphasis added); *see also id.* ¶¶ 27–28 (providing additional context for quoted testimony). It appears that Dr. Creusere's conclusion is premised on the erroneous assumption that a reference *discloses* use of a particular type of software so long as an ordinary artisan would have understood that type of software *could* have been used with the method described in the reference. As a result, Dr. Creusere's conclusion is insufficiently supported, and we assign little weight to it. Moreover, despite Patent Owner's assertion to the contrary (*see* PO Resp. 7–8), Dr. Mowry's testimony also does not support its argument. *See* Ex. 2020, 19:15–20:14 (Dr. Mowry explaining that the question was unclear), 22:6–23:11 (testifying that a "computer application" is software and that a browser is software), 84:10–86:8 (explaining that the question was unclear and that Garcia is "self-contained" and enables remote deposit).

Second, we disagree with Patent Owner's argument (*see* PO Resp. 8–9, 18–19; *see also id.* at 1–3, 58) that Garcia requires a physical check to be sent to the payee bank. Garcia teaches that its "system achieves greater simplicity, speed, and security . . . by replacing the traditional check reader with a multi-purpose mobile device." Ex. 1003, 7:18–22. Moreover, Garcia explains that the user avoids unnecessary trips to a branch because the truncation process is performed external to the bank (*id.* at 7:22–8:11), and it states that the bank uses an image of a check and additional data to "automatically process the deposit of the check in question" (*id.* at 12:17–

22). In addition, Garcia states that the payee bank must have "an optical character recognition (OCR) system." *Id.* at 11:7–13. As a result, we find that an ordinarily skilled artisan would have understood Garcia to teach using a check's image to remotely deposit the check. Also, given these disclosures, we find that Garcia's reference to "the usual means (truncation systems)" (*id.* at 11:17–19) does *not* indicate that a bank receives the physical check and then truncates it.[28] Rather, we understand Garcia to use the words "usual means" to refer to a bank's existing (or usual) check processing systems, i.e., the check processing used for other checks received by the bank. *See id.* at 11:7–19.

Patent Owner's contrary evidence does not outweigh these statements in Garcia.[29] *See also* Ex. 1033, 54:16–55:11 (Dr. Creusere agreeing that Garcia does not describe mailing a physical check). Patent Owner relies on the fact that Garcia does not describe analyzing the quality of the check image or techniques to obtain an image of sufficient quality (*see* PO Resp. 3–4, 8, 18–19 (citing Ex. 2020, 275:5–10; Ex. 2026, 92:19–93:13)), but the absence of such implementation details does not change our understanding of Garcia. The evidence indicates that mobile phones were capable of capturing a sufficient check image at least some of the time. *See, e.g.*, Ex. 1031 ¶ 126; Ex. 2026, 68:15–18, 71:2–9; Ex 2036, 970:15–971:6.

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[28] Truncation refers to "taking the physical document out of the [processing] chain and replacing it with an electronic form." Ex. 2022, 54:10–55:5.

[29] Patent Owner does not contend that Garcia's disclosure is not enabled (*see* Tr. 46:17–20; PO Resp. 7), so we presume that it is. *See, e.g.*, *Apple Inc. v. Corephotonics, Ltd.*, 861 F. App'x 443, 449 (Fed. Cir. 2021) (non-precedential) ("It is well-established that prior art patents and printed publications like Konno, a Japanese patent publication, are presumed enabling.").

Patent Owner also relies on the alleged commercial embodiment of Garcia and another company's check deposit system (PO Resp. 1–2, 8–9 (citing Ex. 2021, 13; Ex. 2023, 7; Ex. 2038; Ex. 2031 ¶¶ 31–32)), but neither is probative of the disclosure of Garcia (*see* Ex. 1003).

Relatedly, Patent Owner argues that Garcia "does not teach that the MICR information is obtained from the electronic image of the check" (PO Sur-reply 16), but this misses the mark. Garcia states that the bank must be able to perform an OCR on the check image for deposit (Ex. 1003, 11:7–15), and the most reasonable read of this disclosure is that it suggests optically extracting check information (such as information from the MICR line like the routing and account numbers) using OCR. Thus, even though Garcia does not *teach* obtaining this information from the check image, Garcia does *suggest* it. *See also, e.g.*, *id.* at 7:18–8:8 ("This system achieves greater simplicity, speed, and security in the process of accepting bank documents and bills, and particularly in depositing checks, by replacing the traditional check reader with a multi-purpose mobile device.").

According to Patent Owner, Garcia discloses entry of the MICR information because Garcia refers to manually inputting a "document number" (PO Resp. 2 (citing Ex. 1005, 5:15–20; Ex. 2031 ¶ 29)), but this argument also is unavailing. First, we disagree with Patent Owner's understanding of Garcia's "document number." The cited testimony from Dr. Creusere is premised on an unfounded assumption that Garcia's "document number" must uniquely identify the check[30] (*see* Ex. 2031 ¶ 29),

[30] We note that an ordinary artisan does not have any specialized knowledge of the banking industry (*see supra* § II.B), and a "document number" to an ordinary artisan would simply be a number that identifies a document.

and we do not agree with his assumption. A MICR line includes a long string of numbers representing a bank's routing number, a customer's account number, and the check number. In our view, relying on the manual entry of this long string of numbers would be counterintuitive, as the inadvertent entry of the wrong numbers would seem to run an unacceptable risk of withdrawing from the wrong account. Second, even if Patent Owner's understanding of this term were correct, Garcia makes clear that entry of the "document number" is optional. *See* Ex. 1003, 5:14–20 (noting user enters "data associated with the document itself, such as the amount *and/or* the document number" (emphasis added)). Garcia discloses that the payee bank must have OCR capability (*id.* at 11:7–15), which strongly suggests that the payee bank performs an OCR to obtain check information from the image. Patent Owner attempts to discount this disclosure by arguing that "there is nothing in Garcia indicating that it had the ability to successfully extract the information necessary for check deposit from the image" (PO Resp. 3), but we see no reason to require any additional disclosure from Garcia.

Third, we do not agree with Patent Owner's arguments that rely on the testimony of Mr. Peterson and Dr. Kia (Petitioner's experts in *PNC III* and *PNC I*, respectively). *See* PO Resp. 9–17; *see also* PO Sur-reply 1–3.[31]

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[31] In Sur-reply, Patent Owner contends that the testimony of Mr. Peterson and Dr. Kia in different proceedings "binds Petitioner here" and relies on testimony introduced in another Board proceeding. PO Sur-reply 3; *see* Tr. 47:2–48:5. These arguments were not presented in the Response and are not fairly responsive to the Reply, and as a result, they are untimely and forfeit. *See supra* § II.A. However, even if they had been timely raised, these arguments would not have been persuasive for at least the reasons we

According to Patent Owner, Petitioner's contentions in this proceeding are undermined by Mr. Peterson's and Dr. Kia's testimony, which indicates that it was neither obvious nor predictable to use a camera phone to remotely deposit a check. *See* PO Resp. 9–17; *see also id.* at 18–21 (faulting Dr. Mowry for failing to address this testimony).

However, Patent Owner's arguments are fundamentally flawed because they fail to account for Garcia, which specifically teaches a system that uses a mobile phone to capture a check image for remote deposit. *E.g.*, Ex. 1003, 1:5–13, 4:10–5:9. This is not a passing reference in Garcia; rather, this is the heart of Garcia's invention. *See, e.g.*, *id.* at Abstr. As a result, Garcia, by itself, is strong evidence that a person of ordinary skill in the art would have expected to be able to remotely deposit a check using a mobile phone. In other words, even if there were challenges associated with using a camera phone to capture a sufficient image to remotely deposit a check, we find Garcia's disclosure to be persuasive evidence that an ordinarily skilled artisan would have expected to be able to successfully address those challenges. We note that we assign significantly more weight to Garcia's disclosure than we do to any expert's testimony because Garcia is documentary evidence written at the relevant time.

Also, Patent Owner's argument fails to address Petitioner's proposed combination, which contends that it would have been obvious to implement Garcia with a downloadable thin client application that provides a user interface and controls a camera (as disclosed in Byrne) and duplicate check detection (as disclosed in Singfield). *E.g.*, Pet. 28. None of the cited

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explain in connection with our analysis of Mr. Peterson's and Dr. Kia's testimony.

testimony from Mr. Peterson or Dr. Kia indicates that an ordinary artisan would have been discouraged from making the proposed combination or would have not had a reasonable expectation of success. Patent Owner asserts that "Mr. Peterson's and Dr. Kia's testimony goes directly to the question of whether there was a motivation to combine Garcia with Byrne/Singfield in the prior art" (PO Resp. 21); however, Patent Owner fails to sufficiently explain this assertion, and having read the cited testimony, we disagree with it.

Given these two fundamental flaws in Patent Owner's argument, we disagree with Patent Owner's suggestion that Dr. Mowry should have addressed the differences between camera phones and specialized scanners. *See* PO Resp. 18–21. Also, we discern little probative value in Dr. Mowry's failure to respond to questions regarding the substance of Mr. Peterson's and Dr. Kia's testimony. *See id.*

In addition, we disagree with Patent Owner's summary of Mr. Peterson's and Dr. Kia's testimony. *See* PO Resp. 9. At most, the testimony indicates that (1) an image obtained by a camera phone was materially different than one obtained from a traditional check scanner, (2) it was more challenging to capture a check image of sufficient quality with a camera phone because the resolution, focus, angle, movement, and lighting of the image were unpredictable, and (3) existing algorithms were not able to reliably and consistently correct for these challenges. *See* Ex. 2026, 42:6–44:2, 67:25–69:18, 124:9–25; Ex. 2036, 937:25–939:18, 941:13–25, 943:4–12; *see also* Ex. 2035, 2; Ex. 2036, 937:5–24 (also testifying a check's routing number, account number, and amount are necessary for a successful deposit, and that an image of a certain quality was needed for an OCR to properly capture that information). Although Mr. Peterson also disagrees

that "it would have been obvious that a person of skill could create a system that used consumer digital cameras to successfully deposit checks" (Ex. 2026, 124:20–25), we understand this statement, in context, to refer to these challenges associated with creating a commercially viable system and not as a statement that no prior art whatsoever is capable of rendering this concept obvious. *See id.* at 123:8–124:25 (making statement in the context of addressing another company's efforts to create a working system); Ex. 2025 ¶¶ 3–4 (opining that the challenged claims of the '598 patent are both obvious and not enabled).[32]

Moreover, we have considered the evidence regarding the challenges associated with using a camera phone to capture a check image, and we find that they would neither have dissuaded an ordinarily skilled artisan from making the proposed combination nor caused him to question the likelihood of success. First, Garcia expressly discloses using a mobile phone to remotely deposit a check. As we discuss above, Garcia is strong evidence that an ordinary artisan would have had a reasonable expectation of success, and we find that an ordinary artisan would not have been discouraged from following Garcia's teaching. Second, these issues, at most, would have caused the Garcia-Byrne-Singfield combination to be able to deposit a check

[32] Exhibit 2025 is an excerpt of Mr. Peterson's expert report, but it does not include the portions of the report that explain these conclusions. Also, it appears that Mr. Peterson considered Garcia and Byrne, but did not address Singfield or the Garcia-Byrne-Singfield combination. *See* Ex. 2025, iii. This is consistent with Petitioner's representation that it would not advance certain invalidity contentions in district court. Pet. 76 (stipulating that Petitioner "will not advance the grounds that are raised or reasonably could have been raised in this [*inter partes* review] in the co-pending district court proceeding"); *see* Inst. Dec. 12–14 (finding that Petitioner's stipulation "weighs strongly against discretionary denial").

image in *some*, but not *all*, cases. The evidence shows that mobile phones could capture check images of sufficient quality at least some of the time (*see, e.g.*, Ex. 1031 ¶ 126; Ex. 2026, 68:15–18, 71:2–9; Ex. 2036, 970:9–971:6), and we need not decide how often the system would have successfully deposited the check because claim 1 simply requires a method that "initiat[es] and/or log[s] a first deposit" (Ex. 1001, 15:58). We find that the Garcia-Byrne-Singfield combination teaches the performance of this step, and the claim does not require a system that always (or even usually) performs this method. *See Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003) ("[A] prior art product that sometimes, but not always, embodies a claimed method nonetheless teaches that aspect of the invention."); *see also Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) ("[C]ombinations of prior art that sometimes meet the claim elements are sufficient to show obviousness.").

iii. Conclusion

For the reasons provided above, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Garcia, Byrne, and Singfield in the manner proposed by Petitioner, and we are also persuaded that the Garcia-Byrne-Singfield combination teaches or suggests each limitation of claim 1. Accordingly, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of independent claim 1 would have been obvious over Garcia, Byrne, and Singfield.

2. Independent Claims 10 and 15

Petitioner contends that the subject matter of independent claims 10 and 15 would have been obvious in light of the Garcia-Byrne-Singfield combination. Pet. 54–59, 63–69. Petitioner addresses each limitation of these two claims and supports its contentions with analysis and evidence, referencing its earlier analysis of commensurate limitations in independent claim 1 as appropriate. *See id.*

Many of Patent Owner's arguments regarding claim 1 apply equally to independent claims 10 and 15 (*see* PO Resp. 6–21, 43–62), but those arguments are not persuasive for the reasons explained above (*supra* § II.E.1). Patent Owner does not otherwise dispute Petitioner's arguments, analysis, or evidence for claims 10 or 15. *See* PO Resp.

Having considered the parties' arguments and evidence, and for the reasons provided in connection with claim 1, we are persuaded that a person of ordinary skill in the art would have been motivated to combine Garcia, Byrne, and Singfield as proposed, and that the resulting combination teaches or suggests each limitation of independent claims 10 and 15.

3. Dependent Claim 2

Claim 2 depends from claim 1 and further recites "passing error processing before initiating and/or logging the deposit of the value to the account." Ex. 1001, 15:63–65.

Petitioner contends that the Garcia-Byrne-Singfield combination teaches the additionally-recited limitation of claim 2. Pet. 40–44. Petitioner submits that Garcia discloses that the payee bank "[r]ecogniz[es], verif[ies], and electronically treat[s] and process[es] the information received," but does not provide implementation details for these steps. *Id.* at 40–41

(quoting Ex. 1003, 6:8–10). According to Petitioner, the additionally-recited subject matter of this claim is disclosed by Byrne. *Id.* at 41–42. In particular, Petitioner points to Byrne's disclosure that the thin client installed on the mobile device "detect[s] whether the check is endorsed" and "check[s] for an imprint image, a scanned serial number, and the like, to indicate that the check had been properly scanned" before uploading the check image to the payee bank. *Id.* at 41–42 (citing Ex. 1004 ¶¶ 18, 31, 174–180, 191, Fig. 7; Ex. 1002 ¶¶ 113–114).

Petitioner contends that an ordinary artisan would have been motivated to include Byrne's error checking in the mobile device of the Garcia-Byrne-Singfield combination. Pet. 42–44. In support, Petitioner argues that an ordinary artisan (1) would have known that mobile networks are bandwidth and resource-constrained, (2) "would have been motivated to address errors at Garcia's mobile device before the check image is transmitted/submitted to avoid wasting communications resources and adding delays," and (3) would have understood that Byrne provides a solution by checking for errors before the image is sent. *Id.* at 42 (citing Ex. 1003, 11:21–12:1; Ex. 1004 ¶¶ 174–183; Ex. 1002 ¶ 115). Petitioner also argues that an ordinary artisan would have had a reasonable expectation of success in making this combination, and that the combination merely applies a known technique to a known device to yield predictable improvements. *Id.* at 42–44 (citing Ex. 1002 ¶¶ 116–119; Ex. 1004 ¶¶ 173–186; Ex. 1003, 10:10–18; Ex. 1020, 8:23–46).

Patent Owner argues that Petitioner fails to show that an ordinary artisan would have been motivated to shift this burden of error checking to Garcia's mobile phone. PO Resp. 62–63. Patent Owner also argues that "there would be substantial reason not to do this," including, for example,

that mobile phones in the relevant time period did not have the capability to run error checking algorithms successfully. *Id.* at 63. In addition, Patent Owner asserts that Dr. Mowry's trial testimony undercuts his rationale for combining Garcia and Byrne. *See* PO Resp. 34, 36–38, 41–42, 63.

Having considered the parties' arguments and evidence, we find that Petitioner has *not* shown, by a preponderance of the evidence, that a person of ordinary skill in the art would have been motivated to combine the references so that Garcia's mobile device would perform error checking as disclosed by Byrne.[33] *See* Pet. 40–42. Even if an ordinary artisan *could* have made the proposed combination, we are not persuaded that Petitioner has sufficiently shown that he would have been *motivated* to do so.

Initially, we note that Garcia provides a list of functions to be performed by the mobile device, but it does not contemplate performing error checking in the mobile phone. *See* Ex. 1003, 9:19–10:18. Rather, if

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[33] We analyze only the theory presented in the Petition, and we cannot consider other potential obviousness theories. *See PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (The "petitioner's contentions . . . define the scope of the litigation all the way from institution through to conclusion." (quoting *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1357 (2018))); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) ("[T]he Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond."). As a result, we do not consider whether it would have been obvious for *the payee bank* in Garcia to "pass[] error processing before initiating and/or logging the deposit" because the Petition includes no such contention. *See, e.g.*, Pet. 40–41 (stating that "Garcia does not disclose . . . that verifying includes passing error processing before initiating or logging a deposit"); *see also* Pet. Reply 22 (arguing that "[e]rror checking at the mobile device . . . is indisputably within claim 2's scope" and that "the prior art makes clear that mobile devices were capable of successfully performing error checking functions").

anything, Garcia indicates that the payee bank would perform such a function. *See id.* at 11:7–10 (stating that the payee bank "must have certain electronic means of recognizing, verifying and processing the information sent by the user"); *see also* Ex. 2020, 240:18–24 (Dr. Mowry agreeing that Garcia's verification process is happening at the bank) (*quoted in* PO Resp. 34).

Petitioner contends that an ordinary artisan would have been motivated to add error processing to Garcia's mobile phone so that it could address errors before transmitting the check image in order "to avoid wasting communications resources and adding delays." Pet. 42. But, Petitioner does not support this rationale with a persuasive explanation or evidence. Indeed, we assume that Petitioner's theory is that the error checking at the mobile device would have conserved bandwidth and reduced delay *because* it would have allowed the mobile device to identify some unsuitable images before they were sent to the payee bank; however, the Petition does not actually include an explanation to this effect. Rather, it simply states that an ordinary artisan would have known that mobile telephone networks (such as that used by Garcia) "are bandwidth and resource-constrained, and that communications over such networks takes time." *Id.*; *see also* Ex. 1002 ¶ 115. However, *all* networks have bandwidth and resource constraints, and *all* communications take time, and neither the Petition nor Dr. Mowry explain why these considerations would have been relevant to an ordinary artisan implementing Garcia. Indeed, the Petition next asserts that "Byrne provides the requisite solution to this problem" (Pet. 42), but neither the Petition nor Dr. Mowry identify any problem. For example, Dr. Mowry does not testify that an ordinary artisan would have expected Garcia's system to consume excessive bandwidth or incur

excessive delay. *See* Ex. 1002 ¶¶ 115–119 (addressing rationale to combine for claim 2). In addition, Petitioner recognizes that the verification process is performed by the payee bank in Garcia, yet does not address the fact that its proposal would apparently shift a portion of the verification process to the mobile phone. *See* Pet. 40–44.

Dr. Mowry's trial testimony casts further doubt on Petitioner's rationale for this claim. Dr. Mowry testifies that conserving bandwidth would "potentially" have been one of the goals of an ordinary artisan "depend[ing] on how precious their resource is." Ex. 2020, 68:12–24. But Dr. Mowry "wouldn't necessarily characterize [Garcia] as bandwidth intensive." *Id.* at 76:13–23. In addition, he disagreed that "in the Garcia system, the motivation would have been to shift it to the client side for the verification," noting simply that "[t]here are tradeoffs" associated with doing the verification processing on either the client or the server. *Id.* at 241:22–242:13. Petitioner attempts to limit the impact of Dr. Mowry's answers (Pet. Reply 16); however, the fact remains that Petitioner has the burden of proof, and it does not identify persuasive evidence to support its contention. Petitioner's Reply asserts that these considerations were "particularly important in 2006, when 3G bandwidth was at a premium" (*id.* at 22 (citing Ex. 1029 ¶ 49)), but neither Petitioner nor Dr. Mowry provide analysis or evidence to support this conclusory assertion.

Moreover, the Petition also fails to address whether the proposed combination would have, in fact, conserved communications resources or reduced delays. In Petitioner's proposed combination, Byrne's thin client application would be downloaded to Garcia's mobile phone at each use (which would require communication resources and incur latency), but the Petition fails to address whether the net result of the proposed combination

would be reduced bandwidth or decreased delays.[34] *See* Ex. 2020, 147:20–148:1 (Dr. Mowry agreeing that the impact of downloading the thin client is not discussed in his report). Moreover, Garcia touts the "speed" of its process, stating that its "immediate processing . . . allows the immediate availability in the user's account" (Ex. 1003, 7:18–8:3), which indicates that an ordinary artisan would not have perceived a problematic delay in Garcia's system. Petitioner's attempt to shift the burden to Patent Owner to determine whether or not its purported benefits would be realized (*see* Pet. Reply 17) is unavailing. In its Reply, Petitioner cites testimony from Dr. Mowry (*see* Ex. 1029 ¶ 37), but it simply compares the size of a compressed image with the size of a "large" application. This evidence does not outweigh the other evidence above, and it was submitted too late to remedy the Petition. *See supra* § II.A.; *see also* Trial Practice Guide 73 (explaining that a petitioner "may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability").

Finally, on this record, we are also not persuaded by Petitioner's contentions that the proposed combination merely applies a known technique to a known device to yield predictable improvements. *See* Pet. 42–44 (citing Ex. 1002 ¶¶ 116, 119). Petitioner points to Dr. Mowry's testimony in support, but he simply reiterates Petitioner's conclusory

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[34] This is problematic in the context of claim 2 (but not claim 1) because Petitioner's rationale for combining Garcia, Byrne, and Singfield to teach the limitation of claim 2 is predicated on improvements to bandwidth and latency (where the rationale for claim 1 is not). Moreover, unlike Petitioner's contentions for claim 1 (which propose implementations that are supported by Garcia's disclosure), Petitioner's contentions for claim 2 propose a modification of Garcia that alters the reference's teachings.

assertions. *See* Ex. 1002 ¶¶ 116, 119 (mirroring the Petition's statements); 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."); *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper 9 at 15 (PTAB Aug. 24, 2022) (precedential).

Accordingly, we are not persuaded by Petitioner's rationale to combine Garcia and Byrne in the manner proposed for this claim. As a result, we conclude that Petitioner has not shown, by a preponderance of the evidence, that the subject matter of claim 2 would have been obvious over Garcia, Byrne, and Singfield.

4. Dependent Claims 3–7, 18 and 19

Claim 3 directly depends from claim 2. Ex. 1001, 15:66–16:3. As explained above, Petitioner has not shown that the subject matter of claim 2 would have been obvious over the combination of Garcia, Byrne, and Singfield. *Supra* § II.E.3. By virtue of dependency, Petitioner also has not shown that the subject matter of claim 3 would have been obvious over Garcia, Byrne, and Singfield.

As for claims 4–7 and 18, Patent Owner contends that the "same analysis" addressed above with respect to claim 2 "applies to claims 4–7 and 18, for which Dr. Mowry relies on the same theory." PO Resp. 63. Petitioner does not dispute this contention. Pet. Reply 22–26.

For claim 4, we understand the Petition to rely upon the same rationale to combine addressed above in the context of claim 2. *See* Pet. 47–48. As a result, for the reasons explained above with respect to claim 2 (*see supra* § II.E.3), we find that Petitioner has not shown, by a preponderance of the evidence, that a person of ordinary skill in the art would have been

motivated to combine the references as proposed. As a result, Petitioner has not shown that the subject matter of claim 4 would have been obvious over Garcia, Byrne, and Singfield. Claims 5–7 directly depend from claim 4 (Ex. 1001, 16:9–28), and by virtue of dependency, Petitioner also has not shown that the subject matter of these claims would have been obvious over Garcia, Byrne, and Singfield.

For claim 18, however, the Petition's contentions are different. *See* Pet. 70–71. Claim 18 directly depends from independent claim 15 and recites that the instructions recited by the independent claim "analyze and confirm that the at least one electronic image of the check meets at least one image criterion before proceeding to activate updating of the account." Ex. 1001, 18:19–24. For these claimed instructions, Petitioner points to Byrne's disclosure of the CEO and contends that it would have been obvious for Garcia's payee bank to include such instructions. Pet. 71 (citing *id.* at 65–67); *see id.* at 65–66 (presenting consistent contention for independent claim 15). As for the additionally-recited limitation of claim 18, Petitioner contends that Byrne discloses scanning a check and detecting endorsement, imprint, and serial number before committing a deposit. *Id.* at 71 (citing Ex. 1004 ¶¶ 175, 191). Although the Petition also cites the discussion of claim 4, we understand this citation to reference the earlier discussion of Byrne's *teachings*, rather than the discussion of the alleged motivation to add these features of Byrne into Garcia's mobile device. *See id.* ("Furthermore, Byrne teaches the additional limitations of claim 18. *See* Section X.A.5 [claim 4]." (alterations in original)). Indeed, such an understanding is most consistent with Petitioner's discussion of independent claim 15, which points to the operations of Garcia's financial institution, as modified by Byrne's disclosure, to teach the other operations executed by

the claimed instructions. *See id.* at 67–69; *see also id.* at 69–70 (claim 16 also alleging that the instructions are executed by the payee bank). In addition, we note that Petitioner's rationale to add Byrne's error processing into Garcia's mobile device is articulated in the discussion of claim 2, which is merely referenced by claim 4. *See* Pet. 40–44, 47–48. Because Patent Owner's argument is that Petitioner fails to show a motivation to shift the error processing to Garcia's mobile device (*see* PO Resp. 62–63), we do not agree that the same analysis applies to dependent claim 18 (*see id.* at 63). Moreover, Patent Owner does not otherwise dispute Petitioner's showing for dependent claim 18. *See* PO Resp.

On this record, we are persuaded by Petitioner's showing that the additionally-recited limitation of dependent claim 18 would have been obvious over the proposed Garcia-Byrne-Singfield combination. *See* Pet. 70–71 (citing *id.* at 63–69). In particular, we are persuaded that an ordinary artisan would have been motivated to implement Garcia's deposit functionality at the payee bank using servers, as disclosed by Byrne, and we agree that Garcia's computer equipment and Byrne's servers include executable instructions. *See id.* at 65–67, 71. We are further persuaded that Byrne teaches analyzing and confirming that the check image meets at least one criterion before updating the account, as further recited by claim 18. *See id.* at 71 (citing Ex. 1004 ¶¶ 175, 191); *see* Ex. 2031 ¶ 39 (Dr. Creusere testifying that "Byrne . . . performs all of its image quality analysis on the bank server"). In addition, we find that an ordinarily skilled artisan would have been motivated to combine these references as proposed, and we find that the proposed Garcia-Byrne-Singfield combination teaches all the limitations of independent claim 15, which are included in dependent claim 18 by virtue of dependency. *See supra* § II.E.2. As a result, we determine

that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 18 would have been obvious over Garcia, Byrne, and Singfield.

Claim 19 directly depends from claim 18 and further recites that the instructions recited by independent claim 15 also "confirm the at least one electronic image of the check is legible, is appropriately sized, has an appropriate orientation, has an appropriate format, includes a validating image feature, includes a properly located image feature properly, or a combination thereof before proceeding to activate updating of the account." Ex. 1001, 18:25–34. Petitioner contends that Byrne teaches these additionally-recited limitations. Pet. 71–72 (citing *id.* at 49–50, 69–71). In particular, Petitioner argues that Byrne's system uses a "checking means, such as checking for an imprint image, as scanned serial number, and the like, to indicate that the check had been properly scanned." *Id.* at 49–50 (emphasis omitted) (quoting Ex. 1004 ¶ 175; *citing* Ex. 1004 ¶ 173; Ex. 1002 ¶ 138). Patent Owner does not dispute Petitioner's showing for dependent claim 19. *See* PO Resp. On this record, upon consideration of the evidence and argument presented, we are persuaded by Petitioner's undisputed showing that the additionally-recited limitation of dependent claims 19 would have been obvious over the proposed Garcia-Byrne-Singfield combination. *See* Pet. 71–72 (citing *id.* at 49–50, 69–71). As a result, we determine that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 19 would have been obvious over Garcia, Byrne, and Singfield.

In sum, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 18 and 19 would have been obvious over Garcia, Byrne, and Singfield, but we conclude that Petitioner

has not shown, by a preponderance of the evidence, that the subject matter of claims 3–7 would have been obvious over these references.

5. Dependent Claims 8, 9, 11–14, 16, and 20

Claims 8 and 9 directly depend from independent claim 1, claims 11–14 directly depend from independent claim 10, and claims 16 and 20 directly depend from independent claim 15. Ex. 1001, 16:29–35, 16:61–17:16, 18:10–14, 18:35–38. Petitioner contends that these dependent claims would have been obvious over Garcia, Byrne, and Singfield. Pet. 47–54, 59–62, 69–72. Patent Owner does not separately dispute these contentions. *See* PO Resp.

Having considered the record, we are persuaded by Petitioner's undisputed showing that each additionally-recited limitation of dependent claims 8, 9, 11–14, 16, and 20 would have been obvious over the proposed Garcia-Byrne-Singfield combination. *See* Pet. 51–54, 59–62, 69–70, 72. In addition, as explained above (*supra* § II.E.1–2) and for the reasons explained by Petitioner in its additional analysis of these claims, we find that an ordinarily skilled artisan would have been motivated to combine these references as proposed, and we find that the proposed Garcia-Byrne-Singfield combination teaches the requirements of the respective independent claims.

Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claims 8, 9, 11–14, 16, and 20 would have been obvious over Garcia, Byrne, and Singfield.

F. Obviousness Ground Based on Garcia, Byrne, Singfield, and Adusumilli

Claim 17 depends from independent claim 15 (Ex. 1001, 18:15–17), and Petitioner contends that the subject matter of this claim would have been obvious over Garcia, Byrne, Singfield, and Adusumilli (Pet. 72–76). Patent Owner does not separately dispute this contention. *See* PO Resp.

Having considered the record, we are persuaded by Petitioner's undisputed showing that Adusumilli teaches the additionally-recited limitation of claim 17 (*see* Pet. 72–75), and that an ordinary artisan would have been motivated to combine this teaching of Adusumilli with Garcia (*see id.* at 75–76). In addition, as explained above (*supra* § II.E.1–2), we find that an ordinarily skilled artisan would have been motivated to combine Garcia, Byrne, and Singfield, and we find that the proposed Garcia-Byrne-Singfield combination teaches or suggests all the limitations of the corresponding independent claim.

Accordingly, we conclude that Petitioner has shown, by a preponderance of the evidence, that the subject matter of claim 17 would have been obvious over Garcia, Byrne, Singfield, and Adusumilli.

III. CONCLUSION[35]

Based on the evidence presented with the Petition, the evidence introduced during the trial, and the parties' respective arguments, Petitioner has shown by a preponderance of the evidence that claims 1 and 8–20 are unpatentable, but Petitioner has not shown that claims 2–7 are unpatentable.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–16, 18–20	103(a)	Garcia, Byrne, Singfield	1, 8–20	2–7
17	103(a)	Garcia, Byrne, Singfield, Adusumilli	17	
Overall Outcome			**1, 8–20**	**2–7**

[35] 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*, 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).

IV. ORDER

Accordingly, it is

ORDERED that claims 1 and 8–20 of the ’598 patent are determined to be unpatentable;

FURTHER ORDERED that claims 2–7 of the ’598 patent are not determined to be unpatentable; and

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

FOR PETITIONER:

Monica Grewal
David Cavanaugh
Jonathan Knight
R. Gregory Israelsen
Scott Bertulli
Amy Mahan
WILMERHALE
monica.grewal@wilmerhale.com
david.cavanaugh@wilmerhale.com
jonathan.knight@wilmerhale.com
greg.israelsen@wilmerhale.com
scott.bertulli@wilmerhale.com
amy.mahan@wilmerhale.com

FOR PATENT OWNER:

Anthony Rowles
Michael Fleming
IRELL & MANELLA LLP
trowles@irell.com
mfleming@irell.com