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Paper 11
Date: June 13, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

IPR2023-00196
Patent 10,810,579 B2

Before BRIAN J. MCNAMARA, ELIZABETH M. ROESEL, and SHARON FENICK, *Administrative Patent Judges.*

FENICK, *Administrative Patent Judge*.

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

GOOGLE EXHIBIT 1047
Google LLC v. Cardware Inc.
IPR2025-01361

I. INTRODUCTION

A. Background and Summary

Samsung Electronics Co., Ltd. ("Petitioner") filed a Petition (Paper 2, "Pet.") requesting *inter partes* review of claims 1–23 ("challenged claims") of U.S. Patent No. 10,810,579 B2 (Ex. 1001, "the '579 patent"). CardWare Inc. ("Patent Owner") filed a Preliminary Response (Paper 6, "Prelim. Resp."). With our prior authorization, Petitioner filed a Preliminary Reply (Paper 7, "Prelim. Reply") and Patent Owner filed a Preliminary Sur-reply (Paper 8, "Prelim. Sur-reply").

An *inter partes* review may be instituted only if "the information presented in the petition . . . and any [preliminary] response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a) (2018). For the reasons below, Petitioner has established a reasonable likelihood that it would prevail in showing the unpatentability of at least one of the challenged claims. As discussed below, we have considered whether to exercise our delegated discretion to deny institution pursuant to 35 U.S.C. § 314(a) and determined not to exercise this discretion. Accordingly, we institute an *inter partes* review of the challenged claims on all grounds raised in the Petition.

B. Real Parties in Interest

Petitioner identifies Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. as real parties in interest. Pet. 95.

Patent Owner identifies only itself as a real party in interest. Paper 3 (Patent Owner's Mandatory Notices), 1.

C. Related Matters

Petitioner and Patent Owner each identify *CardWare Inc. v. Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.*, No. 2:22-cv-00141 in the Eastern District of Texas ("the district court litigation") as a related matter. Pet. 96; Paper 3, 1.

D. The '579 Patent

The '579 patent is directed to a multifunction electronic device used in commercial transactions, such as a device that emulates the behavior of a credit card when used in electronic credit card readers and that allows user control of the device for the purpose of authorizing or controlling the use of the device in transactions. Ex. 1001, code (57), 1:23–27, 2:13–30.

The '579 patent describes a "smart credit card device" that includes a processor, touch sensor array, display, near-field communication (NFC) unit. *Id.* at 6:1–6:48, Fig. 2B (elements 205, 245, 250, 260). The smart credit card device can be used for multiple banks or financial institution accounts, instead of a separate credit card for each account. *Id.* at 6:49–54. Using the touch sensor array, a user can select the appropriate account to perform a transaction, after the plurality of accounts stored by the credit card device are displayed. *Id.* at 6:49–7:4, Fig. 2C. The credit card device is then configured according to account information associated with the selected account, such as account number, expiration date, or other user information. *Id.* at 7:4–9. The credit card device may then be configured with a limited-duration credit card number that is associated with the account. *Id.* at 7:9–12. This limited-duration credit card number may be generated according to "the selected account, a timestamp, a transaction amount, an indicated merchant, user key or secrets, on-card unique hardware secrets, credit card authority key or secrets, user input from the card interface, and other

information associated with the transaction." *Id.* at 7:12–18. The limited-duration credit card number may be limited to one transaction, a finite number of transactions, or a specified period of time. *Id.* at 10:13–23. The limited-duration credit card number provides a credit card device with no fixed number, and makes unauthorized use of the credit card device "highly unlikely." *Id.* at 10:49–56.

In one embodiment, accelerometers in the device are used to detect the beginning of a transaction, by detecting a "priming" action for a credit card device. *Id.* at 5:38–41, 13:22–28. The priming action may be a tap of the credit card device or tapping one credit card device against another. *Id.* at 13:25–30. The touch sensor array may also be used for the priming action. *Id.* at 13:30-32. Success or failure of a transaction is displayed on the display of the smart credit card device. *Id.* at 14:5–7.

E. Illustrative Claim

Claims 1, 15, and 19 are independent. Claim 1, reproduced below with bracketed identifiers added as used by the parties, and some spacing and indentation changes made for readability, is illustrative.

> 1. A method of performing a transaction, the method comprising:
> [1a] receiving an input at an electronic device, wherein the input corresponds to a priming operation of the electronic device by an identified user and wherein the electronic device comprises:
> [1b] a processor;
> [1c] a touch screen display coupled to the processor; and
> [1d] a near field communications (NFC) interface coupled to the processor;
> [1e] receiving a request for a transaction payment at said electronic device via the NFC interface;
> [1f] displaying, on the touch-screen display, images of:
> a card issuer payment method selection, including

a last 4-digit partial number of a card issuer supplied account number of a payment card;

[1g] a card logo; and

[1h] other iconography of the payment card;

[1i] generating, by the processor, a limited-use payment information, and using said limited-use payment information in place of said card issuer supplied payment information;

[1j] transmitting said limited-use payment information from said electronic device to an NFC recipient of the transaction via said NFC interface; and

[1k] visually conveying a status of said transaction via a user-interface displayed on said touch-screen display.

Ex. 1001, 18:58–19:18.

F. Evidence

Petitioner relies on the following patent.

Name	Patent Document	Exhibit
Power	US 8,052,052 B1	1016
Casey	US 8,255,323 B1	1006
Amacker	US 8,423,462 B1	1008
Gomez	US 9,600,808 B1	1007
Deibert	US 2008/0172317 A1	1012
Carlson	US 2008/0319905 A1	1013
Royyuru	US 2010/0185545 A1	1004
Phillips	US 2012/0310760 A1	1005
Mullen	WO 2012/154915 A1	1009
Smith	US 2013/0232083 A1	1010

G. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–23 would have been unpatentable on the following grounds:

Claim(s) Challenged	35 U.S.C. §[1]	Reference(s)/Basis
1–4, 6–9, 11, 12, 15–23[2]	103	Royyuru, Phillips, Casey
5	103	Royyuru, Phillips, Casey, Gomez
10, 14	103	Royyuru, Phillips, Casey, Deibert
13	103	Royyuru, Phillips, Casey, Deibert, Power
4, 21, 22	103	Royyuru, Phillips, Casey, Carlson
1–9, 11, 12	103	Gomez, Amacker, Mullen, Smith
10, 14	103	Gomez, Amacker, Mullen, Smith, Deibert
13	103	Gomez, Amacker, Mullen, Smith, Deibert, Power
15–20, 22, 23	103	Gomez, Amacker, Mullen
4	103	Gomez, Amacker, Mullen, Smith
22	103	Gomez, Amacker, Mullen, Carlson
21	103	Gomez, Amacker, Mullen, Carlson, Royyuru

Pet. 1–2.

[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284 (2011), amended 35 U.S.C. §§ 102, 103. Because the '579 patent claims priority to a provisional application filed before the effective date of the applicable AIA amendment (March 16, 2013), we refer to the pre-AIA version of the relevant statutes. *See* Ex. 1001, code (60), 1:7–19; Pet. 2.

[2] While the table listing the grounds presented and the heading for this ground in the Petition do not list claim 21 as part of this ground, an argument regarding claim 21 is included in the ground. *Compare* Pet. 1, 5, *with id.* at 44–46.

II. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 314(A)

A. Legal Standards

Patent Owner argues that we should exercise discretion to deny institution under 35 U.S.C. § 314(a) because the factors identified in *Apple, Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) ("*Fintiv*"), weigh in favor of denying institution. Prelim. Resp. 27–34; Prelim. Sur-reply. Petitioner argues we should not discretionarily deny institution under *Fintiv*. Pet. 93–95; Pet. Reply.

The precedential decision in *Fintiv* identifies a non-exclusive list of factors parties may consider addressing where there is a related, parallel district court action to determine whether such action provides any basis for discretionary denial. *Fintiv*, 5–16. Those factors include:

> 1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
>
> 2. proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;
>
> 3. investment in the parallel proceeding by the court and the parties;
>
> 4. overlap between issues raised in the petition and in the parallel proceeding;
>
> 5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
>
> 6. other circumstances that impact the Board's exercise of discretion, including the merits.

Id. at 5–6.

In evaluating the factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Id.* at 6. The Director has issued additional guidance on the application of *Fintiv*. *See* Katherine K. Vidal, *Interim Procedure for Discretionary*

Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (June 21, 2022)[3] ("*Fintiv* Memo"). Additionally, we are guided by the precedential decisions of the Director in *OpenSky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102, 49–50 (Oct. 4, 2022) (precedential) and *CommScope Techs. LLC v. Dali Wireless, Inc*, IPR2022-01242, Paper 23 (Feb. 27, 2023) (precedential) ("*CommScope*").

We are instructed to consider compelling merits under *Fintiv* factor six only after a determination that the first five *Fintiv* factors favor discretionary denial. *CommScope*, 4–5. Thus, we begin by considering the first five *Fintiv* factors.

B. Fintiv Factors

1. Factor 1 - Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

"A district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts." *Fintiv*, 6. *Fintiv* indicated that, in previous Board decisions, the existence of a district court stay pending Board resolution of an *inter partes* review has weighed strongly against discretionary denial, while a denial of such a stay request sometimes weighs in favor of discretionary denial. *Id.* at 6–8.

Patent Owner notes that a stay was requested and not granted in the district court litigation, and asserts that this factor should be viewed as neutral. Prelim. Resp. 30; Ex. 2003.

Petitioner notes that the dismissal of the stay request was without prejudice, and that it maintains the right to move for a stay if we institute.

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

Prelim. Reply 1, 2. Petitioner argues that the factor should be considered neutral or to disfavor discretionary denial. *Id.* at 2.

The court in the district court litigation noted in its denial of the stay request that it was following "the universal practice" in the district, to deny a stay based on post-grant review requests where institution decisions have not yet been issued, and provided no additional reasoning or indication of future action with respect to any potential renewal of the stay request. Ex. 2003. Because, "[i]n the absence of specific evidence, we will not attempt to predict" whether a district court would stay "based on a variety of circumstances and facts beyond our control and to which the Board is not privy," we find this factor to be neutral. *See Sand Revolution II, LLC v. Cont'l Intermodal Group – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) ("*Sand Revolution*").

2. Factor 2 - Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision

The proximity factor in *Fintiv* asks us to evaluate our discretion in light of a trial date that has been set in a parallel litigation. *See Fintiv*, 3, 5 ("*NHK* applies to the situation where the district court has set a trial date to occur earlier than the Board's deadline to issue a final written decision in an instituted proceeding."; "When the patent owner raises an argument for discretionary denial under *NHK* due to an earlier trial date, the Board's decisions have balanced the following factors . . . .") (citing *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 at 20 (PTAB Sept. 12, 2018) (precedential)("*NHK*")). As noted above in the discussion of the first factor, *Fintiv* cites concern regarding "inefficiency and duplication of efforts." *Id.* at 6. In its analysis of the proximity factor, *Fintiv* echoes that concern in its guidance that "[i]f the court's trial date is at or around the

same time as the projected statutory deadline or even significantly after the projected statutory deadline, the decision whether to institute will likely implicate other factors discussed herein, such as the resources that have been invested in the parallel proceeding." *Id.* at 9. Similarly, in *NHK*, the Board expressed the concern that a trial before the deadline for a final written decision addressing the same prior art and arguments would have undermined the Board's objectives of providing an effective and efficient alternative to district court litigation. *See NHK*, 20 (citing *General Plastic Indus. Co., Ltd. v. Cannon Kabushiki Kaisha*, IPR2016-01357, Paper 19 at 16–17 (PTAB Sept. 6, 2017 (precedential))).

We are instructed that

> when analyzing the proximity of the court's trial date under factor two of *Fintiv*, when other relevant factors weigh against exercising discretion to deny institution or are neutral, the proximity to trial should not alone outweigh all of those other factors. Parties may present evidence regarding the most recent statistics on median time-to-trial for civil actions in the district court in which the parallel litigation resides for the PTAB's consideration. Where the parties rely on time-to-trial statistics, the PTAB will also consider additional supporting factors such as the number of cases before the judge in the parallel litigation and the speed and availability of other case dispositions.

Fintiv Memo, 8–9 (internal citations and footnote deleted).

At the time of filing the Petition, Petitioner argued that given the district court's median time-to-trial data and the anticipated schedule if we institute, the likely disposition of the district court litigation would be anticipated in the same month as a final written decision in this proceeding. Pet. 93–94 (citing Ex. 1103, 35).

Patent Owner contends that as the docket control order sets jury selection for February, 2024, the trial date precedes the anticipated final

written decision deadline by four months. Prelim. Resp. 30–31 (citing Ex. 2001). Patent Owner additionally argues that, if the Board relies on median time-to-trial, then we should use specific time-to-trial data for the presiding judge, which would indicate an even earlier trial date than that scheduled in the docket control order. Prelim. Resp. 31 (citing Ex. 2002, 1).

We "generally take courts' trial schedules at face value absent some strong evidence to the contrary," and here neither party presents strong evidence casting doubt on the trial date set in the district court's order. Because the trial in the district court litigation is scheduled to begin four months before our deadline to reach a decision, this factor weighs marginally in favor of discretionary denial. *Apple v. Fintiv*, IPR2020-00019, Paper 15, 13 (PTAB May 13, 2020) (informative).

3. Factor 3 - Investment in the parallel proceeding by the court and the parties

If, at the time of the institution decision, the district court has issued substantive orders related to the challenged patent, such as a claim construction order, this fact weighs in favor of denial. *See Fintiv*, 9–10. On the other hand, if the district court has not issued such orders, this fact weighs against discretionary denial. *Id.* at 10.

Petitioner argues that the bulk of investment in the district court litigation has yet to occur, and that no part of claim construction or document production had occurred at the time of the filing of the Petition. Pet. 94. Petitioner further argues that it was diligent in filing the Petition and that its diligence "heavily favors" institution. Prelim. Reply 3.

Patent Owner argues that by the time of our decision, document production will be substantially complete and "the claim-construction

process [will] be underway and completed shortly thereafter." Prelim. Resp. 32 (citing Ex. 2001, 3–4).

The docket control order shows that the claim construction hearing is not scheduled until August 1, 2023, and that substantial deadlines for the parties related to claim construction are still upcoming. Ex. 2001, 3. *Fintiv* also directs us to consider whether "the petitioner filed the petition expeditiously." *Fintiv*, 11. While we are mindful of the investment of the parties to date, we find that, at this time, substantial work remains for the parties and no substantive orders related to the challenged patent have been issued by the district court. Additionally, on the record before us the filing of the Petition was expeditious. We determine this factor weighs against exercising discretion to deny institution.

4. Factor 4 - Overlap between issues raised in the petition and in the parallel proceeding

"[I]f the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial." *Fintiv*, 12. "Conversely, if the petition includes materially different grounds, arguments, and/or evidence than those presented in the district court, this fact has tended to weigh against exercising discretion to deny institution under *NHK*." *Id.* at 12–13. A stipulation as in *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 18–19 (PTAB Dec. 1, 2020) (precedential as to § II.A), if one is entered, would be highly relevant. "Consistent with *Sotera Wireless, Inc.*, the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have

reasonably been raised before the PTAB." *Fintiv* Memo 3 (footnote omitted).

Petitioner offers, in the Petition, a stipulation that, if IPR is instituted, "it will not pursue in the Related Litigation any invalidity grounds against the Challenged Claims of the '579 patent that are the same as those raised in this Petition." Pet. 94–95. It later offers an additional stipulation that "if this IPR is instituted, Petitioner will not pursue an invalidity defense in the E.D. Texas litigation with respect to the claims of the '579 Patent in the instituted IPR based on (i) any of the same grounds in the instituted IPR or (ii) any prior art reference that forms the basis of any ground in the instituted IPR." Prelim. Reply 1–3; Ex. 1110. Petitioner argues that this stipulation "leaves only meaningfully different prior art available for use in the E.D. Texas litigation." Prelim. Reply 3; *see* Ex. 3001 (Petitioner's email to the Board relating to its stipulation).

Patent Owner argues that, in the new stipulation, Petitioner only restricts itself from pursuing "in district court the same grounds or the specific references in those grounds," but "leaves the Petitioner free to pursue related references that might have the same (or substantially the same) disclosure" as the asserted references here, such as continuations or foreign counterparts. Prelim. Sur-reply 1. Patent Owner argues that Petitioner's stipulation has "no practical effect" and, because Petitioner has not offered a *Sotera* stipulation, factor 4 favors denial. *Id.* at 1–2.

While not a *Sotera* stipulation, Petitioner's stipulation appears to be similar to that in *Sand Revolution*. *Sand Revolution II, LLC v. Cont'l Intermodal Grp. Trucking LLC*, IPR2019-01393, Paper 24 at 11–12 (PTAB June 16, 2020) (informative) ("*Sand Revolution*") (finding that a stipulation not to pursue the same grounds in the parallel litigation "mitigates to some

degree the concerns of duplicative efforts"). We recognize that *Sand Revolution*-type stipulations are narrower in scope than *Sotera*-type stipulations. However, Petitioner's stipulation still reduces potential overlap with the district court litigation. In *Sand Revolution*, such a stipulation weighed marginally in favor of not exercising discretion. *Sand Revolution*, 12.

Additionally, we note that we have not been apprised by either party whether, in fact, the same art and arguments are anticipated to be the subject of the district court litigation. *See Fintiv*, 12.

We determine this factor weighs marginally against exercising discretion to deny institution.

5. Factor 5 - Whether the petitioner and the defendant in the parallel proceeding are the same party

If the petitioner is unrelated to the defendant in the parallel proceeding, that might weigh against discretionary denial. *See Fintiv*, 13–14.

Patent Owner argues that Petitioner is the defendant in several of the parallel proceedings. Prelim. Resp. 61. Petitioner does not dispute this. Prelim. Reply 3.

As with *Fintiv* factor 2, therefore, this factor weighs marginally in favor of exercising our discretion to deny the Petition.

C. Conclusion

We have considered the circumstances and facts before us in view of the first five *Fintiv* factors. Because our analysis is fact driven, no single factor is determinative of our conclusion. Considering these five *Fintiv* factors, we determine that they do not favor a discretionary denial. As we do not find that the first five *Fintiv* factors favor discretionary denial, we

therefore do not make a determination regarding compelling merits under *Fintiv* factor 6, and our consideration ends with this conclusion. *CommScope*, 4–5.

III. REASONABLE LIKELIHOOD UNDER 35 U.S.C. § 314(A)

A. Legal Standards

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring [*inter partes*] review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review). Furthermore, Petitioner must explain with particularity how the prior art would have rendered the challenged claims unpatentable. 35 U.S.C. § 312(a)(3); 37 C.F.R. § 42.104(b)(4) ("The petition must specify where each element of the claim is found in the prior art patents or printed publications relied upon.").

A claim is unpatentable under 35 U.S.C. § 103 if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art;

(3) the level of skill in the art; and (4) when presented, objective indicia relating to obviousness.[4] *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner argues that:

> A person of ordinary skill as of the Critical Date of the '579 patent ("POSITA") would have had (1) a bachelor's degree in computer science, computer engineering, electrical engineering, or a related field, and (2) one to two years of experience working with payment processing and/or digital authentication systems, including familiarity with short-range wireless technologies. Graduate education could substitute for professional experience, or significant experience in the field could substitute for formal education.

Pet. 5 (internal citations omitted) (citing Ex. 1003 ¶¶ 43–49).

At this point, Patent Owner does not dispute this assertion regarding the proper level of ordinary skill in the art. Prelim. Resp. 11–12. For purposes of this Decision, we apply Petitioner's definition of a POSITA.

C. Claim Construction

Each party submits that no claim construction is necessary at this stage. Pet. 3; Prelim. Resp. 11. We agree. *See Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those 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)).

[4] The record at this point contains no contentions regarding such objective indicia relating to obviousness.

D. Obviousness of Claims 1–4, 6–9, 11, 12, and 15–23 over Royyuru, Phillips, and Casey

Petitioner argues that claims 1–4, 6–9, 11, 12, and 15–23 are unpatentable as obvious over a combination of Royyuru, Phillips, and Casey. Pet. 5–47. Patent Owner presents arguments relating to limitation 1i of claim 1 (and similar limitations in independent claims 15 and 19), and relating to the propriety of the proposed combination. Prelim. Resp. 12–18.

1. Royyuru

Royyuru describes a mobile device, such as a smart card or cellular telephone, used as a presentation instrument to initiate the processing of a financial transaction related to a financial account. Ex. 1004 ¶¶ 5, 21, 32. The mobile device can be encoded with a real Primary Account Number (PAN) and a card-level key (e.g. Institution Key Card Variant (IKCV)) stored on the mobile device or with the real PAN and an "unpredictable number" sent by an intermediate device. *Id.* ¶¶ 5, 32, 57. The IKCV may be generated for the mobile device when the mobile device is being customized and be a based on but distinct from an institution key for the issuer of the presentation instrument. *Id.* ¶¶ 46, 57. A dynamic PAN (or "Pseudo-PAN") is generated by an application within the mobile device, and that dynamic PAN is used in the transaction in place of the real PAN. *Id.* ¶¶ 46, 47, 49, 57. The dynamic PAN can be generated based on the real PAN and the IKCV. *Id.* ¶¶ 5, 33, 54, 57. "The dynamic PAN can comprise an encrypted form of a real PAN of the financial account that is valid for a single transaction." *Id.* ¶ 33; *see id.* ¶¶ 54, 57. A Dynamic Transaction Cryptogram (DTC) may also be generated at the mobile device and sent to the payment processor system with the dynamic PAN, allowing the transaction to be authenticated based on the DTC. *Id.* ¶ 34. The DTC may

be generated based on a unique card-level key and a personal identification number (PIN) provided by the consumer or other information known to the user of the mobile device. *Id.* ¶¶ 47, 53.

Royyuru describes the detection of the initiation of a transaction using the mobile device, for example by passing the mobile device on or near a point-of-sale (POS) device. *Id.* ¶¶ 33, 47, 53. The device then generates and provides a dynamic PAN and DTC, which is provided, via the POS device to a payment processor system. *Id.* ¶¶ 53–55.

Royyuru further describes the interaction between the mobile device and the POS device as possibly being contactless, e.g. through NFC transmissions, or as occurring through contact between the device and a reader. *Id.* ¶ 35.

2. Phillips

Phillips describes a portable device that can be used for contactless payments and that displays credit or debit card account choice images to a user who can select one of the images in order to select an account for use in a transaction. Ex. 1005 ¶¶ 5, 17, 35–37. The images displayed for an account may include payment account numbers, cardholder name, the name or logo of the payment card association or issuer, among other information. *Id.* ¶ 36. A payment application program in the memory of the mobile device stores payment card account numbers and associated information. *Id.* ¶ 29. The portable device can interact with a merchant proximity reader, which allows the portable device to receive a merchant identifier to automatically select a particular payment card for use in a purchase transaction with that merchant. *Id.* ¶ 57.

When a particular payment card has been selected, a user may be required to enter a PIN in order to transact using the selected card. *Id.* ¶¶ 35,

38, 57, 62, 66. The mobile device then communicates with the merchant proximity reader associated with a POS terminal to consummate the transaction. *Id.* ¶ 66.

3. Casey

Casey provides for payment transactions using an electronic device with a touch screen, through which a user may select a payment instrument such as a credit card, provide confirmation information, and view a displayed receipt for the transaction. Ex. 1006, 3:10–35, 10:47–53. Upon accessing a payment service or electronic wallet, virtual representations of available payment instruments may be displayed through the electronic device. *Id.* at 9:9–12. A user may select one by tapping the corresponding graphical element on the display. *Id.* at 9:12–15. A PIN, password, or other identifier may be required to verify the payment instrument. *Id.* at 9:15–22, 12:46–13:3, 15:28–31. A confirmation screen may then be presented so the user can confirm the payment transaction, including price and related charges. *Id.* at 9:26–32, 10:24–35, 15:31–56. This screen may include graphical elements that may be moved by a user to confirm the payment transaction. *Id.* at 9:32–35, 9:58–10:2, 10:36–51, 14:13–24. A receipt may then be displayed for the payment transaction. *Id.* at 10:47–51, 14:25–36, 16:5–7.

4. Combination of Royyuru, Phillips, and Casey

Petitioner argues that one of ordinary skill in the art would have applied certain teachings of Phillips and Casey to Royyuru's system. Pet. 10–16. Patent Owner disputes that one of ordinary skill in the art would have combined Royyuru and Phillips. Prelim. Resp. 16–18. For the reasons discussed below, we find that Petitioner's arguments and evidence in support of the proposed combination meet the threshold for institution.

Petitioner argues that one of ordinary skill in the art would have modified Royyuru's payment request NFC communication between the user device and merchant device to include information regarding the transaction, including merchant information (as Petitioner argues is taught in Phillips and Casey) and product and price information (as Petitioner argues is taught in Casey). Pet. 10–11 (citing Ex. 1004 ¶¶ 22, 44, 47; 1005 ¶¶ 23, 27,57, 72; Ex. 1006, 8:52–9:8, Fig. 5; Ex. 1003 ¶¶ 132–133). Petitioner argues that one of ordinary skill in the art would have done so to provide information to the user to better ensure that they are approving the correct transaction and to allow the user to visually review transaction data before approving the transaction, as taught in Casey. *Id.* at 12 (citing Ex. 1006, 9:9–36, 13:24–51, 14:12–49; Ex. 1003 ¶ 133).

Petitioner additionally argues obviousness of modifying Royyuru to add authentication and confirmation techniques prior to completion of a transaction, such as entering a PIN (as Petitioner argues is taught in Phillips and Casey) or moving a graphical element to confirm or deny a transaction (as Petitioner argues is taught in Casey). *Id.* at 12 (citing Ex. 1005 ¶¶ 35, 38, 59, 61–62, 66, 68; Ex. 1006, 9:9–36, 13:24–51; Ex. 1003 ¶ 134). Petitioner argues that this modification would have allowed a user to review, reconsider, and ensure the validity of a transaction. *Id.* at 13 (citing Ex. 1005 ¶¶ 35, 47; Ex. 1006, 3:20–35, 9:9–36; Ex. 1003 ¶ 134).

Petitioner's next argued modification to Royyuru is the inclusion, from Phillips, of multiple payment options and a graphical interface including payment method indicia. *Id.* at 13–14 (citing Ex. 1005 ¶¶ 36–42, Fig. 8; Ex. 1003 ¶ 135). Petitioner argues that one of ordinary skill in the art would have done this to provide a user with more choices and options and allowed the user to select payment options appropriate for a given scenario,

while reducing the need for the user to carry additional physical payment options. *Id.* at 14 (citing Ex. 1003 ¶ 135). Petitioner argues that while additional information would be needed to be stored in memory, the benefits would have outweighed these drawbacks. *Id.* at 15 (citing Ex. 1003 ¶ 135).

Patent Owner argues that one of ordinary skill in the art would not have combined Royyuru and Phillips in this way, because Royyuru teaches that its DTC, used in the authentication of a transaction, is generated using a unique card key that is particular to every card. Prelim. Resp. 17 (citing Ex. 1004 ¶¶ 47, 57). Patent Owner argues that Petitioner's combination is incompatible with Phillips' teaching that the different issuers of the accounts used in its multi-card configuration would come from different financial institutions, different from the provider of the user's device. *Id.* (citing Ex. 1005 ¶¶ 4, 5, 36, 40). Patent Owner contends that Petitioner does not adequately explain how the combination it proposes would function, given the use in Royyuru of the card-level IKCV in authentication. *Id.* at 18.

However, at this stage, we determine that Petitioner has provided sufficient evidence that one of ordinary skill in the art would have had a reason to make the proposed combination and would have had a reasonable expectation of success in achieving the claimed method. Although Patent Owner argues that Royyuru's card-level-based authentication is based on one IKCV per device, we note that Royyuru describes the possibility of multiple card-level keys. Ex. 1004 ¶ 6 ("determining the real PAN . . . using a key maintained by the payment processor system and corresponding to *one of* the card-level keys of the device") (emphasis added). Additionally, we note that Phillips' Figure 8 includes several payment cards but each appears to have the same issuer bank name, and thus one card-level key tied to one issuer might be used for multiple accounts. Ex. 1005 ¶ 39, Fig. 8. Although

Patent Owner argues that Petitioner "asserts that a POSITA would have *re-imagined* Royyuru as a mobile-phone with a touch screen display, supplied by a separate device maker" (Prelim. Resp. 16–17 (emphasis added)), we note that Royyuru describes its presentation instrument as, for example, a cellular telephone. Pet. 17, 39–40; Ex. 1004 ¶¶ 21, 46. We additionally take into account Dr. Shamos' testimony regarding the costs in memory usage of including additional cards. Pet. 14–15 (citing Ex. 1003 ¶ 135).

Petitioner additionally argues that including Phillips' preselection of a default payment option and Casey's display of transaction status such as a payment receipt would have been obvious, in order to improve user flexibility and satisfaction. Pet. 14–15 (citing Ex. 1005 ¶¶ 5, 17, 29, 59, 66; Ex. 1006, 10:47–53, 14:25–36, 16:3–20; Ex. 1003 ¶¶ 136–137).

With respect to Petitioner's proposed combination of Royyuru, Phillips, and Casey, on the present record and for the purposes of institution, Petitioner's showing regarding the proposed combination is sufficient.

5. Analysis of Claim 1

Petitioner argues, with respect to the preamble and limitations 1a through 1d of claim 1, that Royyuru describes a method of processing a financial transaction including receiving an input to an electronic device (Royyuru's "mobile device"/"presentation instrument") that includes a processor, touch screen display, and NFC module. Pet. 16–18 (citing Ex. 1004 ¶¶ 2, 5–10, 21, 35, 40, 47; Ex. 1003 ¶¶ 55–59, 139–143). Petitioner cites Royyuru's "pass[ing] or tap[ping] the presentation instrument" at a POS device, presumably for the priming operation of limitation 1a. Pet. 17 (citing Ex. 1004 ¶ 47; Ex. 1003 ¶ 140); *see also id.* at 32–33 (explicitly describing the priming as the tapping of the presentation instrument at the POS device). Petitioner additionally argues that PIN entry

additionally may be a priming operation and identification of a user with reference to the combination of Royyuru and Phillips, in the entry of a PIN. *Id.* at 17 (citing Ex. 1005 ¶¶ 35, 38, 39, 66; Ex. 1003 ¶ 140).

Petitioner argues that limitation 1e, "receiving a request for a transaction payment at said electronic device via the NFC interface" is taught by Royyuru's and Phillips' descriptions of a mobile device receiving a transaction initiation request from a POS device via NFC. *Id.* at 18 (citing Ex. 1004 ¶¶ 9, 22, 44, 47, 57; Ex. 1005 ¶¶ 23, 27, 57, 72; Ex. 1003 ¶ 144).

For limitations 1f, 1g, and 1h, which require the display, on a touch-screen display, of images of a card issuer payment selection method, Petitioner cites Figure 8 of Phillips and the related disclosure, which include a menu allowing selection from a payment cards, with a display including partial account numbers, card logos, and other iconography of a payment card. *Id.* at 18–21 (citing Ex. 1005 ¶¶ 36, 37, 39–41, Fig. 8; Ex. 1003 ¶¶ 145–154).

For limitation 1i, Petitioner argues that Royyuru teaches "generating . . . a limited-use payment information, and using said limited-use payment information in place of said card issuer supplied payment information" in its DTC and its dynamic PAN. Pet. 21–23. Petitioner argues that the DTC is generated at the device using a unique card level key or by combining several fields including the PAN, service code, expiration date, and an application transaction counter (ATC) and encrypting them using the card key (CK). *Id.* at 21–22 (citing Ex. 1004 ¶¶ 5–10, 32, 33, 47, 57; Ex. 1003 ¶¶ 155–156). Petitioner argues that the dynamic PAN is generated based on the real PAN and a card-level IKCV stored on the device. *Id.* at 22 (citing Ex. 1004 ¶¶ 5, 57). Petitioner argues that each of these is discussed as being valid for a single transaction and therefore are "limited-use" and are used in

place of the real PAN. *Id.* at 22–23 (citing Ex. 1004 ¶¶ 6–10, 33, 32, 57; Ex. 1003 ¶ 156).

Petitioner contends that limitation 1j is taught or suggested by the provision of the DTC and the dynamic PAN to the POS device via an NFC interface. Pet. 23 (citing Ex. 1004 ¶¶ 34, 47, 51, 52, 54, 57, Fig. 3; Ex. 1003 ¶ 157). And, with respect to limitation 1k, requiring the step of visually conveying a status of the transaction, Petitioner argues that, in its proposed combination, Casey's display of a receipt for the payment transaction teaches this limitation. *Id.* at 24 (citing Ex. 1006, 10:47–53, Fig. 8; Ex. 1003 ¶¶ 158–159).

With respect to Petitioner's contentions, Patent Owner disputes that Petitioner has made a sufficient showing with respect to limitation 1i of claim 1. Patent Owner argues that:

> Petitioner fails to show that either the DTC or dynamic PAN, or the combination of the two, is used "in place of" card issuer payment information as required by the challenged claims.
>
> Petitioner's argument fails because, in the system of Royyuru, the PAN or primary account number is used in the transaction and is not replaced by other information. . . . However, Royyuru does not teach using some other, generated payment information "in place of" the card issuer payment information (i.e., the PAN) but rather uses the PAN throughout the transaction flow. Specifically, Royyuru teaches using a "dynamic PAN" that is simply "an encrypted form of [the] real PAN." Ex. 1004, ¶0005. The payment processor determines the real PAN by decrypting the dynamic PAN. *Id.* ¶0006. The decrypted PAN is then sent to a financial institution to process the transaction. *Id.* Thus, Royyuru does not replace the PAN, as required by the challenged claims, but simply encrypts the PAN during transmission from the device to the payment processor system. . . .

> [A]lthough Royyuru's choice of words [in paragraphs 32 and 57, cited by Petitioner] suggests a substitution of the real PAN with something else, the rest of Royyuru makes clear that what is really meant is simply encryption of the real PAN.

Prelim. Resp. 14–15. Patent Owner additionally argues, with respect to the DTC, that Petitioner does not show that the DTC is used "in place of" issuer information, as required by limitation 1i of claim 1. *Id.* at 15–16.

We determine that on the present record Petitioner has sufficiently shown, for the purposes of institution, that the dynamic PAN (limited-use payment information") is used in place of the actual PAN ("card issuer supplied payment information") in transmissions to the NFC recipient to perform a transaction. Royyuru describes that the prior art is vulnerable to attack because devices capable of skimming transmissions might read transaction information, including the account number, supplied via NFC to a merchant. Ex. 1004 ¶ 3. Petitioner argues that the dynamic PAN is provided, along with the DTC, so that the real PAN can be determined to process the transaction, and is sent in place of the real PAN. Pet. 6, 22 (citing Ex. 1004 ¶¶ 7, 32, 57; Ex. 1003 ¶ 156). As Patent Owner argues, Royyuru teaches that the dynamic PAN may be "an encrypted form of [the] real PAN." Prelim. Resp. 14 (quoting Ex. 1004 ¶ 5) (alteration in the original). But as Petitioner contends, the dynamic PAN may also be "computed by the device for each transaction by combining the digits from the card number with the ATC and with the unpredictable number sent by the RFID or NFC reader and then encrypting these digits with the IKCV." Pet. 22 (quoting Ex. 1004 ¶ 57). On the present record, Petitioner's argument does not appear to be that Royyuru's teaching is of "simply" an encrypted form of the real PAN.

As discussed, Patent Owner contends that an encrypted form of the real PAN could not teach or suggest "limited-use payment information" supplied "in place of" the real PAN. Prelim. Resp. 14–15. This implies an argument that the recited "limited-use payment information" used "in place of said card issuer supplied payment information" must exclude an encrypted form of an account number. To the extent that this argument is maintained, it appears to invoke claim construction, and, if so, the parties are welcome to address the proper construction of the claim term.

On the present record, Petitioner has provided sufficient evidence that "limited-use payment information" as recited in claim 1 is taught or suggested by the dynamic PAN of Royyuru.

On the present record and for the purposes of institution, we determine that Petitioner shows that there is a reasonable likelihood that the petitioner would prevail in showing claim 1 of the '579 patent to be obvious over its proposed combination of Royyuru, Phillips, and Casey.

6. Claims 2–4, 6–9, 11, 12, and 15–23

With respect to claims 2–4, 6–9, 11, 12, and 15–23, Petitioner contends these claims are obvious over the combination of Royyuru, Phillips, and Casey. Pet. 24–47. Patent Owner presents no additional arguments with respect to these claims and this ground.

We have reviewed Petitioner's contentions. Although we do not provide a detailed analysis with respect to all of these contentions, we note the following, as our institution is necessarily on all of the challenged claims and on all grounds of unpatentability asserted for each claim. *See* 37 C.F.R. § 42.108(a).

a) Claim 3

Petitioner relies on either the dynamic PAN or the DTC for the "limited-use payment information" of claim limitation 1i of claim 1, from which claims 2–4, 6–9, 11, and 12 depend. Pet. 21–23. Petitioner refers back to this argument with respect to the "limited-use number" of claim 15 and its dependent claims 16–18, and the "limited-use payment information" of claim 19 and its dependent claims 20, 22, and 23. Pet. 38, 41–42.[5] In addition to arguing that the DTC (as well as the dynamic PAN) in Royyuru teaches or suggests the "limited-use payment information" of claim 1, Petitioner argues that the DTC teaches or suggests claim 3's "cryptogram number for use by the electronic device in place of a card validation value originated from the card issuer." Pet. 26–27. On the present record, it is unclear whether the same element of Royyuru, the DTC, could teach or suggest both the "limited-use payment information" and the "cryptogram number." Additionally, Petitioner argues that the DTC is provided as part of "Track 1" verification information and that standard Track 1 data would include (along with other data) a card validation value. Pet. 27 (citing Ex. 1004 ¶ 59; Ex. 1003 ¶¶ 167, 280). Petitioner, relying on Dr. Shamos' testimony, argues that one of ordinary skill in the art would have recognized from this that the DTC is being provided "in place of a card validation value" as required by claim 3, however it is unclear why the DTC, and not some other portion of Track 1 data, would be transmitted in place of a card validation value.

[5] Petitioner references its arguments with respect to limitation 1e with respect to limitation 15d of claim 15, but this appears to be a typographical error. *Compare* Pet. 38, *with* Ex. 1003 ¶¶ 215–216.

b) Claim 19

Claim 19 requires a processor (limitation 19a) operable to execute a program to implement steps (limitation 19f) including: "accepting a priming action of the electronic device by an identified device user" (limitation 19g) and "enabling the electronic device for imminent performance of a payment operation responsive to the priming action of a valid user" (limitation 19h). The implemented steps further include "responsive to receiving an NFC transaction payment request, generating a limited-use payment information . . ." (limitation 19k). Petitioner argues that the scanning or tapping of the presentation instrument on or near the POS device in Royyuru teaches or suggests the priming action of limitation 19g. Pet. 40-41 (referring to arguments for limitation 1a of claim 1 and claims 7 and 8; citing Ex. 1004 ¶ 44; Ex. 1003 ¶¶ 247–248). Petitioner appears to cite the same passing or tapping of the presentation instrument as teaching an NFC transaction payment request in limitation 19k. Pet. 42 (citing Ex. 1004 ¶¶ 9, 47). Petitioner does not explain how the same user action teaches or suggests a priming action and an NFC transaction payment request.

We note that Petitioner additionally argues that, as taught in Phillips and Casey, the entry of a valid PIN or swiping may be a priming action. *Id.* at 41 (citing Ex. 1005 ¶¶ 35, 59, 62, 66, 70; Ex. 1006, 9:9-36, 12:64–13:51, Figs. 5–8).

E. Other Obviousness Grounds Including Royyuru, Phillips, and Casey

Petitioner additionally argues that dependent claims 4, 5, 10, 13, 14, 21, and 22 are obvious over combinations of Royyuru, Phillips, and Casey, with additional references Gomez (claim 5), Deibert (claims 10 and 14), Power (claim 13), and Carlson (claims 4, 21, and 22). Pet. 47–59. Patent

Owner does not present any additional arguments with respect to these claims.

We have reviewed Petitioner's contentions. Although we do not provide a detailed analysis with respect to all of these contentions, we note the following.

With respect to claim 5, Petitioner argues that one of ordinary skill in the art would have combined Gomez's displayed cryptogram on a device with Royyuru, Phillips, and Casey, "to allow the user to manually enter [the cryptograms] into a website of an online merchant." Pet. 48. However, it is unclear how this relates to the prior description of the proposed combination of Royyuru, Phillips, and Casey as directed to a mobile device that communicates with a merchant POS or merchant device via NFC, with a touch screen on the mobile device for user input. *See* Pet. 10–13, 32–33.

F. Obviousness of Claims 1–9, 11, and 12 over Gomez, Amacker, Mullen, and Smith

Petitioner argues that claims 1–9, 11, and 12 are unpatentable as obvious over a combination of Gomez, Amacker, Mullen, and Smith. Pet. 59–93. Patent Owner presents arguments relating to limitation 1i of claim 1 and relating to the propriety of the proposed combination. Prelim. Resp. 18–27.

1. Gomez

Gomez describes a payment card system in which a secure authentication cryptogram, based on a seed value stored in the card and a temporal signal value such as a real-time clock or sequence number of an attempted use. Ex. 1007, 1:58–2:4, 7:17-26. A static payment card identifying number can not be used without the authentication cryptogram, generated uniquely for the transaction. *Id.* at 2:19-25.

In the Gomez system, a payment card is presented at a POS terminal, and account information including card ID, authentication cryptogram, and other account information is transmitted to the POS terminal. *Id.* at 5:48-6:2, Fig. 2. The information is analyzed and communicated, along with additional transaction information, to an authentication server, to determine whether the authentication cryptogram is valid for the transaction. *Id.* at 6:7–23, Fig. 2. This may be performed through swiping a re-writable magnetic stripe through a card reader or via NFC. *Id.* at 7:49-65, 8:16–23. If the authentication server determines that the authentication cryptogram is valid, it provides an actual payment card account number and account name for use in processing the transaction. *Id.* at 6:23–27, 17:43–51. This information is used in an approval request to the card association corresponding to the payment card being used. *Id.* at 6:39–51, 17:51–62.

Gomez's card may additionally confirm the correct user is presenting the card by checking a user's fingerprint or requiring a PIN number to be entered. *Id.* at 7:9–16, 9:21–33. In one embodiment, the card provides an indication, such as a small light, after the authentication cryptogram has been generated, when the card is ready to swipe at the POS terminal. *Id.* at 10:18–26.

Additionally, in one system, there may be different actual payment card accounts linked to the payment card, and preferences for default accounts to use, in addition to providing options for the user to select a specific card, for example by displaying different accounts sequentially on a display and providing a selection capability for a user. *Id.* at 18:43–19:3, 20:1–59.

2. Amacker

Amacker describes a mobile wallet server that stores personal and payment information for a user. Ex. 1008, 2:13–25. The mobile wallet server may be used to initiate a purchase from a retailer. *Id.* at 2:26–28. The person may communicate a mobile device identifier to the retailer, which may transmit a transaction request to the mobile device using the identifier. *Id.* at 2:37–41. The mobile wallet server may present response options to the user to allow the user to accept the transaction by sending payment or other stored information to the retailer to complete a pending purchase process, or to reject the transaction. *Id.* at 2:42–57, 6:3–14.

The mobile wallet system may have a user interface to display data to a user, including a wallet presenter to enable the user to view or select information, such as payment card selections, for the user. *Id.* at 5:1-41.

3. Mullen

Mullen describes a mobile device that stores information from physical account cards and provides payment information to authorize purchases. Ex. 1009, code (57), ¶¶ 4–8, 23, 29. A user interface on the mobile device may render virtual cards for a user, and allow a user to select from among several virtual cards for a transaction. *Id.* ¶¶ 314–328, Figs. 36–40.

4. Smith

Smith describes processing a financial transaction using a mobile cloud account number (MCA) that corresponds to and is based on attributes of a real card account number (RCA). Ex. 1010, code (57). Smith describes an embodiment in which the MCA includes the last four digits of the RCA, and these digits are displayed in a user interface to a user, while the other digits of the account number are obscured. *Id.* ¶ 83.

5. Combination of Gomez, Amacker, Mullen, and Smith

Petitioner argues that one of ordinary skill in the art would have applied certain teachings of Amacker, Mullen, and Smith to Gomez's system. Pet. 63–68. Patent Owner disputes that one of ordinary skill in the art would have combined Gomez and Amacker. Prelim. Resp. 23–27. For the reasons discussed below, we find that Petitioner's arguments and evidence in support of the proposed combination meet the threshold for institution.

Petitioner contends that one of ordinary skill in the art would have modified Gomez to provide a larger touchscreen display for the Gomez payment card or to integrate it into a mobile device, as taught by Amacker and Mullen. Pet. 63 (citing Ex. 1007, 5:48–57, 10:34–42; Ex. 1008, 4:51–60, 6:21–30; Ex. 1009 ¶¶ 41, 151, 326, 458; Ex. 1003 ¶¶ 311–312). Petitioner contends that one of ordinary skill would have done so in order to have provided additional room for information regarding payment cards and transaction details and easier intuitive user manipulation, and to reduce the number of devices a user carries. *Id.* at 63–64 (citing Ex. 1003 ¶¶ 310–312).

Petitioner additionally argues that one of ordinary skill would have incorporated Amacker's receipt and display of a payment request into Gomez's payment card. *Id.* at 64–66 (citing Ex. 1008, 2:37–3:3, 3:27-57, 4:37–5:17, Fig. 2; Ex. 1003 ¶¶ 313–314). Petitioner argues that the displayed request could allow the user to ensure they approve of the transaction and prevent fraud. *Id.* at 65–66 (citing Ex. 1003 ¶ 314).

Petitioner further argues that one of ordinary skill would have modified Gomez to provide additional graphical information when allowing a user to select a payment method from among various methods, in order to allow a user to more easily identify a desired card. *Id.* at 66 (citing

Ex. 1007, 20:30–42, 21:5–20; Ex. 1008, 5:18–41; Ex. 1009 ¶¶ 37, 326, 328, 353; Ex. 1003 ¶¶ 315–316). Petitioner argues that one of ordinary skill in the art would have modified Gomez's display to enable displaying four digits for a payment number, as per Mullen's teaching of partial display of payment numbers, or Smith's disclosure of displaying the last four digits, to allow a user to better identify payment options and still prevent fraud by obscuring the complete number. *Id.* at 67–68 (citing Ex. 1009 ¶¶ 433–434; Ex. 1010 ¶ 83; Ex. 1003 ¶ 317).

Petitioner argues that one of ordinary skill would have modified Gomez to provide for the generation of the authentication cryptogram to be in response to a transaction request, to ensure that a limited-duration cryptogram is valid for an intended transaction as taught by Amacker, thereby saving processing resources. *Id.* at 67 (citing Ex. 1008, 2:37–3:3, 3:42–47, 4:37–50, 6:37–61; Ex. 1003 ¶ 318). Additionally, Petitioner asserts that one of ordinary skill would have combined Mullen's teaching of displaying receipt information with Gomez's payment card user device, to provide additional assurance to the customer that the correct transaction occurred. *Id.* at 67–68 (citing Ex. 1009 ¶¶ 38, 210, 287, 339, 340; Ex. 1003 ¶ 319).

Patent Owner argues that Petitioner has not shown that one of ordinary skill would have incorporated Amacker's teachings regarding receiving and displaying a payment request into Gomez's user device. Patent Owner argues that the system of Gomez is intended to be usable in a traditional payment system without any infrastructure changes, while Amacker requires the recipient (merchant) to initiate contact with the mobile wallet server to request information, which request may be accepted or rejected. Prelim. Resp. 11, 24–25 (citing Ex. 1008, 2:37–49, 6:49–61).

Thus, Patent Owner argues, Petitioner's argued modification of Gomez would defeat the benefit of requiring no changes in the payment system infrastructure. *Id.* at 25. Additionally, Patent Owner argues, since in Gomez the user has already swiped the card through a magnetic card reader, it would be redundant and costly (in terms of user time and effort) to require the user to perform an initiation and then a transaction request, as in Amacker. *Id.* at 25, 26–27. Patent Owner argues that the combination would require a user to activate the card, provide the card identifier to the merchant, and then receive and approve or deny a transaction request from the merchant. *Id.* at 27. Patent Owner argues that these steps are cumbersome and repetitive and therefore the combination would not have been made by one of ordinary skill in the art. *Id.* Patent Owner additionally argues that Amacker is intended to reduce dissemination of personal information to additional storage locations, but that this is exactly what Gomez does. *Id.* at 25–26 (citing Ex. 1008, 2:49–57).

On the present record, and for the purposes of institution, we determine that Petitioner has provided sufficient evidence in support of its proposed combination of prior art references. Although Patent Owner argues that Amacker is not usable in a traditional payment system without infrastructure changes and that the resulting transaction would require more user time and effort, on the present record, Petitioner argues that the modification would include a preliminary procedure that provides additional security for a user before entering a payment transaction. Pet. 65–66. Although this constitutes a change from Gomez, Petitioner argues that the modification would have provided benefits to a user and, according to Petitioner, there would have been no effect on the payment transaction and infrastructure after the preliminary procedure (e.g. contact between a

merchant POS device and an acquirer or payment processor, card association, etc., as described in Gomez) (*see*, *e.g.*, Ex. 1007, 5:48–6:64, Fig. 2). With respect to Patent Owner's argument that Amacker is intended to reduce dissemination of personal information to additional storage locations, we note that this may be a drawback of Petitioner's proposed combination, but a motivating benefit may compensate for drawbacks in the combination. *Winner Int'l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n. 8 (Fed. Cir. 2000). We also take into account Dr. Shamos' testimony that the combination would have allowed extra assurance to the user regarding its intended transaction (Ex. 1003 ¶ 314).

With respect to Petitioner's proposed combination of Gomez, Amacker, Mullen, and Smith, on the present record and for the purposes of institution, Petitioner's showing regarding the proposed combination is sufficient.

6. Analysis of Claim 1

Petitioner contends that the combination of Gomez, Amacker, Mullen, and Smith teaches the preamble and limitations 1a through 1d in the combination's smartphone-implemented payment device used for purchase transaction approval at a retail merchant. *Id.* at 68–69 (citing, *inter alia*, Ex. 1007, 2:59–64, 3:65–67, 8:53–57; Ex. 1008, 2:13–25, 4:51–60; Ex. 1009 ¶¶ 41, 458; Ex. 1003 ¶¶ 321–327).

Petitioner argues that the "priming operation" of limitation 1a is taught by Gomez's described entry of a fingerprint or PIN into the payment card. *Id.* at 68 (citing Ex. 1007, 2:59–64, 5:13–18, 7:9–16, 9:12–33, 13:40–44; Ex. 1003 ¶ 324). Petitioner argues that the receipt of a request for transaction payment of limitation 1e is taught in Amacker's request for

payment information for completing an in-person transaction. *Id.* at 69 (citing Ex. 1008, 2:37–3:3, 3:42–57, 4:37–50, 6:37–61; Ex. 1003 ¶ 328).

With respect to the display of limitations 1f, 1g, and 1h, Petitioner argues that this is taught or suggested in Gomez's multiple accounts, Amacker's display of relevant payment options, and Mullen's interface, with the details of what is displayed taught by the references disclosures regarding displays relating to of account information. *Id.* at 70–73 (citing, *inter alia*, Ex. 1007, 20:30–59, 21:5–20, Fig. 9; Ex. 1008, 5:18–41; Ex. 1009 ¶¶ 37, 326–328, 353, 433, 434, Figs. 36–40; Ex. 1003 ¶¶ 329–336).

For the limited-use payment information of limitation 1i, Petitioner argues that this is taught or suggested by Gomez's secure authentication cryptogram, generated for each attempted use of the card. Pet. 73–74 (citing Ex. 1007, 1:58–2:4, 5:13–18; Ex. 1003 ¶¶ 337–338). Petitioner contends that this authentication cryptogram is used in place of the card issuer supplied payment information, because "the authentication cryptogram is combined with the static EPIC account number to form limited-use payment information and provided to the merchant rather than the issuer supplied payment information." *Id.* at 74 (citing Ex. 1007, 1:55–2:39, 5:19–24, 5:48–6:51, 17:40–62, 18:4–13, 18:50–19:3; Ex. 1003 ¶¶ 338–339).

Petitioner argues that this cryptogram is transmitted to the payment processing system using NFC, and that Gomez and Mullen teach limitation 1k's visually conveyance of the status of the transaction at the user-interface. *Id.* at 74–75 (citing Ex. 1007, 2:50–54, 7:49–54, 8:16–23; Ex.1009 ¶¶ 38, 210, 287, 339–340; Ex. 1003 ¶¶ 339–342).

Patent Owner contends that the Gomez, Amacker, Mullen, and Smith combination does not teach limitation 1i's generation of limited-use payment information used in place of issuer payment information. Prelim. Resp. 19–

23. Patent Owner argues that Gomez requires a static payment card number (EPIC account number) and an authentication cryptogram must be used, and that to maintain compatibility with traditional POS systems, the authentication cryptogram is encoded in a different field of the payment card information. *Id.* at 20–21 (citing Ex. 1007, 1:48–63, 5:13–24, 5:50–57, 5:67–6:2, 11:19–27, Fig. 9). Thus, Patent Owner argues, a different existing data field than that previously used for the credit card number is repurposed to transmit the cryptogram, and the cryptogram is therefore not used in place of card issuer payment information. *Id.* at 21. Patent Owner contends that "it is the EPIC account number alone that is used 'in place of' a live credit card number, while the authentication cryptogram is ***additional***, not replacement, information." *Id.* at 22. However, Petitioner's contention is that the EPIC account number and the authentication cryptogram ***together*** are the limited-use payment information, used in place of the issuer payment information. Pet. 73–74. Gomez discloses that these two data items are used in an account authentication request which, if successful, provides an "actual payment card account number and account name" to the acquirer to use for processing a transaction. Ex. 1007, 5:19–24, 5:7–27, 5:48–51 ("[T]he EPIC account number and authentic cryptogram [are] replaced with a 'live' payment card account number and account name."). To the extent that Patent Owner's argument relies on a claim construction that limits "using said limited-use payment information in place of said card issuer supplied payment information" to require that the limited-use payment information be encoded in the same location previously used for the card issuer supplied payment information (*see* Prelim. Resp. 21), the parties are welcome to address this issue in the proceeding. On the present record, Petitioner has provided sufficient evidence, including Dr. Shamos'

testimony, to support its contention that claim 1 would have been obvious over the combination of Gomez, Amacker, Mullen, and Smith.

7. Claims 2–9, 11, and 12

With respect to claims 2–9, 11, and 12, Petitioner contends these claims are obvious over the combination of Gomez, Amacker, Mullen, and Smith. Pet. 75–83. Patent Owner presents no additional arguments with respect to these claims and this ground.

We have reviewed Petitioner's contentions. Although we do not provide a detailed analysis with respect to all of these contentions, we note the following with respect to claim 3.

Petitioner argues that claim 3 does not require that the cryptogram number be distinct from the limited-use payment information of claim 1, and therefore argues that Gomez's authentication cryptogram additionally teaches or suggests the dynamically generated cryptogram number, used in place of a card validation value, as recited in claim 3. However, "[w]here a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention." *Becton, Dickinson & Co. v. Tyco Healthcare Group, IP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (internal quotation marks, brackets, and citations omitted).

G. Other Obviousness Grounds Including Gomez, Amacker, and Mullen

Petitioner additionally argues that independent claims 15 and 19 and dependent claims 4, 10, 13, 14, 16–18, and 20–23 are obvious over combinations of Gomez, Amacker, and Mullen, with additional references Smith and Deibert (claims 10 and 14), Smith, Deibert, and Power (claim 13), and Smith (claim 4), Carlson (claim 22) and Carlson and Royyuru (claim

21). Pet. 83–93. Patent Owner does not present any additional arguments with respect to these claims.

IV. CONCLUSION

For the above reasons, we determine that Petitioner establishes a reasonable likelihood that it would prevail in showing that at least one of claims 1–23 of the ’579 patent is unpatentable. Accordingly, we institute an *inter partes* review of all challenged claims on all grounds asserted against those claims in the Petition.

V. ORDER

It is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–23 of the ’579 patent is instituted commencing on the entry date of this Decision; and

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

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