

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
VISA INC., and VISA U.S.A. INC.,
Petitioner,

v.

UNIVERSAL SECURE REGISTRY, LLC,
Patent Owner.

Case IPR2018-00813¹
Patent 9,100,826 B2

Before PATRICK R. SCANLON, GEORGIANNA W. BRADEN, and
JASON W. MELVIN, *Administrative Patent Judges*.

SCANLON, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining Some Claims Unpatentable
Granting In Part Patent Owner's Motion to Amend
35 U.S.C. § 318(a)
Denying Patent Owner's Motion to Strike
37 C.F.R. § 42.5

¹ Visa Inc. and Visa U.S.A. Inc., which filed a petition in IPR2019-00176, have been joined as parties to this proceeding.

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I. INTRODUCTION

Apple Inc. filed a Petition (Paper 3, “Pet.”) requesting an *inter partes* review of claims 1, 2, 7, 8, 10, 11, 14, 15, 21, 22, 24, 26, 27, 30, 31, and 34 of U.S. Patent No. 9,100,826 B2 (Ex. 1101, “the ’826 patent”). Universal Secure Registry, LLC (“Patent Owner”) did not file a Preliminary Response. The Board instituted a trial as to the challenged claims. Paper 9 (“Dec.”).

After institution of trial, Visa Inc. and Visa U.S.A. Inc. filed a petition and a Motion for Joinder to this proceeding. Case IPR2019-00176, Papers 2, 3. We granted the Motion for Joinder, and IPR2019-00176 was joined with this proceeding and dismissed. Paper 33, 5–6. Consequently, Apple Inc., Visa Inc., and Visa U.S.A. Inc. (collectively, “Petitioner”) are joined in this proceeding.

Patent Owner filed a Patent Owner Response (“PO Resp.”) to the Petition. Paper 18. Petitioner filed a Reply (“Reply”) to the Patent Owner Response. Paper 24. Patent Owner filed a Sur-Reply (“Sur-Reply”). Paper 30. In addition, Patent Owner filed a Conditional Motion to Amend (Paper 19, “Mot. Amend”), Petitioner filed an Opposition to Patent Owner’s Conditional Motion to Amend (Paper 25, “Opp. Amend”), Patent Owner filed a Reply to Petitioner’s Opposition (Paper 31, “Reply Amend”), and Petitioner filed a Sur-Reply to Patent Owner’s Reply (Paper 35, “Sur-Reply Amend”). Patent Owner also filed a Motion to Strike (Paper 34), Petitioner filed an Opposition to Patent Owner’s Motion to Strike (Paper 40), and Patent Owner filed a Reply to Petitioner’s Opposition (Paper 42).

Petitioner relies on the Declaration of Dr. Victor Shoup in Support of Petition for *Inter Partes* Review (Ex. 1102), the Declaration of Dr. Victor Shoup in Support of Petitioner’s Reply to Patent Owner’s Response

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(Ex. 1118), the Declaration of Dr. Victor Shoup in Support of Petitioner’s Opposition to Patent Owner’s Conditional Motion to Amend (Ex. 1119), the Declaration of Ari Juels (Ex. 1120), and the Declaration of Dr. James L. Mullins (Ex. 1122) in support of its contentions. Patent Owner relies on the Declaration of Markus Jakobsson in Support of Patent Owner’s Response (Ex. 2101), the Declaration of Markus Jakobsson in Support of Patent Owner’s Conditional Motion to Amend (Ex. 2111), and the Declaration of Markus Jakobsson in Support of Patent Owner’s Reply to Opposition of Conditional Motion to Amend (Ex. 2113) in support of its contentions.

An oral hearing was held on July 16, 2019, and the record contains a transcript of this hearing. Paper 45 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 8, 10, 11, 21, 22, 24, 27, 30, and 31 of the ’826 patent are unpatentable, but has not shown by a preponderance of the evidence that claims 7, 14, 15, 26, and 34 are unpatentable. We grant Patent Owner’s Motion to Amend with respect to proposed substitute claim 50, but deny Patent Owner’s Motion to Amend with respect to proposed substitute claims 36, 37, 45, 46, 56, and 57. We deny Patent Owner’s Motion to Strike.

II. BACKGROUND

A. *Related Matters*

As required by 37 C.F.R. § 42.8(b)(2), each party identifies various judicial or administrative matters that would affect or be affected by a

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decision in this proceeding. Pet. 2–4; Paper 7, 2 (Patent Owner’s Updated Mandatory Notices).

B. The ’826 Patent

The ’826 patent, titled “METHOD AND APPARATUS FOR SECURE ACCESS PAYMENT AND IDENTIFICATION,” issued August 4, 2015, with claims 1–35. Ex. 1101, (54), (45), 44:24–48:34. The ’826 patent is directed to a secure database called a “Universal Secure Registry,” which can be used as “a universal identification system” and/or “to selectively provide information about a person to authorized users.” *Id.* at 3:63–67. The ’826 patent states that the USR database is designed to “take the place of multiple conventional forms of identification.” *Id.* at 4:10–12. The ’826 patent further states that various forms of information can be stored in the database to verify a user’s identity and prevent fraud: (1) algorithmically generated codes, such as a time-varying multi-character code or an “uncounterfeitable token,” (2) “secret information” like a PIN or password, and/or (3) a user’s “biometric information,” such as fingerprints, voice prints, an iris or facial scan, DNA analysis, or even a photograph. *See id.* at 13:52–58, 14:5–23, 43:52–59, Fig. 3.

The patent discloses a variety of embodiments including those in which a user is authenticated on a device using secret information (such a PIN code) and biometric information (such as a fingerprint), then the first device transmits information to a second device for further authentication. *See id.* at 28:52–29:7. The second device may verify the user’s information and return an enablement signal to the first device. *Id.* at 32:43–56. Accordingly, the ’826 patent discloses that the system can be used to selectively provide authorized users with access to perform transactions

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involving various types of confidential information stored in a secure database. *See, e.g., id.* at 3:63–4:3.

C. Challenged Claims

As noted above, Petitioner challenges claims 1, 2, 7, 8, 10, 11, 14, 15, 21, 22, 24, 26, 27, 30, 31, and 34 of the '826 patent. Claims 1, 10, 21, and 30 are independent. Independent claim 1 is illustrative of the claimed subject matter and is reproduced below:

1. A system for authenticating identities of a plurality of users, the system comprising:

a first handheld device including:

a first processor, the processor programmed to authenticate a user of the first handheld device based on authentication information and to retrieve or receive first biometric information of the user of the first handheld device; and

a first wireless transceiver coupled to the first processor and programmed to transmit via a network a first wireless signal including first authentication information of the user of the first handheld device; and

a second device including:

a second processor;

a second wireless transceiver coupled to the second processor, and

a second memory coupled to the second processor, and

wherein the second device is configured to retrieve or receive respective second authentication information for a first plurality of users, wherein the first plurality of users includes the user of the first handheld device;

wherein the first processor is programmed to determine the first authentication information derived from the first biometric information and to transmit the first authentication

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information of the user of the first handheld device to the second device via the network,

wherein the second processor is configured to:

receive the first authentication information of the user of the first handheld device;

retrieve or receive the second authentication information of the user of the first handheld device; and

use the first authentication information and the second authentication information to authenticate an identity of the user of the first handheld device with the second device.

Id. at 44:24–58.

D. The Prior Art

Petitioner’s asserted grounds of unpatentability for the challenged claims relies on the following references:

Jakobsson	WO 2004/051585 A2	June 17, 2004	Ex. 1104
Maritzen	US 2004/0236632 A1	Nov. 25, 2004	Ex. 1105
Gullman	US 5,280,527	Jan. 18, 1994	Ex. 1106
Verbauwhede	WO 2005/001751 A1	Jan. 6, 2005	Ex. 1107

E. Ground of Unpatentability at Issue

The Petition challenges claims 1, 2, 7, 8, 10, 11, 14, 15, 21, 22, 24, 26, 27, 30, 31, and 34 of the ’826 patent as unpatentable on the following grounds.² Pet. 8, 19–74.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102, 103. Because the ’826 patent has an effective filing date before the effective date of the relevant amendment, the pre-AIA versions of §§ 102, 103 apply.

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Claim(s) Challenged	35 U.S.C. §	Basis
1, 2, 10, 11, 21, 22, 24, 27, 30, and 31	102	Jakobsson
7, 14, 26, and 34	103	Jakobsson, Verbauwhede, and Maritzen
8 and 15	103	Jakobsson and Gullman

We instituted trial on all three grounds, and for all claims subject to each asserted ground. Dec. 2, 21.

III. ANALYSIS

A. *Relevant Legal Principles*

To prevail in challenging Patent Owner’s claims, Petitioner must demonstrate by a preponderance of the evidence that the claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). “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”)). The burden of persuasion rests with Petitioner. *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 cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior

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art reference.” *Verdegaal Bros. Inc., v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987). Moreover, “[b]ecause the hallmark of anticipation is prior invention, the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). Whether a reference anticipates is assessed from the perspective of an ordinarily skilled artisan. *See Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003) (“[T]he dispositive question regarding anticipation [i]s whether *one skilled in the art* would reasonably understand or infer from the [prior art reference’s] teaching that every claim element was disclosed in that single reference.”).

A 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 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) where in evidence, so-called secondary considerations, including commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

For an obviousness analysis, prior art references must be “considered together with the knowledge of one of ordinary skill in the pertinent art.”

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In re Paulsen, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (quoting *In re Samour*, 571 F.2d 559, 562 (CCPA 1978)). Moreover, “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person having ordinary skill in the art to which the '826 patent pertains

would have a Bachelor's Degree in electrical engineering, computer science, or a related scientific field, and approximately two years of work experience in the computer science field including, for example, operating systems, database management, encryption, security algorithms, and secure transaction systems, though additional education can substitute for less work experience and *vice versa*.

Pet. 5 (citing Ex. 1102 ¶¶ 26–28). Patent Owner argues that a person having ordinary skill in the art to which the '826 patent pertains

would have a Bachelor of Science degree in electrical engineering and/or computer science, and three years of work or research experience in the fields of secure transactions and encryption, or a Master's degree in electrical engineering and/or computer science and two years of work or research experience in related fields.

PO Resp. 17 (citing Ex. 2101 ¶ 16). Patent Owner correctly notes that its proposed definition is essentially the same as Petitioner's, with the exception of requiring three—rather than two—years of work or research experience. *Id.* at 17–18.

Factual indicators of the level of ordinary skill in the art include “the various prior art approaches employed, the types of problems encountered in

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the art, the rapidity with which innovations are made, the sophistication of the technology involved, and the educational background of those actively working in the field.” *Jacobson Bros., Inc. v. U.S.*, 512 F.2d 1065, 1071 (Ct. Cl. 1975); *see also Orthopedic Equip. Co. v. U.S.*, 702 F.2d 1005, 1011 (Fed. Cir. 1983) (quoting with approval *Jacobson Bros.*).

The parties’ respective proposals are substantially similar such that there is no apparent dispute between the parties. Also, based on our review of the record before us, we find that Petitioner’s stated level of ordinary skill in the art is reasonable because it is consistent with the evidence of record, including the asserted prior art. Thus, for the purposes of this Decision, we adopt Petitioner’s definition. We note, however, that our findings in this proceeding would not differ under Patent Owner’s proposed definition.

C. Claim Construction

Under the version of our rules applicable to this *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b) (2017);³ *see also Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2142–46 (2016) (concluding that 37 C.F.R. § 42.100(b) “represents a reasonable exercise of the rulemaking authority that Congress delegated to the Patent Office”). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the

³ A recent amendment to this rule does not apply here because the Petition was filed before November 13, 2018. *See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b), effective Nov. 13, 2018).

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entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Also, we are careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *See In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993) (“[L]imitations are not to be read into the claims from the specification.”).

In view of our analysis discussed below, we determine that “enable” and “disable” from claims 7, 14, 26, and 34 are the only terms requiring construction in order to resolve the disputed issues in this proceeding. *See Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (citing *Vivid Techs.* in the context of an *inter partes* review).

Patent Owner argues that the phrase “to [. . .] enable or disable use of the first handheld device based on a result of the comparison” should be construed to mean “to expand the range of functionality available to the [first] user of the first handheld device based on one result of the comparison, and to reduce the range of functionality available to the [first] user of the first handheld device based on another result of the comparison.” PO. Resp. 23 (citing Ex. 2101 ¶ 46). Patent Owner argues its proposed construction is supported by the Specification, particularly in connection with Figure 22, which describes “a comparison at step 202 when the ‘the first user of the first wireless device 2110 first authenticates his or herself to the wireless device 2110 . . . by either entering a PIN . . . or by interacting

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with the biometric sensor.’” *Id.* at 25 (citing Ex. 1101, 29:65–30:3). According to Patent Owner, if the comparison fails, “the device disables its use when it ‘shuts down as step 204,’” and if the comparison is successful, “the device enables its use to perform the rest of the process of Figure 22 to ‘identify and authenticate the identity of the first user’ to a second device.” *Id.* (citing Ex. 1101, 29:52–64, 30:7–14, 30:46–31:16). Patent Owner also argues that its proposed construction is supported by the plain language of claims 7, 14, 26, and 34, which recite “enable” and “disable” as verbs that connote an action changing the state of the device, not merely the absence of action. *Id.* at 27 (citing Ex. 1101, 45:14–20, 45:60–64, 47:7–12, 48:24–28; Ex. 2101 ¶ 51).

In reply, Petitioner argues that Patent Owner’s proposed construction is unduly narrow and inconsistent with the broadest reasonable standard. Reply 4–5. According to Petitioner, “[e]nabling or disabling use of a handheld device is a concept well understood by those of ordinary skill in the art and requires no construction.” *Id.* at 5 (citing Ex. 1118 ¶ 18). Petitioner offers a dictionary definition that defines “disable” to mean “to make ineffective or inoperative.” *Id.* (citing Ex. 1131). Although a definition of “enable” is not proffered, it is logical to consider this term to mean “to make effective or operative.”

We agree with Petitioner that Patent Owner’s proposed construction is inconsistent with the broadest reasonable standard. Therefore, in the context of the claims and the Specification of the ’826 patent, we determine that the ordinary and customary meaning of “enable” is “to make effective or operative” and the ordinary and customary meaning of “disable” is “to make ineffective or inoperative.”

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D. Motion to Strike

Patent Owner moves to strike the Declaration of Ari Juels (Ex. 1120) that Petitioner filed with its Reply. Paper 34, 1. Patent Owner contends that Petitioner initially relied on Dr. Shoup's declaration only, but over a year after starting this proceeding submitted Dr. Juels' declaration with its Reply. *Id.* at 2. According to Patent Owner, there is no reason Petitioner could not have presented Dr. Juels' declaration with the Petition. *Id.* Thus, Patent Owner maintains that Dr. Juels' declaration should be stricken in accordance with Board guidance that a petitioner may not submit new evidence in reply that it could have presented earlier. *Id.* (citing Trial Practice Guide (Aug. 2018 Update) at 18). Patent Owner also cites *Dexcom, Inc. v. Waveform Technologies, Inc.*, IPR2016-01680, Paper 46 at 30 (PTAB Feb. 28, 2018) (Final Written Decision) as support for excluding evidence raised for first time in a reply brief. Paper 34, 2.

In addition, Patent Owner argues that failure to strike Dr. Juels' declaration would be highly prejudicial because Patent Owner cannot rebut this new evidence with a responsive declaration from its expert. *Id.* at 2–3.

Petitioner argues that “[i]t is well settled that expert declarations are permitted on reply where, as here, the declarations respond to arguments made by the patent owner or its expert.” Paper 40, 2 (citing *Anacor Pharm., Inc. v. Iancu*, 889 F.3d 1372, 1380–81 (Fed. Cir. 2018); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1078 (Fed. Cir. 2015); *Square, Inc. v. Unwired Planet, LLC*, CBM2014-00156, Paper 40 (PTAB Dec. 22, 2015); *Hughes Network Systems, LLC v. California Institute of Technology*, IPR2015-00059, Paper 42 (PTAB Apr. 21, 2016)).

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In this case, Petitioner asserts that Dr. Juels' declaration responds directly to Dr. Jakobsson's declaration. *Id.* at 3 (citing Ex. 1120 ¶ 2). Petitioner further asserts that each point made by Dr. Juels in his declaration responds to a specific statement made in Dr. Jakobsson's declaration and provides a table mapping each rebuttal opinion to testimony from Dr. Jakobsson's declaration or his deposition. *Id.* at 3–5. Accordingly, Petitioner asserts that Dr. Juels' declaration follows the same approach as the reply declaration found permissible in *Belden*. *Id.* at 5 (citing *Belden*, 805 F.3d at 1078).

Petitioner also contends that the *Dexcom* case cited by Patent Owner is distinguishable because the motion to exclude in that case was based on the petitioner attempting to fill in a gap in its unpatentability case by introducing new prior art references to satisfy a limitation. *Id.* (citing *Dexcom*, Paper 46 at 30). Petitioner asserts the Dr. Juels, however, has not advanced any new theory or evidence to gap fill. *Id.*

Last, Petitioner argues that Patent Owner will not be prejudiced because it was able to cross-examine Dr. Juels and dispute the substance of his declaration at the oral hearing. *Id.* at 7 (citing *Belden*, 805 F.3d at 1081).

In reply, Patent Owner argues that Petitioner's contentions that Dr. Juels' testimony is permissible as responding to Dr. Jakobsson's testimony are incorrect as a matter of law and fact. Paper 42, 2. Patent Owner asserts that *Belden* is distinguishable because the reply declaration in *Belden* solely presented expert testimony, not factual and expert testimony as Patent Owner contends Dr. Juels' declaration does. *Id.* at 3. Patent Owner also asserts that the patent owner in *Belden* failed to file a sur-reply, unlike this proceeding where Patent Owner was not authorized to file a sur-reply. *Id.*

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Upon considerations of the parties' arguments, we agree with Petitioner that Dr. Juels' declaration responds directly to Dr. Jakobsson's declaration and, thus, is a proper reply declaration. We are not persuaded by Patent Owner's arguments that *Belden* is distinguishable.

Accordingly, we deny Patent Owner's Motion to Strike.

E. Asserted Anticipation by Jakobsson

Petitioner contends claims 1, 2, 10, 11, 21, 22, 24, 27, 30, and 31 are anticipated by Jakobsson. Pet. 19–55. Patent Owner disputes Petitioner's contentions with respect to limitation 1[g] of claim 1 and limitation 10[e] of claim 10 only.⁴ PO Resp. 28–31. The remaining aspects of Petitioner's arguments challenging claims 1, 2, 10, 11, 21, 22, 24, 27, 30, and 31 as anticipated by Jakobsson are uncontested. “The Board is ‘not required to address undisputed matters’ or arguments about limitations with which it was never presented.” *LG Elecs., Inc. v. Conversant Wireless Licensing S.A.R.L.*, 759 F. App'x 917, 925 (Fed. Cir. 2019) (quoting *In re Nuvasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016)). Also, we cautioned Patent Owner “that any arguments for patentability not raised in the response may be deemed waived.” Paper 10, 5; cf. 37 C.F.R. § 42.23(a) (“Any material fact not specifically denied may be considered admitted.”).

1. Overview of Jakobsson

Jakobsson is a published international patent application directed to an identity-authentication system. Ex. 1104, code(54), ¶ 2. In certain embodiments of Jakobsson's system, a user is first authenticated on a user

⁴ We follow the limitation identifications used by Petitioner in the Petition for ease of reference.

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device using a PIN or biometric information; the user device then sends information to a remote verifier including user authentication, PIN, biometric data, and a time-varying code, so that the remote system may verify the information and return a signal to the user device. *Id.* ¶¶ 50, 59.

2. *Independent Claim 1*

a) *Limitation 1[g]*

Claim 1 of the '826 patent recites “wherein the second device is configured to retrieve or receive respective second authentication information for a first plurality of users, wherein the first plurality of users includes the user of the first handheld device.” Ex. 1101, 44:41–44. First, Petitioner contends that Jakobsson discloses that verifier 105 is configured to retrieve or receive Authentication Code A_{1V} (i.e., the claimed second authentication information) for comparison with Authentication Code A_D (i.e., the claimed first authentication information). Pet. 29 (citing Ex. 1104 ¶¶ 50, 118). According to Petitioner, one of ordinary skill in the art would have understood that Authentication Code A_{1V} must be stored in memory, such as random-access memory (RAM), once it is derived or generated, and that Authentication Code A_{1V} must be retrieved or received from memory to perform the comparison with Authentication Code A_D . *Id.* at 29–30 (citing Ex. 1104 ¶ 58). Petitioner also argues that Jakobsson discloses that verifier 105 can be implemented on a computer interacting with one or more other computer programs on the same or different computer, and one of ordinary skill in the art would have understood that derivation of Authentication Code A_{1V} could be implemented on a different program or computer such that the verifier could be configured to retrieve or receive Authentication Code A_{1V}

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from a different program or computer. *Id.* at 30–31 (citing Ex. 1102 ¶ 74; Ex. 1104 ¶ 38).

Second, Petitioner contends that Jakobsson discloses that verifier 105 is configured to authenticate a plurality of users such that verifier 105 retrieves or receives respective second authentication information for a first plurality of users, wherein the first plurality of users includes the user of the first handheld device. *Id.* at 31 (citing Ex. 1102 ¶ 75; Ex. 1104 ¶¶ 37, 38).

Patent Owner argues that Jakobsson does not disclose that verifier 105 receives or retrieves the second authentication information; rather, the verifier creates the second authentication information. PO Resp. 29 (citing Ex. 2101 ¶ 54). For example, Patent Owner points out that ¶ 118 of Jakobsson discloses that verifier 105 *derives* Authentication Code A_{1V} from event code (F) and security enhancing secret (C) and argues there is no disclosure of receipt or retrieval of second authentication information. *Id.* (citing Ex. 1104 ¶ 118; Ex. 2101 ¶ 55).

Patent Owner also argues that, contrary to Petitioner’s assertion, one of ordinary skill in the art would not have understood that Authentication Code A_{1V} must be stored in memory once it is derived or generated and that it must be retrieved or received from memory to perform the comparison with Authentication Code A_D . *Id.* at 30 (citing Ex. 2101 ¶ 56). According to Patent Owner, one of ordinary skill in the art “would understand the claimed ‘receiving’ or ‘retrieving’ of second authentication information to be from long-term memory/storage—such as RAM.” *Id.* (citing Ex. 2101 ¶ 56).⁵ Next, Patent Owner argues that Jakobsson does not disclose storing the

⁵ Although Patent Owner cites to ¶ 56 of Dr. Jakobsson’s Declaration, it appears that the relevant testimony is actually in ¶ 57.

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second authentication code in long-term memory, and this absence of disclosure “demonstrates that Jakobsson’s verifier stores its created code within registers in the CPU, which temporarily hold the code to allow comparison.” *Id.* at 30–31 (citing Ex. 2101 ¶ 58). Patent Owner then contends that one of ordinary skill in the art “would understand that the claimed data retrieval or receipt is from long-term memory, such as RAM, and is not received or retrieved from registers.” *Id.* at 31 (citing Ex. 2101 ¶ 58). Patent Owner asserts that data is read from registers but received or retrieved from long-term memory. *Id.* (citing Ex. 2101 ¶ 58).

In reply, Petitioner argues that it is not relevant whether Jakobsson’s data is stored in CPU registers, RAM, ROM, or any other known memory device; the data still must be retrieved or received from the memory to perform the authentication. Reply 6. Petitioner also argues that, contrary to Patent Owner’s contention, there is no distinction between reading data from memory and receiving or retrieving data from memory because both terms refer to transferring data from a memory device to a processor. *Id.* at 6–7. Petitioner adds that there is no meaningful distinction between CPU registers and RAM because they are both well-known memory devices. *Id.* at 7 (citing Ex. 1118 ¶ 24; Ex. 1120 ¶¶ 44–50). In addition, Petitioner argues that Patent Owner’s assertion that Jakobsson requires storing data within CPU registers is incorrect because one of ordinary skill in the art would understand that Jakobsson’s authentication procedure can be implemented using RAM, ROM, CPU registers, flash memory, or any other common memory device. *Id.* at 8.

Patent Owner disputes these arguments in its Sur-Reply. Sur-Reply 2–6. In particular, Patent Owner argues the plain and ordinary

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meanings of “retrieve” and “receive” both suggest a transfer from outside to an entity, and CPU registers are not outside the CPU, as RAM is. *Id.* at 3 (citing Ex. 2101 ¶ 58). Patent Owner also argues that

There is also a very good reason from a design perspective that the claimed retrieve/receive relates to storage such as RAM, but read/fetch is used for access to registers. That is because the two operations are dramatically different. Read/fetch is a direct addressing method, whereas retrieving/receiving uses a complex mapping performed by a memory management unit (MMU). Read/fetch takes a known amount of time (typically one cycle), whereas retrieve/receive involves bus activity, and therefore potential bus congestion. Read/fetch is done by micro-instructions, whereas receive/retrieve is done by instructions. There is no pipelining for read/fetch, but there is for retrieve/receive.

Id. at 4. This argument is not persuasive, however, because it is attorney argument not supported by evidence of record. Furthermore, Patent Owner argues that Jakobsson’s authentication code is generated anew for each time period or verification, such that there is no need to store the code. *Id.* at 5 (citing Ex. 2101 ¶ 57). This argument is not persuasive because the cited testimony of Dr. Jakobsson does not indicate that the authentication code is generated anew for each verification. *See* Ex. 2101 ¶ 57.

Dr. Shoup testifies that one of ordinary skill in the art would have understood that Jakobsson’s Authentication Code A_{1V} must be stored in memory, such as RAM, once it is derived or generated and that it must be retrieved or received from memory to perform the comparison with Authentication Code A_D . Ex. 1102 ¶ 74. Dr. Juels also testifies that Jakobsson’s verifier must receive or retrieve the second authentication code from some memory device to facilitate the comparison. Ex. 1120 ¶ 44. Although neither expert provides much objective evidence or analysis in

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support, we note that Patent Owner does not dispute that Authentication Code A_{1V} is stored *at all*; rather, Patent Owner and its expert both concede that Authentication Code A_{1V} is stored within the CPU registers. PO Resp. 30–31; Sur-Reply 3; Ex. 2101 ¶ 58. Thus, we credit the testimony of Dr. Shoup and Dr. Juels to the extent that Authentication Code A_{1V} is stored *in some manner* after being derived.

Furthermore, we disagree with Patent Owner’s argument that one of ordinary skill in the art “would understand the claimed ‘receiving’ or ‘retrieving’ of second authentication information to be from long-term memory/storage—such as RAM.” *See* PO Resp. 30 (citing Ex. 2101 ¶ 56). First, the language of claim 1 simply does not support this assertion, as there is no recitation of where the second authentication information is retrieved or received. Claim 1 does recite “a second memory coupled to the second processor” (Ex. 1101, 44:40), but makes no connection between the second memory and the retrieving or receiving of the second authentication information. Second, we do not credit the testimony of Dr. Jakobsson on this point (Ex. 2101 ¶ 57) because it is not supported sufficiently by objective evidence or analysis. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Last, we are not persuaded by Patent Owner’s argument that Dr. Shoup’s testimony supports the assertion that the claimed “receiving” or “retrieving” must be from long-term memory or storage such as RAM. *See* PO Resp. 30 (citing Ex. 1102 ¶ 74). Dr. Shoup’s testimony is that one of ordinary skill in the art would have understood that *Jakobsson*’s authentication information must be stored in

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memory *such as* RAM, and did not address the meaning the claim language “receive” or “retrieve.” Ex. 1102 ¶ 74.

Thus, in view of Patent Owner’s concession that Jakobsson’s Authentication Code A_{1V} is stored within the CPU registers (PO Resp. 30–31; Sur-Reply 3; Ex. 2101 ¶ 58), we determine that one of ordinary skill in the art would have understood that Authentication Code A_{1V} would be stored in some manner upon being derived, and Authentication Code A_{1V} would be retrieved from this storage for comparison to the Authentication Code A_D .

Based on the full record before us, we determine that Petitioner has met its burden of establishing that Jakobsson discloses limitation 1[g].

b) Remaining Limitations

As for the remaining limitations of claim 1, Petitioner provides a detailed analysis of Jakobsson’s disclosures that teach every element of the claim. Pet. 19–39. Other than as discussed above, Patent Owner offers no argument disputing those disclosures. *See* PO Resp. 28–31.

We have reviewed the contentions in the Petition and find that Jakobsson teaches the remaining limitations of claim 1 as set forth by Petitioner. *See* Pet. 19–28, 31–39.

c) Conclusion

For the foregoing reasons, we determine that Petitioner has shown by a preponderance of the evidence that Jakobsson anticipates claim 1.

3. Independent Claim 10

Petitioner relies on its analysis of claim 1 in asserting that Jakobsson anticipates claim 10. Pet. 39–41 (citing 1102 ¶¶ 96, 98, 100, 102, 104, 106, 108). Patent Owner argues claims 1 and 10 together, and thus relies on the

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same arguments for claim 10 as it did in connection with claim 1. PO Resp. 28–31. For the reasons discussed above, we find Patent Owner’s arguments unpersuasive and are persuaded on the full record that Jakobsson anticipates claim 10. *See supra* § III.E.2.

4. *Claims 2, 11, 21, 22, 24, 27, 30, and 31*

For each of claims 2, 11, 21, 22, 24, 27, 30, and 31, Petitioner provides a detailed analysis of Jakobsson’s disclosures that teach every element of each claim. Pet. 37–39, 41–55. Patent Owner offers no argument disputing Petitioner’s contentions with respect to these claims. *See generally* PO Resp.

We have reviewed the contentions in the Petition and find that Jakobsson teaches each limitation of claims 2, 11, 21, 22, 24, 27, 30, and 31 as set forth by Petitioner. *See* Pet. 37–39, 41–55. Accordingly, we determine that Petitioner has shown by a preponderance of the evidence that Jakobsson anticipates claims 2, 11, 21, 22, 24, 27, 30, and 31.

F. Asserted Obviousness based on Jakobsson, Verbauwhede, and Maritzen

Petitioner contends claims 7, 14, 26, and 34 are obvious over Jakobsson, Verbauwhede, and Maritzen. Pet. 55–67. Patent Owner disputes Petitioner’s contentions. PO Resp. 31–49.

1. *Overview of Maritzen*

Maritzen is a published patent application directed to conducting a financial transaction, in one embodiment using communication “between a vehicle-accessed, payment-gateway terminal (VAPGT) and a pre-registered, key-enabled, personal transaction device (PTD).” Ex. 1105, Abstract. In one embodiment, Maritzen discloses a financial transaction system in which

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PTD 100 communicates with VAPGT 120 via communication link 150. *Id.* ¶ 38, Fig. 1. In addition, VAPGT 120 communicates with clearing house 130 via communication link 170. *Id.* ¶ 39, Fig. 1.

2. Discussion

Claims 7, 14, 26, and 34 each recite comparing stored authentication information with the authentication information of the user of the first handheld device and enabling or disabling use of the first handheld device based on a result of the comparison. Ex. 1101, 45:15–20, 45:60–64, 47:7–12, 48:24–28. With respect to “enabling or disabling use,” Petitioner asserts that “Jakobsson recognizes that access to the user authentication device 120 **[first handheld device]** can be limited or denied based on the authentication of a user using a PIN, passcode, or biometric information.” Pet. 58–59 (citing Ex. 1104 ¶¶ 3–5). Petitioner also argues

To the extent that Jakobsson does not expressly disclose that the first processor is configured to enable or disable use of the first handheld device based on the result of an authentication, Maritzen provides this disclosure. For example, Maritzen discloses that a PTD CPU 210 **[first processor]** is configured to unlock the PTD and limit access to authorized users **[enable or disable use of the first handheld device]** based on the result of a biometric comparison.⁶

Id. at 59 (citing Ex. 1104 ¶¶ 63, 65, 67, 72). Maritzen discloses that “[b]iometric control manager 330 includes computer readable instructions used by CPU 210 to receive biometric information from privacy card 110, *verify the biometric information, and unlock PTD 100.*” Ex. 1105 ¶ 67 (emphasis added). This appears to be the disclosure that Petitioner primarily

⁶ Petitioner does not rely on Verbauwheide for this limitation.

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relies on for teaching enabling or disabling use based on a result of the comparison.

Patent Owner argues that Petitioner fails to establish that Jakobsson alone discloses enabling or disabling use because the three cited “Background” paragraphs of Jakobsson (i.e., ¶¶ 3–5) merely discuss prior art systems that allow access to a physical location or electronic data based upon ‘one or more of several factors, alone or in combination, to authenticate entities,’” and thus do not “disclose enabling or disabling of the first device based upon a comparison of stored data with user data.” PO Resp. 32 (citing Ex. 1104 ¶¶ 3–5; Ex. 2101 ¶ 61).

We agree with Patent Owner. First, paragraphs 3 through 5 of Jakobsson describe the general background of the invention and are not necessarily describing specific features of Jakobsson’s invention. Moreover, these paragraphs generally discuss denying unauthorized parties access to system, but do not mention specifically enabling or disabling use of a device. Ex. 1104 ¶¶ 3–5.

Patent Owner also argues that Petitioner’s reliance on Maritzen fails. PO Resp. 33–36. In particular, Patent Owner argues that, even if assuming that Maritzen’s disclosure of unlocking PTD 100 satisfies enabling use of the PTD, this disclosure does not suggest *disabling* use of the PTD “because the PTD never reduces the range of functionality available to the user or otherwise changes the state of the PTD in any way based on a failed authentication attempt (e.g., by shutting down the device and/or deleting data in its memory).” *Id.* at 34 (citing Ex. 2101 ¶ 64). According to Patent Owner, PTD 100 simply remains in the same locked state that existed before the failed authentication attempt. *Id.* (citing Ex. 2101 ¶ 64).

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Although this argument relies on Patent Owner’s proposed construction for “enabling or disabling use,” which we have declined to adopt (*see* § III.C.), we find it persuasive. Our construction of “disable” as meaning “to make ineffective or inoperative” requires an affirmative act to make the device ineffective or inoperative. In this context, we determine that simply remaining in a locked state is not an act that makes the PTD ineffective or inoperative.

In reply, Petitioner argues that “Maritzen explains that ‘PTD 100 is disabled such that the user may not access PTD 100.’” Reply 9 (citing Ex. 1105 ¶ 56). Paragraph 56, however, states that PTD 100 is disabled as the result of an “invalid transaction message.” Ex. 1105 ¶ 56. This invalid transaction message is transmitted from clearing house 130 to VAPGT 120. *Id.* ¶ 55. As such, disabling PTD 100 in response to an invalid transaction message is distinct from unlocking or not unlocking PTD 100 in response to an attempt to verify the biometric information and does not suggest that not unlocking PTD 100 is equivalent to disabling PTD 100.⁷ Accordingly, Petitioner’s reply argument is not persuasive.

For the above reasons, we determine that Petitioner has not met its burden of establishing that the combination of Jakobsson, Verbauwhede, and

⁷ To the extent Petitioner is asserting that paragraph 56 satisfies the limitation of disabling the first handheld device, we determine that such an argument, made for the first time in the Reply, improperly raises a new theory or reasoning that reasonably could have been presented in the Petition. Under such circumstances, it would be a proper exercise of our discretion not to consider these arguments. *See Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 775 (Fed. Cir. 2018) (finding the Board did not abuse its discretion in declining to consider portions of a reply declaration that raised a new obviousness argument).

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Maritzen teaches or suggests disabling use of a first handheld device based on a result of comparing stored authentication information with the authentication information of a user of the first handheld device.

Accordingly, we determine, on the full record before us, that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 7, 14, 26, and 34 are unpatentable under 35 U.S.C. § 103 as directed to subject matter that would have been obvious to a person of ordinary skill in the art in light of Jakobsson, Verbauwhede, and Maritzen.

G. Asserted Obviousness based on Jakobsson and Gullman

Petitioner contends claims 8 and 15 are obvious over Jakobsson and Gullman. Pet. 67–74. Patent Owner disputes Petitioner’s contentions. PO Resp. 49–55.

Claim 8 depends from claim 1 and recites “wherein the first handheld device includes a first memory coupled to the first processor included in the first handheld device and configured to store respective biometric information for a second plurality of users.” Ex. 1101, 45:21–25. Claim 15 depends from claim 10 and recites “further comprising an act of storing on the first handheld device respective biometric information for a second plurality of users.” *Id.* at 45:65–67.

Petitioner argues that Jakobsson’s user authentication device 120 is a first handheld device that includes a first memory coupled to a first processor. Pet. 68 (citing Ex. 1104 ¶ 41; Ex. 1102 ¶ 185). Petitioner also argues Jakobsson discloses that user authentication device 120 is configured to store biometric information, but does not disclose expressly that the device is configured to store biometric information for a second plurality of users. *Id.* at 69 (citing Ex. 1104 ¶ 110; Ex. 1102 ¶ 186). Petitioner then

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asserts that “Gullman discloses a security apparatus 14 [**first device**] that stores biometric templates [**biometric information**] for multiple users.” *Id.* (citing Ex. 1106, 5:55–65; Ex. 1102 ¶ 187). Petitioner then concludes that the combination of Jakobsson and Gullman teaches the limitations of claim 8 and asserts reasons to combine these references. *Id.* at 69–74. In particular, Petitioner argues

combining Gullman’s storage for multiple users with the teachings of Jakobsson would have involved nothing more than combining prior art elements (devices configured to store biometric information for more than one user) according to known methods (configuring the memory device to accommodate information for more than one user) to yield predictable results (a device accessible by more than one user).

Id. at 70 (citing Ex. 1102 ¶ 190). Second, Petitioner argues that both references are in the same field and address the same problem. *Id.* at 70–74. Petitioner relies on its analysis of claim 8 in asserting that claim 15 is unpatentable in view of the combination of Jakobsson and Gullman. *Id.* at 74 (citing Ex. 1102 ¶ 196).

Patent Owner argues that Gullman does not disclose storage for multiple distinguishable users. PO Resp. 49–51. Petitioner argues that claims 8 and 15 do not require that a second group of have access to a second group of accounts. Reply 19. We agree with Petitioner that claims 8 and 15 do not recite a second group of accounts, but this argument overlooks a primary problem with Petitioner’s proposed ground of unpatentability with respect to claim 8. Namely, claim 8 requires storing biometric information for *a second plurality of users*. Ex. 1101, 45:24–25. Claim 1, from which claim 8 depends, recites that a second device is configured to retrieve or receive respective second authentication information for *a first plurality of*

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users. Id. at 44:43. Thus, claim 8 requires two distinct groups of users. Gullman teaches storing multiple templates for multiple users. Ex. 1106, 5:55–65. At best, this discloses storing information for a single group or plurality of users. Petitioner does not explain adequately how the combination of Jakobsson and Gullman would disclose storing information for two distinct groups of users.

Claim 15, however, does not present this same issue because claim 10, from which claim 15 depends, does not recite authentication information for a first plurality of users. *See* Ex. 1101, 45:30–47, 65–67. Thus, we are persuaded by Petitioner’s argument that it would have been obvious to one of ordinary skill in the art to modify Jakobsson’s user authentication device 120, which is configured to store biometric information (*see* Ex. 1104 ¶ 110), to store biometric information for a plurality of users as taught by Gullman (Ex. 1106, 5:55–65). Furthermore, we are persuaded that one of ordinary skill in the art would have had a reason to combine Jakobsson and Gullman because the proposed combination modifies a device configured to store biometric information with a known method of configuring the memory device to accommodate information for more than one user to yield the predictable result making the device accessible by more than one user, and thereby enhancing its utility.

Patent Owner argues one of ordinary skill in the art would not have been motivated to combine Jakobsson and Gullman. PO Resp. 51–55. First, Patent Owner argues Petitioner’s contention that Jakobsson and Gullman are in the same field, address the same problem, and have the same basic structure and functions is overbroad and incorrect. *Id.* at 51–54. This

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argument is not persuasive because it addresses Petitioner's second reason to combine, but not the first reason, which we find convincing.

Patent Owner also argues that the proposed combination would require substantial changes to Jakobsson's authentication code architecture. *Id.* at 54 (citing Ex. 2101 ¶ 97). According to Patent Owner, because Jakobsson includes an "event state" in its authentication process, adding multiple users would require an exponential increase in the number of authentication codes required. *Id.* at 55 (citing Ex. 1104 ¶ 17; Ex. 2101 ¶ 97). We do not find this argument persuasive. Neither Patent Owner nor Dr. Jakobsson explain adequately why an increased number of authentication codes would dissuade one of ordinary skill in the art from combining the references to enhance the device's utility.

For the above reasons, we determine that Petitioner has not met its burden of establishing that the combination of Jakobsson and Gullman renders claim 8 obvious, but has met its burden of establishing that the combination of Jakobsson and Gullman renders claim 15 obvious.

Accordingly, we determine, on the full record before us, that Petitioner has not demonstrated, by a preponderance of the evidence, that claim 8 is unpatentable under 35 U.S.C. § 103 as directed to subject matter that would have been obvious to a person of ordinary skill in the art in light of Jakobsson and Gullman, and Petitioner has demonstrated, by a preponderance of the evidence, that claim 15 is unpatentable under 35 U.S.C. § 103 as directed to subject matter that would have been obvious to a person of ordinary skill in the art in light of Jakobsson and Gullman.

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H. Secondary Considerations

Patent Owner argues that neither Petitioner nor its expert witness considered the strong evidence of secondary considerations of non-obviousness, such as long-felt need, failure of others, and commercial success. PO Resp. 55–61. Because we are not persuaded Petitioner has demonstrated sufficiently that the combination of Jakobsson, Verbauwhede, and Maritzen renders claims 7, 14, 26, and 34 obvious, or that the combination of Jakobsson and Gullman renders claim 8 obvious, we need not reach Patent Owner’s assertions regarding secondary considerations with respect to those claims. With respect to claim 15, Patent Owner has not established a sufficient nexus between the asserted success and the subject matter of claim 15. *See In re GPAC Inc.*, 57 F.3d. 1573, 1580 (Fed. Cir. 1995) (holding that there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations). Furthermore, as Petitioner argues, “Dr. Jakobsson admitted that all the features that he describes in his declaration as ‘long-felt needs’ were in fact in the prior art, including local authentication based on PINs and biometric information.” Reply 22 (citing Ex. 1117, 98:12–99:18).

Accordingly, we do not find Patent Owner’s arguments regarding secondary considerations persuasive.

IV. CONDITIONAL MOTION TO AMEND

In its Conditional Motion to Amend, Patent Owner requests that we substitute claims 1–20 and 30–35 of the ’826 patent with proposed claims 36–61 “should any of claims 1, 2, 7, 8, 10, 11, 14, 15, 21, 22, 24, 26, 27, 30, 31, and 34 be found unpatentable.” Mot. Amend 1. Because we determined claims 7, 8, 14, and 34 have not been shown to be unpatentable by a

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preponderance of the evidence, we do not consider Patent Owner's contingent request to replace those claims with proposed substitute claims 42, 43, 49, and 60. *See* Paper 17, 3 (“[A] request to substitute claims will be treated as contingent, which means a proposed substitute claim will only be considered if the original patent claim it is meant to replace is deemed unpatentable.”).

A. Statutory and Regulatory Requirements

In reviewing a motion to amend, we consider whether the motion meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. *Lectrosonics, Inc. v. Zaxcom, Inc.*, Case IPR2018-01129 (PTAB Feb. 25, 2019) (Paper 15) (precedential). That is, the patent owner must demonstrate the following: (1) the amendment proposes a reasonable number of substitute claims; (2) the amendment responds to a ground of unpatentability involved in the trial; and (3) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter. *See* 35 U.S.C. § 316(d); 37 C.F.R. § 42.121; *see also Lectrosonics, Inc.*, slip op. at 4–8. The patent owner, however, “does not bear the burden of persuasion to demonstrate the patentability of [the proposed] substitute claims.” *Lectrosonics, Inc.*, slip op. at 4 (citing *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017); *Bosch Auto. Serv. Sols. LLC v. Matal*, 878 F.3d 1027 (Fed. Cir. 2017)). “Rather, as a result of the current state of the law and [U.S. Patent and Trademark Office] rules and guidance, the burden of persuasion will ordinarily lie with the petitioner to show that any proposed substitute claims are unpatentable by a preponderance of the evidence.” *Lectrosonics, Inc.*, slip op. at 4.

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1. *Reasonable Number of Substitute Claims*

Patent Owner asserts that, consistent with the presumption that only one substitute claim would be needed to replace each challenged claim, the Motion to Amend provides only one substitute claim for each challenged claim. Mot. Amend 2 (citing 37 C.F.R. § 42.121(a)(3)). Petitioner argues that Patent Owner proposes too many substitute claims because it includes proposed substitute claims 38–41, 44, 47, 48, 51–55, 58, 59, and 61 for original claim 3–6, 9, 12, 13, 16–20, 32, 33, and 35, which were challenged in the Petition. Opp. Amend 1–3. Patent Owner has withdrawn proposed substitute claims 38–41, 44, 47, 48, 51–55, 58, 59, and 61 (*see* Amend Reply 1), rendering Petitioner’s argument moot. Furthermore, because Patent Owner now proposes one substitute claim for each challenged claim, it proposes a reasonable number of substitute claims. *See* 37 C.F.R. § 42.121(a)(3).

2. *Responds to a Ground of Unpatentability Involved in the Trial*

Patent Owner also asserts that the proposed substitute claims are responsive to the grounds of unpatentability involved in the proceeding. Mot. Amend 12. Petitioner does not dispute Patent Owner’s contention. *See generally* Opp. Amend. We agree that the proposed substitute claims meet the requirement of responding to a ground of unpatentability involved in the trial.

3. *Scope of the Claims*

Patent Owner contends “the proposed substitute claims *do not broaden* the scope of the original claims. As shown in Appendix A . . . , all substitute claims include the same substantive claim limitations found in the

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original claims, and further include additional substantive features.” Mot. Amend 2. Petitioner does not dispute Patent Owner’s contentions. *See generally* Opp. Amend.

We agree with Patent Owner that the proposed substitute claims the substantive claim limitations of the original claims and only include additional limitations. *See* Mot. Amend. A1–A7. Accordingly, we determine that Patent Owner has complied with the requirement to not enlarge the scope of the claims.

Patent Owner also contends the proposed substitute claims do not add new subject matter and provides a chart listing citations where support for the proposed substitute claims can be found in U.S. Patent Application No. 14/027,860 (“the ’860 application”) from which the ’826 patent issued. Mot. Amend 2–12. Petitioner argues that substitute claim 56 is either not supported or not enabled by the written description. Opp. Amend 3–4. For the reasons discussed below, we determine that substitute claim 56 is not enabled by the written description. Petitioner does not contend that any of the other proposed substitute claims add new subject matter. Accordingly, we determine that Patent Owner has complied with the requirement to not introduce new subject matter.

B. Patentability

1. Ineligible Subject Matter

Petitioner contends that the proposed substitute claims are directed to ineligible subject matter under 35 U.S.C. § 101. Opp. Amend 19–24.

a) Principles of Law

An invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101.

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However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

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In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 187; *see also id.* at 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221 (quotation marks omitted). “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

The PTO published revised guidance on the application of § 101. *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50

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(Jan. 7, 2019) (“Guidance”). Under the Guidance, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* Manual of Patent Examining Procedure (“MPEP”) §§ 2106.05(a)–(c), (e)–(h) (9th ed. rev. 08.2017 Jan. 2018)).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

- (3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or
- (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Guidance.

b) Discussion

Petitioner argues that the substitute claims are directed to “the abstract idea of verifying an account holder’s identity based on codes and/or information related to the account holder before enabling a transaction.”

Opp. Amend 19.

Patent Owner argues that, on September 19, 2018, United States Magistrate Judge Sherry R. Fallon for the District Court of Delaware issued a Report and Recommendation rejecting similar ineligible subject matter arguments made by Petitioner. Reply Amend 22 (citing Ex. 2112, 19–20).⁸

⁸ Patent Owner misidentifies this exhibit as Exhibit 2016 in the Reply.

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In addition, Patent Owner notes that the Report and Recommendation recommended that the District Court deny Petitioner’s motion to dismiss under § 101 because the claims of the ’826 patent are “not directed to an abstract idea because ‘the plain focus of the claims is on an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity.’” *Id.* at 22–23 (quoting Ex. 2112, 19–20).

Patent Owner also argues that the Board reached the same conclusion on patent eligibility when it rejected substantially similar ineligible subject matter arguments made by Petitioner for related U.S. Patent No. 8,577,813 in CBM2018-00026. *Id.* at 23 (citing *Apple Inc. v. Universal Secure Registry LLC*, CBM2018-00026, Paper 11 at 23–24 (PTAB Dec. 10, 2018)).

Under Step 2A, Prong 1 of the Guidance, we determine that Petitioner has not met its burden of showing how its characterization of the claims as “verifying an account holder’s identity based on codes and/or information related to the account holder before enabling a transaction” falls within any of “mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes.” Furthermore, even assuming that Petitioner has made such a showing, under Step 2A, Prong 2, we determine that Petitioner has not met its burden of showing that the claims are “directed to” that characterization, because the claims are instead directed to “an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity.” Ex. 2112, 19–20. Our assessment is based on an analysis of proposed independent claims 36, 45, and 56.

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For instance, substitute claim 36 recites a first handheld device having a first wireless transceiver for transmitting a first wireless signal that includes encrypted authentication information. The first handheld device also generates a one-time code and a digital signature, which are included in the first wireless signal. Substitute claim 36 also recites a second device having a first wireless transceiver for receiving the first wireless signal. The second handheld device also retrieves or receives second authentication information and uses information from the first wireless signal and the second authentication information to verify the user. We determine that these limitations show how the claim is directed to an improvement to computer functionality itself, as opposed to an abstract idea.

Substitute claim 45 recites using a first handheld device to authenticate a user; retrieving or receiving first biometric information of a user; and determining a first authentication information from the first biometric information. Substitute claim 45 also recites generating a one-time code and a digital signature with the first handheld device, at least one of which is encrypted by the first handheld device. In addition, substitute claim 45 recites using a second device to receive a first signal wirelessly transmitted from the first handheld device and retrieving or receiving second authentication information. The second device also is used to decrypt at least one of the digital signature and the one-time code, and to use information from the first wireless signal and the second authentication information to authenticate the identity of the user. Substitute claim 56 has similar limitations. We again determine that these limitations show how the claim is directed to an improvement to computer functionality itself, as opposed to an abstract idea.

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Furthermore, after thorough review of the record, we agree with Judge Fallon's analysis and determination that the original claims of the '826 patent are not directed to an abstract idea. We also note that the proposed substitute claims only add additional limitations to the original claims and do not make any changes such that the proposed substitute claims would be directed to an abstract idea.

In addition, we agree with Patent Owner that Petitioner's arguments that the proposed substitute claims are directed to an abstract idea are substantially similar to the arguments Petitioner made in CBM2018-00026. *Compare* Opp. Amend 19–22 with *Apple, Inc.*, slip op. at 17–20. Given that the claims at issue in CBM2018-00026 and the proposed substitute claims are both directed to using encrypted authentication information that is based on biometric information to verify and allow a user to access a transaction, we determine that the Board's conclusion in CBM2018-00026 that the claims were not directed to an abstract idea is equally applicable here.

Because we find the claims are not directed to an abstract idea, we do not proceed to the second step of the *Alice* test to make a determination as to whether the challenged claims describe an inventive concept.

c) Conclusion

In view of the above, we conclude that Petitioner has failed to demonstrate sufficiently that any of the proposed substitute claims are directed to a patent-ineligible abstract idea under 35 U.S.C. § 101.

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2. *Duty of Candor*

Petitioner contends that Patent Owner has failed to comply with the duty of candor under 37 C.F.R. § 42.11 because it did not disclose Schutzer,⁹ of which Petitioner contends Patent Owner was aware because the reference was cited in the related proceeding IPR2018-00809. Opp. Amend 19–24.

Patent Owner disputes Petitioner’s contention, arguing that Petitioner’s reliance on Schutzer for discussing credit card transactions and digital signatures is misplaced. Reply Amend 24–25. Patent Owner also states it objectively believed that Schutzer was not materially relevant when the Motion to Amend was filed. *Id.* at 25.

In view of Patent Owner’s assertions, we determine that Petitioner has not established adequately that Patent Owner failed to comply with the duty of candor under 37 C.F.R. § 42.11.

3. *Proposed Substitute Claims 56 and 57*

Substitute claim 56 recites “at least a portion of the first authentication information encrypted by a first key, the first authentication information including the first key encrypted by a second key,” “decrypting, at the second device, the encrypted first key using the second key to retrieve the first key,” and “decrypting, at the second device, the portion of the first authentication information encrypted by the first key using the first key.” Mot. Amend A6.

Patent Owner points to various passages in the ’860 application, in particular lines 24–32 on page 49, as providing written description support

⁹ European Patent Application Publication No. EP 1028401, published August 16, 2000 (Ex. 1130).

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for substitute claim 56. *Id.* at 11. The '860 application discloses a first wireless signal comprising “a PKI encrypted one-time DES key field 310 comprising a PKI encrypted one-time DES key” and “a DES key encrypted biometric data field 312, which includes at least a portion of biometric data of the first user encrypted with the DES key.” Ex. 2106, 49:24–28. In addition, “the public key of the first user . . . can be used to decrypt the DES key, and the DES key can be used to decrypt at least a portion of the biometric data of the first.” *Id.* at 49:29–31. Thus, the DES key corresponds to the first key of substitute claim 56, and the public key corresponds to the second key of substitute claim 56. Thus, the limitations of claim 56 appear to be supported by the written disclosure of the '860 application.

Petitioner, however, argues that this disclosure describes only symmetric encryption because the same public key is used to both encrypt and decrypt, but the written description does not enable this public key encryption scheme because a value encrypted with a public key, which is an asymmetric key, could not be decrypted using the same public key. Opp. Amend 3–4 (citing Ex. 1119 ¶ 27). Petitioner also argues

Dr. Jakobsson admits that this encryption and decryption scheme does not make sense as written. *See* Ex-1117, Jakobsson Dep., 52-54. Instead, Dr. Jakobsson argues this must be read as a typographical error, and that the text really means decrypting the DES key with a *different (private) key*. *Id.* Yet Dr. Jakobsson's declaration mentions no typographical error. Furthermore, claim 56 requires encrypting and decrypting the first key with *the same second key*.

Id. at 4.

Patent Owner admits the '860 application contains an obvious error in that “a public key cannot be used to decrypt ciphertext.” Reply Amend 2 (citing Ex. 2113 ¶ 30). Patent Owner, however, argues an amendment to

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correct an obvious error does not constitute new matter where the ordinary artisan would not only recognize the existence of the error in the specification, but also recognize the appropriate corrections, and the obvious error in the '860 application would be immediately recognized by one of ordinary skill in the art, who would also recognize the appropriate corrections. *Id.* at 2–3 (citing *In re Oda*, 443 F.2d 1200 (CCPA 1971); Ex. 2113 ¶ 31).

We do not find this argument persuasive because the Motion to Amend does not seek to correct the error identified by Petitioner and admitted by Patent Owner. Rather, the added limitations of substitute claim 56 recite the same error found in the '860 application. The test for compliance with the enablement requirement is whether the disclosure, as filed, is sufficiently complete to enable one of ordinary skill in the art to make and use the claimed invention without undue experimentation. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988) (setting forth eight factors to be considered to evaluate whether a disclosure would require undue experimentation). Given that Patent Owner and its expert witness concede that the written description supporting the added limitations of substitute claim 56 is erroneous, we find substitute claim 56 unpatentable for lack of enablement under 35 U.S.C. § 112 ¶ 1. Proposed substitute claim 57, which depends from substitute claim 56 and contains all of its limitations, is also unpatentable for lack of enablement under 35 U.S.C. § 112 ¶ 1.

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4. *Proposed Substitute Claim 36*

a) *Credit and/or debit card transaction*

Substitute claim 36 adds three limitations, limitations 36[pre],¹⁰ 36[b] and 36[j], that recite conducting a credit and/or debit card transaction. Mot. Amend A1–A2. Petitioner argues that Jakobsson discloses that its authentication process can result into services such as financial services, and contends that one of ordinary skill in the art would understand that such financial services would include a credit card and/or debit card transaction. Opp. Amend. 5 (citing Ex. 1104 ¶ 39). Petitioner also argues that Jakobsson’s authentication device can be a credit-card sized device such as a credit card including a magnetic strip. *Id.* (citing Ex. 1104 ¶ 41).

We agree that Jakobsson’s disclosure that authentication device 120 can be a credit-card sized device such as a credit card establishes that the financial services Jakobsson’s device is disclosed as providing access to include credit card services. We disagree with Patent Owner’s argument that ¶ 41 “merely states that the user device may be a credit card sized device including a magnetic strip *like that of a credit card.*” See Reply Amend 5 (emphasis added). This argument mischaracterizes the disclosure, which is: “a credit-card sized device 120 is a card such as a credit card including a magnetic strip or other data store on one of its sides.” Ex. 1104 ¶ 41. Thus, contrary to Patent Owner’s assertion, Jakobsson discloses that authentication device 120 can be a *credit card*, not a device *like* a credit card. In addition, Jakobsson’s disclosure that communications terminal 140

¹⁰ Patent Owner refers to the preamble as “limitation 36[pre].” Mot. Amend 3, B1. Although we follow this convention for ease of reference, we do not determine whether the preamble is a limitation.

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can be a card reader further suggests that the reference contemplates providing credit card services. *See* Ex. 1104 ¶ 44.

Thus, we determine that Petitioner has met its burden of establishing that Jakobsson discloses limitations 36[pre], 36[b] and 36[j]. In view of this determination, we do not reach the parities arguments on whether Jakobsson and Schutzer discloses conducting credit and/or debit card services.

b) First processor further programmed to generate a one-time code and a digital signature, the digital signature generated using a private key associated with the first handheld device

Substitute claim 36 adds the limitation “the first processor further programmed to generate a one-time code and a digital signature, the digital signature generated using a private key associated with the first handheld device,” which Patent Owner identifies as limitation 36[f]. Mot. Amend A1, B1.

Petitioner argues that Jakobsson discloses a number of different one-time codes that can be changed over time and combined with other information to generate an authentication code. Opp. Amend. 10 (citing Ex. 1104 ¶¶ 13, 63–77, 116, 140; Pet. 20–21). Petitioner also argues that Schutzer discloses “a cardholder can authenticate his or herself by providing certain information, and that ‘[i]f the transaction or the customer’s history warrants, the issuing bank 8 can require more secure authentication, such as additional secrets, matching biometrics, and/or **digital signatures.**’” *Id.* (citing Ex. 1130 ¶ 29).

Petitioner then argues one of ordinary skill in the art would have been motivated to add the digital signature of Schutzer to the authentication code of Jakobsson because such a combination would combine known elements

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(one-time code, authentication code, and digital signature) with the known method of prepending or appending combination function or inclusion as additional information to yield the predictable result of a combined authentication code to more securely authenticate a user. *Id.* at 10–11 (citing Ex. 1119 ¶ 47). In addition, Petitioner argues it would have been obvious to try adding the digital signature of Schutzer to the other authentication values disclosed by Jakobsson because one of ordinary skill in the art would have understood that doing so would add another layer of security. *Id.* at 11 (citing Ex. 1119 ¶¶ 46–50; Ex. 1104 ¶¶ 21, 97, 112; Ex. 1130 ¶ 29). Dr. Shoup explains that in one approach within Jakobsson’s disclosures, “a user could decrypt data with his or her private key to create a digital signature, and then append[] the digital signature to the authentication code” whereby the “recipient of this digital signature could (1) reverse the appending operation and then (2) confirm that the device that created the digital signature is in possession of [the] user’s private key by encrypting with the user’s public key.”

Patent Owner argues that Petitioner’s analysis fails to identify what in Jakobsson or Schutzer allegedly corresponds to the claimed “first authentication information.” Reply Amend 8. Patent Owner also argues that Petitioner’s analysis of limitation 36[f] ignores the language “the digital signature generated using a private key associated with the first handheld device.” *Id.* at 10–11. In its Sur-Reply, Petitioner argues that Patent Owner’s arguments overlook Dr. Shoup’s detailed explanation of why it would have been obvious to include a digital signature that secretly authenticates a user. Sur-Reply Amend 3 (citing Ex. 1119 ¶¶ 45–50, 59; Opp. Amend 9–11). We agree with Petitioner that its declarant provides an

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adequate explanation of why it would have been obvious to try the claimed approach in light of Jakobsson's and Schutzer's disclosures.

Thus, we determine that Petitioner has met its burden of establishing that the combination of Jakobsson and Schutzer discloses limitation 36[f].

c) Remaining Limitations

As for the remaining limitations of substitute claim 36, Petitioner provides a detailed analysis of Jakobsson's and Schutzer's disclosures that teach these limitations. Opp. Amend 4–11. Other than as discussed above, Patent Owner offers no argument disputing Petitioner's contentions. See Reply Amend 4–15. We have reviewed the contentions in the Opposition and find that the combination of Jakobsson and Schutzer teaches the remaining limitations of substitute claim 36 as set forth by Petitioner. See Opp. Amend 4–11.

d) Conclusion

Accordingly, we conclude that Petitioner has shown by a preponderance of the evidence that the subject matter of substitute claim 36 would have been obvious over Jakobsson and Schutzer.

5. Proposed Substitute Claim 45

Substitute claim 45 adds several limitations. Mot. Amend A3–A4, B3–B4. Petitioner's analysis of substitute claim 45 is:

As discussed in the Petition, claim 10, which corresponds to substitute claim 45, is anticipated by Jakobsson. See Pet., 39–41; Ex-1102, Shoup-Decl., ¶¶96–109. Substitute claim 45 adds similar amendments to claim 10 as substitute claim 36 to claim 1. Accordingly, substitute claim 45 is obvious for at least the same reasons substitute claim 36 is obvious. Ex-1119, Shoup-Decl. ¶52.

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Opp. Amend 12. Patent Owner argues that this analysis fails to address several claim limitations, including limitation 45[e] (“at least one of the digital signature and/or the one-time code encrypted by the first handheld device”) and limitation 45[g] (“decrypting, with the second device, at least one of the digital signature and/or the one-time code encrypted by the first handheld device”). Reply Amend 13.

Regarding limitation 45[e], we agree with Petitioner that its Opposition sufficiently addresses the claimed encryption. Sur-Reply Amend 11 (citing Opp. Amend 7–12; Ex. 1119 ¶ 52); *see* Opp. Amend at 7 (citing Ex. 1104 ¶ 58) (“Jakobsson discloses encrypting a token sent from a user device.”).

Regarding limitation 45[g], Petitioner argues that it also addressed this limitation sufficiently in its Opposition, which explicitly addressed encrypting with a first device and decrypting with a second device. Sur-Reply Amend 10 (citing Opp. Amend 7–8; Ex. 1119 ¶¶ 38–39). We agree. Petitioner’s Opposition argued that “Jakobsson in view of Schutzer discloses encrypting and decrypting authentication information.” Opp. Amend 7. This assertion is supported by Dr. Shoup. Ex. 1119 ¶ 39.

In addition, Patent Owner contends that Petitioner’s analysis of substitute claim 45 failed to address the first authentication information having separable fields. Reply Amend 13–14. We agree with Petitioner, however, that Jakobsson discloses different combination functions, including prepending or appending constituent codes and values to produce a signal with separable fields. *See* Sur-Reply Amend 7–8 (citing Opp. Amend 10–14).

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Accordingly, we conclude that Petitioner has shown by a preponderance of the evidence that the subject matter of substitute claim 45 would have been obvious over Jakobsson and Schutzer.

6. *Proposed Substitute Claims 37 and 46*

Substitute claim 37 depends from substitute claim 36 and adds the same limitations recited in original claim 2. Mot. Amend A2. Similarly, substitute claim 46 depends from substitute claim 45 and adds the same limitations recited in original claim 11. *Id.* at A4–A5. Petitioner relies on those relationships to argue that the subject matter of substitute claims 37 and 46 would have been obvious for the same reasons as original claims 2 and 11, respectively. Opp. Amend 12 (citing Pet. 37–39, 41–42; Ex. 1102 ¶¶ 91–95, 110; Ex. 1119 ¶ 53).

Patent Owner does not contest that assertion. *See generally* Reply Amend. We agree with Petitioner for the reasons given in the Petition. *See* Pet. 37–39, 41–42. Accordingly, we conclude that Petitioner has shown by a preponderance of the evidence that the subject matter of substitute claims 37 and 46 would have been obvious over Jakobsson and Schutzer.

7. *Proposed Substitute Claim 50*

Petitioner makes no argument against the patentability of substitute claim 50. Accordingly, we determine that Petitioner has not demonstrated, by a preponderance of the evidence, that substitute claim 50 is unpatentable.

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V. CONCLUSION¹¹

In summary:

Claims	35 U.S.C. §	Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 10, 11, 21, 22, 24, 27, 30, and 31	102	Jakobsson	1, 2, 10, 11, 21, 22, 24, 27, 30, and 31	
7, 14, 26, and 34	103	Jakobson, Verbauwhede, and Maritzen		7, 14, 26, and 34
8 and 15	103	Jakobsson and Gullman	8	15
Overall Outcome			1, 2, 8, 10, 11, 21, 22, 24, 27, 30, and 31	7, 14, 15, 26, and 34

Additionally, we reach the following conclusions regarding Patent Owner's Conditional Motion to Amend:

Motion to Amend Outcome	Claim(s)
Original Claims Canceled by the Amendment	15
Substitute Claims Proposed in the	36–61

¹¹ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

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Motion to Amend Outcome	Claim(s)
Amendment	
Substitute Claims: Motion to Amend Granted	50
Substitute Claims: Motion to Amend Denied	36, 37, 45, 46, 56, and 57
Substitute Claims: Not Reached	38–44, 47–49, 51–55, and 58–61

VI. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 2, 8, 10, 11, 21, 22, 24, 27, 30, and 31 of the '826 patent *have been shown* to be unpatentable;

FURTHER ORDERED that claims 7, 14, 15, 26, and 34 *have not been shown* to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Strike is *denied*;

FURTHER ORDERED that Patent Owner's Conditional Motion to Amend is *granted* with respect to substitute claim 50, such that claim 15 is cancelled and replaced with substitute claims 50; and

FURTHER ORDERED that Patent Owner's Conditional Motion to Amend is *denied* with respect to substitute claims 36, 37, 45, 46, 56, and 57; 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.

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For PETITIONER:

Monica Grewal
Benjamin Fernandez
Kelvin Chan
Mark Selwyn
WILMER CUTLER PICKERING HALE AND DORR LLP
monica.grewal@wilmerhale.com
ben.fernandez@wilmerhale.com
kelvin.chan@wilmerhale.com
mark.selwyn@wilmerhale.com

For PATENT OWNER:

James Glass
Tigran Guledjian
Christopher Mathews
Nima Hefazi
Richard Lowry
QUINN EMANUEL URQUHART & SULLIVAN LLP
jimglass@quinnemanuel.com
tigranguledjian@quinnemanuel.com
chrismathews@quinnemanuel.com
nimahefazi@quinnemanuel.com
richardlowry@quinnemanuel.com