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Paper 30
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EMC CORPORATION and RSA SECURITY LLC,
Petitioner,

v.

SECURE AXCESS, LLC,
Patent Owner.

Case IPR2014-00475
Patent 7,631,191 B2

Before BARBARA A. BENOIT, TRENTON A. WARD, and
GEORGIANNA W. BRADEN, *Administrative Patent Judges*.

BENOIT, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

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I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. This Final Written Decision is entered concurrently with a final written decision in *PNC Bank, N.A. v. Secure Access, LLC*, Case CBM2014-00100, a covered business method patent review of claims 1–32 of U.S. Patent No. 7,631,191 B2 (Ex. 1001; “the ’191 patent”). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–23 and 25–32 of the ’191 patent are unpatentable.

A. Procedural History

EMC Corporation and RSA Security LLC (collectively, “Petitioner”) filed a Petition (Paper 3; “Pet.”) requesting an *inter partes* review of claims 1–32 (the “challenged claims”) of the ’191 patent. Patent Owner, Secure Access, LLC, filed a Preliminary Response opposing institution of a review. Paper 7. On September 9, 2014, pursuant to 35 U.S.C. § 314(a), we instituted an *inter partes* review for claims 1–23 and 25–32 of the ’191 patent as unpatentable under 35 U.S.C. § 103(a) over the following references.

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Reference(s)	Basis	Claims Challenged
Arent ¹	§ 102	1–9, 11, 12, 14–22, 25, 27–32
Arent and Schneier ²	§ 103	10, 13, 23, 26
Arent and Merritt ³	§ 103	14, 15, 27
Tygar ⁴	§ 102	1–6, 8, 9, 11, 12, 14–22, 25, 27–32
Tygar and Yoshiura ⁵	§ 103	2, 4, 7
Tygar and Schneier	§ 103	10, 13, 23, 26
Tygar and Merritt	§ 103	14, 15, 27

Paper 10 (“Inst. Dec.”) 33.

Subsequent to institution, Patent Owner filed a Patent Owner Response (Paper 15; “PO Resp.”), and Petitioner filed a Reply (Paper 18; “Reply”). Patent Owner filed observations on the cross-examination of Petitioner’s declarant (Paper 23), to which Petitioner filed a response (Paper 27).

An oral hearing was held on May 20, 2015. Paper 29 (“Hearing Tr.”).

B. Related Matters

Patent Owner has asserted the ’191 patent in numerous district court actions, but none against Petitioner. Pet. 1; *see also* Paper 6 (Patent Owner’s

¹ U.S. Patent No. 6,018,724, issued Jan. 25, 2000, filed June 30, 1997 (Ex. 1003; “Arent”).

² BRUCE SCHNEIER, *APPLIED CRYPTOGRAPHY: PROTOCOLS, ALGORITHMS AND SOURCE CODE IN C 39-41* (2d ed. 1996) (Ex. 1009; “Schneier”).

³ U.S. Patent No. 5,475,756, issued Dec. 12, 1995 (Ex. 1022; “Merritt”).

⁴ J.D. TYGAR & ALMA WHITTEN, *WWW Electronic Commerce and Java Trojan Horses* in PROCEEDINGS OF THE 2ND USENIX WORKSHOP ON ELECTRONIC COMMERCE 243-50 (Nov. 18-21, 1996) (Ex. 1004; “the Tygar paper” or “Tygar”).

⁵ European Patent Application Publication Number EP 0 883 284 A2, published Dec. 9, 1998 (Ex. 1006; “Yoshiura”).

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Mandatory Notice). In addition to *PNC Bank, N.A. v. Secure Access, LLC*, Case CBM2014-00100, the '191 patent has been the subject of petitions for covered business method patent reviews brought by other petitioners. In *Bank of the West v. Secure Access, LLC*, Case CBM2015-00009, the Board instituted review of claims 1–32 and then consolidated that review with ongoing CBM2014-00100. *Bank of the West v. Secure Access, LLC*, Case CBM2015-00009 (PTAB April 13, 2015; Paper 21) and (PTAB May 12, 2015; Paper 27).

On June 22, 2015, the Board further instituted a covered business method patent review of claims 1–5, 16, and 29–32 of the '191 patent brought by yet another petitioner. *See T. Rowe Price Inv. Servs., Inc. v. Secure Access, LLC*, Case CBM2015-00027 (PTAB June 22, 2015; Paper 9). On July 10, 2015, the Board denied institution of a second petition by PNC Bank seeking another covered business method patent review of the '191 patent. *See PNC Bank, N.A. v. Secure Access, LLC*, Case CBM2015-00039 (PTAB July 10, 2015; Paper 9).

C. The '191 Patent

The '191 patent relates to authenticating data, such as a web page. Ex. 1001, Abstract, 1:16–18, 12:9–18 (claim 1). The '191 patent explains that customers can be deceived by web pages that appear to be authentic but are not. *See id.* at 1:28–34. A web page that has been authenticated according to the techniques described by the '191 patent includes “all of the information in the same format as the non-authenticated page.” *Id.* at 2:58–

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60. The authenticated web page, however, also includes an “authenticity stamp.” *Id.* at 2:60–62.

Figures 1 and 2 are set forth below:

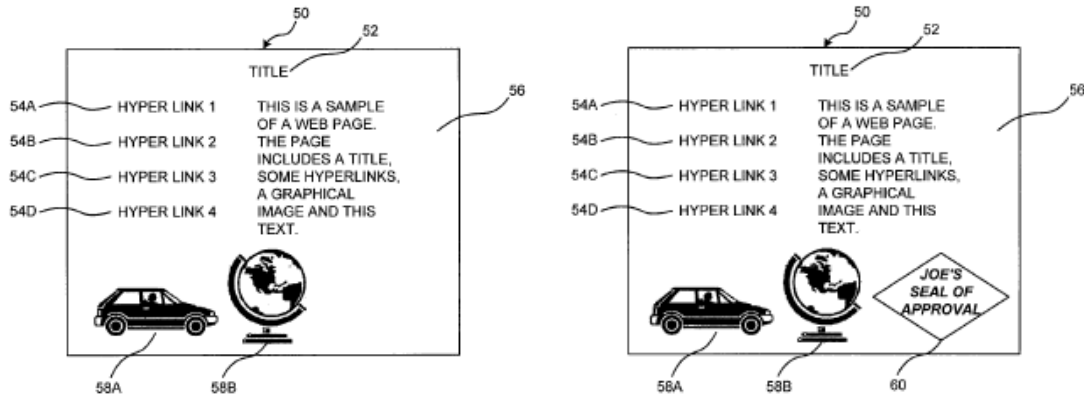


Figure 1

Figure 2

Figures 1 and 2 each show web page 50 having title 52, hyperlinks 54A, 54B, 54C, and 54D, textual information 56, and graphical images 58A and 58B. *Id.* at 2:54–57. Figure 1 shows web page 50 has not been authenticated, whereas Figure 2 shows web page 50 has been authenticated. *Id.* at 2:54–61. The authenticated web page shown in Figure 2, unlike the non-authenticated web page shown in Figure 1, includes authenticity stamp 60. *Id.*

The '191 patent discloses an exemplary environment using an authentication server. *Id.* at Abstract, 3:26–55, Fig. 4. In that embodiment, a web server at a web site receives a request for information from user's web browser and, prior to sending the requested web page to the user's computer, the web server submits information to an authentication server. *Id.* at 3:41–51. The authentication server adds authentication information to the request for information. *Id.* at 3:50–53. “The information which includes the

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authentication information is returned to the web server[,] which then sends the web page including the authentication information to the user [computer].” *Id.* at 3:52–55. The ’191 patent also describes combining the logic of an authentication server with the logic of a web server. *Id.* at 4:57–58.

The ’191 patent further discloses that an authentication server is not always necessary. *Id.* at 8:17–18 (“In alternative embodiments, there is no authentication server.”). In such an embodiment, for example, a web server receives a request for a web page. *Id.* at 4:5–14. “If the [web] page is to be authenticated, the page is dynamically signed with a private key and additional information. . . .” *Id.* at 4:14–16. The signed web page then is returned to the user’s computer, and the user’s computer verifies the authenticity of the web page, using a public key to verify the digital signature. *Id.* at 4:18–23. After verification of the digital signature, the user computer “can validate the authentication of the [web] page.” *Id.* at 4:23–24.

D. Illustrative Claims of the ’191 Patent

Claims 1, 17, 29, 31, and 32 of the ’191 patent are independent and generally relate to methods, authentication systems, and a computer-readable medium for inserting an authenticity key into formatted data (claim 17) or to create formatted data (claims 1, 31, 32), and sending (or returning) formatted data having an authenticity key (claims 1, 29, 31). Claims 1 and 17, reproduced below, are illustrative of the claimed subject matter:

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1. A method comprising:

transforming, at an authentication host computer, received data by inserting an authenticity key to create formatted data; and

returning, from the authentication host computer, the formatted data to enable the authenticity key to be retrieved from the formatted data and to locate a preferences file,

wherein an authenticity stamp is retrieved from the preferences file.

17. An authentication system comprising:

an authentication processor configured to insert an authenticity key into formatted data to enable authentication of the authenticity key to verify a source of the formatted data and to retrieve an authenticity stamp from a preferences file.

Ex. 1001, 12:9–18, 12:62–67.

II. DISCUSSION

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see* Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,766 (Aug. 14, 2012); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278, 1279 (Fed. Cir. 2015) (“Congress implicitly approved the broadest reasonable interpretation standard in enacting the AIA,” and “the standard was properly adopted by PTO regulation.”), *reh’g en banc denied*, 793 F.3d 1297 (Fed. Cir. 2015). Under that standard, claim terms are presumed to be given their

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ordinary and customary meaning as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definition for a claim term must be set forth in the specification with reasonable clarity, deliberateness, and precision. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). A particular embodiment appearing in the written description should not be read into the claim if the claim language is broader than the embodiment. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993). We construe the terms below and discuss terms relative to prior art disclosures in accordance with these principles.

The parties each propose constructions for various claim terms and oppose several of one another's proposed constructions. We address disputed terms as necessary for this decision.

The parties also refer to claim constructions from prior litigation involving the '191 patent. Pet. 11–16; PO Resp. 8–22; Reply 1, 2, 6, 8, 9, 11, 12; *see also* Ex. 1005 (Mem. Op. and Order, *Secure Axxcess, LLC v. Bank of Am. Corp.*, No. 6:10-cv-00670 (E.D. Tex. July 9, 2012, ECF No. 461) (“Markman Order”). We apply a different claim construction standard than that applied by a district court and are not generally bound by a judicial construction of a claim term. *Power Integrations, Inc. v. Lee*, No. 2014-1123, 2015 WL 4757642, at *6 (Fed. Cir. Aug. 12, 2015). Nonetheless, we are mindful of the judicial constructions of the terms “authenticity key,” “preferences file,” and “authenticity stamp.” Markman Order 21. Those terms, however, need not be construed expressly for this decision, so we

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need not determine whether those constructions are consistent with the broadest reasonable construction of the terms. *Cf. Power Integrations*, 2015 WL 4757642, at *7 (“We do not hold that the board must in all cases assess a previous judicial interpretation of a disputed claim term.”).

1. “Received Data”

Independent claims 1, 31, and 32 recite “received data.”⁶ Patent Owner proposes, with support of its declarant, that “transforming, at an authentication host computer, received data” (recited in independent claim 1), “instructions to format received data by inserting an authenticity key to create formatted data” (recited in independent claim 31), and “the authentication host computer receives the data to create received data” (recited in independent claim 32) require the authentication host computer “to receive data from outside of itself.” PO Resp. 14; Ex. 2007 ¶¶ 19, 24.

As made clear by Patent Owner’s arguments concerning prior art references, Patent Owner further proposes that each of independent claims 1, 31, and 32, which recite “received data,” be construed additionally to require “data sent from a device other than the authentication host computer.” PO Resp. 14, 30–31, 46–47. Petitioner, with support from its declarant, opposes construing “received data” and the limitations which recite “received data”

⁶ The district court determined that no construction was necessary for “received data.” Markman Order 13–14. The district court also rejected both Patent Owner’s proposed construction of “data indicative of at least part of a web page” and the defendants’ proposed construction of “a webpage or other document requested by the user.” *Id.*

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as data sent from a device other than the authentication host computer.

Reply 8–9.

As an initial matter, in accordance with the plain language of the claims and because the '191 patent does not provide any special meaning for the term “received data,” we construe “received data” to mean “data that has been received.” The term “received data” implies data has been received but does not itself require the data to be received at a particular time, in a particular manner, by a particular device (such as an authentication host computer), or from a particular device (such as a device other than an authentication host computer).

None of independent claims 1, 31, or 32 expressly recites from where the received data is sent, much less recite expressly that the data is sent from a device other than the authentication host computer. Of independent claims 1, 31, and 32, only independent claim 32 expressly requires a particular device—“an authentication host computer”—to receive data. Independent claims 1 and 31 require acting on received data in a certain manner—to transform (claim 1), or format (claim 31), received data in a certain manner to create formatted data. Thus, none of claims 1, 31, or 32 expressly requires an authentication host computer to receive data from a device other than the authentication host computer, as Patent Owner contends.

Moreover, independent claim 31 does not require an authentication host computer. Initially, Patent Owner contended in its Response that independent claim 31 requires an authentication host computer to receive data outside of itself and further requires the authentication host computer to

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receive data from another device. PO Resp. 30 (“Arent does not disclose ‘transforming, at an authentication host computer, received data’ . . . *as similarly recited in independent claims 31 and 32*”) (initial capitalization removed; emphasis added).

Independent claim 31 does not recite an “authentication host computer” but rather recites a “computer readable medium having . . . instructions to format received data.” We are not persuaded that the recited instructions must be executed by an authentication host computer because other embodiments are described by the ’191 patent, among them an embodiment using a web server that digitally signs without involving separate authentication server (Ex. 1001, 4:5–43, Fig. 5) and a combined web server and authentication server (*id.* at 4:57–58). Furthermore, at the Hearing, Patent Owner apparently abandoned its position and acknowledged that claim 31 does not require an authentication host computer. Hearing Tr. 47:1–2 (stating “I don’t think I’m arguing that claim 31 requires an authentication computer”).

In reciting “transforming, at an authentication host computer, received data,” independent claim 1 requires the transforming be performed by a particular device—“an authentication host computer.” In reciting “received data,” claim 1 impliedly requires data have been received but does not require the data to be received by a particular device, such as an authentication host computer.

This construction is consistent with the ’191 patent because claim 1 recites “an authentication host computer,” a term that does not appear in the

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'191 patent other than in the claims and does not recite “an authentication server,” a term that does appear in the written description of the '191 patent.⁷ Because the '191 patent discloses embodiments that do not require an authentication server, we will not equate the claim term “authentication host computer” with the disclosed authentication server. *See* Ex. 1001, 4:5–43, Fig. 5 (using a web server that digitally signs without involving a separate authentication server), *id.* at 4:57–58 (describing a combined web server and authentication server). This view is confirmed by the prosecution history of the '191 patent. *See Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (“The PTO should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review.”). The applicants during examination deliberately removed “authentication server” from a pending claim. Ex. 3001, 11 (deleting “authentication server” from application claim 8 in response to the Office action dated July 16, 2008). Later to address a rejection that the claim did not recite patent-eligible subject matter, the applicants added “an authentication host computer”—not “authentication server”—to claim 1. Ex 3001, 2 (adding “authentication host computer” to application claim 1 in response to the Office action dated January 9, 2009).

⁷ Patent Owner apparently equates the recited “authentication host computer” with the “authentication server” disclosed in the '191 patent. *See, e.g.*, PO Resp. 15–18 (relying on an “authentication server” depicted in Ex. 1001, Figs. 9, 10 for support of Patent Owner's contention that the recited “authentication host computer” receives data from a web server).

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Further, Petitioner's declarant J. Douglas Tygar, Ph.D., testifies that the recited "authentication host computer" could read on the disclosed embodiment that combines the logic of the web server and the logic of the authentication server. Ex. 1035 ¶ 61 (testifying that the embodiment combining the logic of the web server and the logic of the authentication server indicates that the authentication host computer may receive the information from other software on the authentication host computer).

Additionally, during examination, the applicants removed from claim 1 a limitation specifying a source from which the data was received and then deleting the receiving step entirely. Ex. 3001, 25 (changing "receiving data *from* a client" to "receiving data *for* a client" in claim 1 in response to the Office action dated October 18, 2007), 10 (deleting "receiving data for a client to create received data" in application claim 1 in response to the Office action dated July 16, 2008).

Thus, the applicants deliberately broadened claim 1 by removing a limitation specifying from where the data is received. This further confirms our determination that the transformation limitation in claim 1 should not be construed to require the authentication host computer to receive data from outside of itself or from another device (such as a client computer or a web server), which is a more narrow construction than the plain language of the claim requires.

Turning to independent claim 32, the plain language "the authentication host computer receives the data to create received data" requires the authentication host computer to receive data. We are not

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persuaded, however, that independent claim 32 requires the authentication host computer to receive data from outside of itself or from another device, as Patent Owner contends.

We credit Dr. Tygar's testimony, based on the disclosure of the '191 patent of an embodiment combining the logic of the authentication server and the web server (Ex. 1001, 4:57–58), that the authentication host computer may receive the web page from other software on the authentication host computer (Ex. 1035 ¶ 61).

Neither Patent Owner nor its declarant addresses persuasively this embodiment disclosed in the '191 patent. Although Patent Owner's declarant Jonathan Katz, Ph.D., testifies that “‘received data’ means the authentication host computer receives data from outside itself,” Dr. Katz does not go as far as Patent Owner's proposed additional construction, which limits received data to data sent from a device other than the authentication host computer. *See, e.g.*, Ex. 2007 ¶¶ 19, 24. Nor does Dr. Katz address how the disclosure of a combined web server and authentication server (*id.* at 4:57–58) and use of the term authentication server in the '191 patent (as opposed to “an authentication host computer”) would affect how one of ordinary skill in the art would understand the scope of independent claim 32.

We, therefore, are not persuaded that independent claims 1, 31, or 32 require an authentication host computer to receive data from outside of itself or from a device other than the authentication host computer.

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2. *“Authenticity Key” and “Locating a Preferences File”*

Independent claims 1, 29, 31, and 32 each recites some limitation regarding the authenticity key and locating a preferences file. Independent claim 1 recites “returning . . . the formatted data to enable the authenticity key to be retrieved from the formatted data and to locate a preferences file.” Independent claim 29 recites “the authenticity key enables location of a preferences file.” Independent claim 31 recites “the authenticity key is retrieved from the formatted data to locate a preferences file.” Similarly, independent claim 32 recites “retrieving, by the client computer, the authenticity key from the formatted data to locate a preferences file.”

Independent claim 17 does not recite locating a preferences file but recites retrieving something from a preferences file. Specifically, independent claim 17 recites “an authentication processor configured to insert an authenticity key into formatted data to enable authentication of the authenticity key to verify a source of the formatted data and to retrieve an authenticity stamp from a preferences file.”

The parties dispute whether these claims require the preferences file to be hidden and require “the authentication key to provide the ability to determine a location of a preference file,” as Patent Owner contends (PO Resp. 19–22). For the following reasons, we do not construe the independent claims 1, 17, 29, 31, and 32 to require the preferences file to be hidden or to require the authentication key be used to, or provides the ability to, determine a location of a preference file.

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Preferences File Need Not Be Hidden

Turning first to whether the claims require the recited “preferences file” to be hidden, Patent Owner contends that all of the challenged claims require the “preferences file” to be hidden—its location not to be known. None of the independent claims recite expressly hiding or obscuring the location of the preferences file, or that the location of the preferences file is hidden or obscured. In support of its position, Patent Owner relies on a preferred embodiment disclosed in the written description in which the location of the preferences file is obscured. *See, e.g.*, PO Resp. 20 (citing Ex. 1001, 4:37–40). Patent Owner’s contentions seem to require the location of the preferences file to be concealed, rather than merely not being known. PO Resp. 21, 31–32, 47–48.

Petitioner opposes, indicating “to enable the authenticity key . . . to locate a preferences file” and similar claim terms do not require the location of the preferences file to be hidden. Pet. 15–16. Petitioner contends the ordinary and customary meaning of the word “locate” means “to find” and does not require deliberate obscuring or hiding. Pet. 15–16 (citing Ex. 1011 (Merriam-Webster’s Collegiate Dictionary at 684) (defining “locate” as “to find or fix the place of”)). Petitioner further provides an example of the ordinary meaning of “locating” that does not require locating something that is hidden. Petitioner explains “locating a word in a dictionary” requires one to find the page on which the word resides to locate the word’s definition in the dictionary. Pet. 15. Petitioner correctly points out that the location of the word in the dictionary is not hidden or obscured. *Id.*

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Moreover, Petitioner correctly notes that the '191 patent does not require a preferences file be hidden but only discloses the location may be obscured or not readily known in preferred, but not all, embodiments. Pet. 16 (quoting Ex. 1001, 9:53–55) (“[p]referably, the preferences file is placed in a random directory to help obscure the location of the preferences file”); *see also* Ex. 1001, 4:5–7, 37–40 (indicating in an exemplary embodiment, “the location of the preferences file is not readily known” to the user computer, so the user computer “must get the preferences key to determine the location of the preferences file”).

The term “to locate a preferences file” in claims 1, 31, and 32, as well as enabling “location of a preferences file” in claim 29, does not require the location of the preferences file be obscured or hidden. Nor does “enabl[ing] authentication of the authenticity key . . . to retrieve an authenticity stamp from a preferences file,” as recited in independent claim 17, require the preferences file to be obscured or hidden.⁸

We agree with Petitioner. None of the independent claims requires that the location of the preferences file be obscured or hidden; the ordinary and customary meaning of “to locate” is “to find,” which does not require something to be hidden; and the '191 patent describes the location of the preferences file as being obscured or not readily known only as preferred embodiments. *See* Ex. 1001, 4:37–40, 9:53–57.

⁸ Patent Owner includes this limitation of claim 17 in the heading of its argument but does not explain why this particular limitation would require locating a preferences file. PO Resp. 19–22.

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We decline to read limitations into a claim from these preferred embodiments described in the Specification when the claim language is broader than the embodiment. *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004); *In re Van Geuns*, 988 F.2d at 1184. Here, the claim language is broader than the preferred embodiments describing the location of the preferences file as obscured or not readily known and, therefore, should not be narrowed by embodiments in the '191 patent. Further, the '191 patent does not set forth a special definition for that claim term with reasonable clarity, deliberateness, or precision that would impose a special meaning requiring the location of the preferences file be obscured or hidden. *See In re Paulsen*, 30 F.3d at 1480. Moreover, Patent Owner's declarant acknowledges that the written description of the '191 patent does not require hiding the preferences file. Ex. 1034, 86:17–87:1.

Enabling the Authenticity Key to Locate a Preferences File

Petitioner contends that none of the claims requires the formatted data or the authenticity key be used to locate the preferences file. Pet. 13–14. Rather, Petitioner contends independent claims 1, 17, 29, 31, and 32 only require some action as a precondition to locating the preferences file. Pet. 13–14. For instance, Petitioner contends the broadest reasonable construction of “returning . . . the formatted data to enable the authenticity key to be retrieved from the formatted data and to locate the preferences file,” as recited in claim 1, means returning the formatted data is “a precondition” to locating the preferences file. Pet. 13.

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Patent Owner does not challenge directly whether the authenticity key must be used to locate the preferences file. Patent Owner, however, contends that the claims require “the authentication key to provide the ability to determine a location of a preference file.”⁹ PO Resp. 19–22.

We agree with Petitioner that none of the claims requires the authenticity key to locate the preferences file or have the ability to determine the location of a preferences file. First, none of the independent claims recites the authenticity key being used to locate the preferences file.¹⁰ Nor is there evidence of written description support for such an interpretation—the ’191 patent does not disclose using an authenticity key to locate the preferences file. Rather, as noted previously, the ’191 patent discloses in a preferred embodiment that a preferences key, which is different than an authenticity key, is used to locate the preferences file. *See* Ex. 1001, 4:38–40. This understanding is confirmed by Patent Owner’s declarant Dr. Katz. *See* Ex. 1034, 164:20–165:5. Further, Dr. Katz acknowledges the

⁹ To the extent that Patent Owner argues Dr. Tygar’s testimony concerning a particular embodiment disclosed in the ’191 patent acknowledges Patent Owner’s proposed construction here is correct (Paper 23, 2–4), we disagree. Dr. Tygar did not provide testimony about the meaning of the claims, only what a particular embodiment in the ’191 patent described. *See* Paper 27, 1–3.

¹⁰ Claim 1 recites “returning. . . the formatted data to enable the authenticity key to be retrieved from the formatted data and to locate a preferences file”; independent claim 29 recites “the authenticity key *enables* location of a preferences file”; independent claims 31 and 32 require retrieving the authenticity key to locate a preferences file. Independent claim 17 does not recite the location of a preferences file.

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authenticity key does not have information to locate the preferences file.
See, e.g., Ex. 1034, 165:6–9.

Petitioner’s proposed construction of independent claims 1, 17, 29, 31, and 32 as only requiring some action as a precondition to locating the preferences file better comports with the claims and written description of the ’191 patent. For example, the ’191 patent discloses that after verification of a received digital signature, the preferences key is requested and subsequently used to determine the location of the preferences file. *See* Ex. 1001, 4:22–40 (referring to Fig. 5). The verification of the received digital signature must occur before the preferences key can be requested and used to determine the location of the preferences file. In other words, verification of the received digital signature is a precondition of requesting and using the preferences key to determine the location of the preferences file. Thus, verification of the received digital signature enables—supplies the opportunity for¹¹—the requested preferences key.

We, therefore, adopt Petitioner’s proposed construction that the independent claims require only certain action to be a precondition to the action of locating the preferences file.

¹¹ AMERICAN HERITAGE DICTIONARY 605 (3d ed. 1992) (defining “enable” as “1. To supply the means, knowledge, or opportunity; make able”) (Ex. 3002).

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B. Principles of Law Regarding Anticipation and Obviousness

To prevail in challenging claims 1–23 and 25–32 of the '191 patent, 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).

To establish anticipation under 35 U.S.C. § 102, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001). To anticipate, a prior art reference must disclose more than “multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention.” *Net MoneyIN*, 545 F.3d at 1371; *see also In re Arkley*, 455 F.2d 586, 587 (CCPA 1972) (“The [prior art] reference must clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [invention] without *any* need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference.”). Although the elements must be arranged or combined in the same way as in the claim, “the reference need not satisfy an *ipsissimis verbis* test,” i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009); *In re Bond*, 910 F.2d 831, 832 (Fed. Cir. 1990). Moreover, the prior art reference is read from the perspective of one with ordinary skill in the art. *In re Graves*, 69 F.3d 1147, 1152 (Fed. Cir. 1995) (“A reference anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings in combination with his own knowledge of the particular

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art and be in possession of the invention.”); *In re Preda*, 401 F.2d 825, 826 (CCPA 1968) (“[I]t is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.”).

Under 35 U.S.C. § 103(a), a claim is unpatentable 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 the following: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Level of Ordinary Skill in the Art

In determining whether an invention would have been obvious at the time it was made, 35 U.S.C. § 103 requires us to determine the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere*, 383 U.S. at 17. “The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991). The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the time of the invention. *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). Factors

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that may be considered in determining the level of ordinary skill in the art include, but are not limited to, the types of problems encountered in the art, the sophistication of the technology, and educational level of active workers in the field. *Id.* In a given case, one or more factors may predominate. *Id.* Generally, it is easier to establish obviousness under a higher level of ordinary skill in the art. *Innovation Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

The parties propose similar levels of ordinary skill in the art and do not directly challenge the other’s proposal. Ex. 1002 ¶ 12 (testimony by Petitioner’s declarant); Ex. 2007 ¶ 8 (testimony by Patent Owner’s declarant). The parties’ declarants differ in the amount of work experience one with ordinary skill in the art with a bachelor’s degree would have. Patent Owner’s declarant opines two years of work experience would be sufficient, whereas Petitioner’s declarant opines five years of work experience would be necessary for one of ordinary skill in the art with a bachelor’s degree. *Id.* Despite these initial differences, Petitioner later acknowledged that record evidence supports a level of ordinary skill having two years of work experience. Hearing Tr. 32:1–16; *see also Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (indicating the level of ordinary skill in the art is reflected by the prior art of record).

We adopt the areas of agreement in the parties’ proposals. Therefore, one of ordinary skill in the art would have a bachelor’s degree in computer

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science (or an equivalent field) and least two years of work experience in the area of information technology.

D. Anticipation by Arent

Petitioner contends 1–9, 11, 12, 14–22, 25, and 27–32 are unpatentable under 35 U.S.C. § 102 as anticipated by Arent.¹² To support its contentions, Petitioner provides detailed analysis, relying on declaration testimony of Dr. Tygar. Pet. 28–38 (citing Ex. 1002). Patent Owner responds, relying on declaration testimony of Dr. Katz. PO Resp. 25–37 (citing Ex. 2007).

Petitioner represents that Arent is prior art at least under 35 U.S.C. § 102(e)¹³ to the challenged claims. Pet. 28. Arent is a patent, which issued from an application filed on June 30, 1997—a date prior to the earliest effective filing date claimed by the '191 patent—September 9, 1999.

¹² Petitioner points to acknowledgements by Patent Owner's declarant that it was known prior to the invention of the '191 patent (1) to sign and authenticate a web page (citing Ex. 1034, 127:22–128:3, 131:17–20); (2) to show some indication that a web page was authenticated and verified (*id.* at 155:14–21); and (3) that the indication could be user customized (*id.* at 157:2–13). Reply 1. Such general acknowledgements, however, do not establish anticipation, which requires each and every limitation in a claim to be found in a single prior art reference as arranged in the claim.

¹³ We are mindful that Arent also is asserted by a different petitioner in a covered business method patent review to be prior art under § 102(a), based on the petitioner's assertion that the provisional application to which the '191 patent claims priority does not provide written description support for the claims of the '191 patent. *See* CBM2014-00100, Paper 3, 19–20.

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Patent Owner does not dispute that Arent is prior art to the challenged claims.

1. Summary of Arent

Arent describes authenticating online transaction data. Ex. 1003, Abstract. A validation process is initiated when a user starts an electronic transaction, and the validation process “determin[es] authenticity of data related to the transaction, such as the identity of a transaction party.” *Id.* If the data are authentic, Arent’s process displays a “certification indicator,” which may be a graphic with user defined text and may be customized by a user. *Id.*

Arent’s Figure 6 is set forth below:

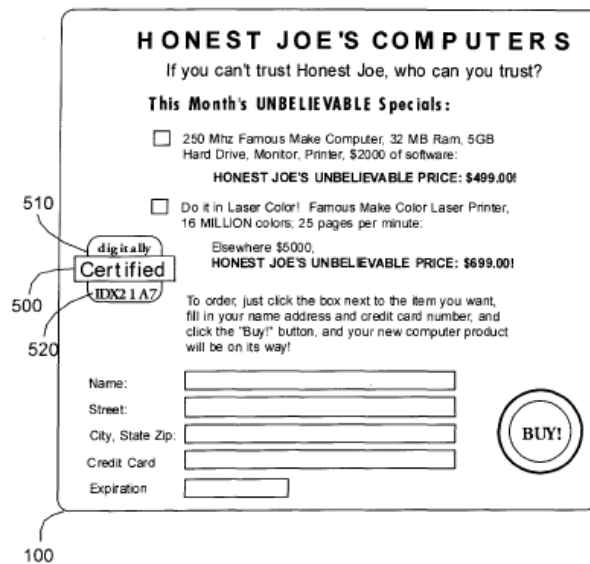


FIG. 6

Figure 6 illustrates an example of certification indicator with a user-defined component. Certification indicator 500 includes standard component 510 and user-defined component 520 consisting of a text string

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selected by the user and stored in a database with user preference information. *Id.* at 4:51–60, 7:24–25, 7:33–37. After the merchant has been authenticated, components 510 and 520 of the certification indicator are retrieved from storage and combined to form certification indicator 500, which is displayed on top of merchant’s web page 100 offering computers for sale. *Id.* at 4:67–5:7, Fig. 6.

Arent also describes computer program instructions “for performing authentication tests on web site proprietors and on other on-line transaction parties, and for authenticating data related to on-line transactions.” *Id.* at 5:63–67. “The instructions also have the ability to determine whether or not an offer presented to a user (e.g. via a web site) has been digitally signed by the party making the offer, as well as whether or not other information displayed to the user . . . is authentic.” *Id.* at 6:2–6.

2. *Independent Claims 1, 17, 29, 31, and 32*

Similarly to embodiments in the ’191 patent that describe a web server digitally signing a web page (*see* Ex. 1001, 4:13–24) and using user-configurable authenticity stamps (*see id.* at 3:1–4), Arent describes techniques for authenticating web-page based offers to sell computers by using digital signatures and user-customized certification indicators. Ex. 1003, Fig. 3. Also, similarly to the authenticity stamp of the ’191 patent (*see* Ex. 1001, 1:28–34, 2:58–60), Arent’s user-customized certification indicator stored on the user’s device helps protect a user from an unscrupulous merchant counterfeiting a certification indicator. *See* Ex. 1003, 4:34–50.

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According to Petitioner, Arent’s digital signature discloses the recited “authenticity key”; Arent’s digitally signed web page offer discloses the recited “formatted data”; Arent’s user-customizable certification indicator discloses the recited “authenticity stamp”; and Arent’s wallet database file, which stores user preferences, discloses the recited “preferences file,” from which the certification indicator (corresponding to the recited “authenticity stamp”) is retrieved. Pet. 32–33.

Petitioner, relying on testimony by its declarant, asserts that a person skilled in the art would have understood that “Arent inserts the authenticity key at an ‘authentication host’ or ‘authentication processor,’” as recited in claim 1. *Id.* (citing Ex. 1002 ¶¶ 51–55). As Dr. Tygar explains, the web server of Arent’s merchant includes authentication logic and so meets the limitations to be an authentication host computer recited in claim 1. Ex. 1002 ¶ 51. Petitioner’s declarant also testifies that a digitally signed web page offer necessarily discloses a digital signature is inserted into the web page. Ex. 1035 ¶ 50 (stating one of ordinary skill in the art “would appreciate that Arent’s ‘signed offer’ was a conventionally signed web page (formatted data), containing both the web page (received data) and the signature (authenticity key) for the signed web page.”).

Patent Owner’s Contentions Based on Overly Narrow Claim Constructions

As an initial matter, we are not persuaded by Patent Owner’s contentions that are predicated on claim constructions narrower than the broadest reasonable construction of claim terms in light of the Specification. For example, Patent Owner asserts that Arent does not disclose that the act

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of inserting an authentication key into formatted data enables the authenticity key to locate a preferences file and retrieve an authenticity stamp. PO Resp. 28–30, 31–32; Hearing Tr. 50:1–9 (Patent Owner asserting Arent does not disclose determining the location of the wallet and Arent does not disclose how an authenticity key provides the ability to determine the location of the wallet). According to Patent Owner, this is because the challenged claims require an authentication key to be used to locate the preferences file, which must be obscured or hidden. PO Resp. 29, 32. As discussed above, the claims do not require the location of a preferences file to be obscured or hidden.

Patent Owner also relies on overly narrow construction of “transforming, at an authentication host computer, received data,” contending the claims purportedly require data to be sent from outside itself or from a device other than the authentication host computer. PO Resp. 30–31. As discussed above, the independent claims do not require data to be sent from outside the authentication host computer or from a device other than the authentication host computer.

Transforming or Formatting Received Data

Independent claims 1, 31, and 32 each require transforming or formatting received data by inserting an authenticity key to create formatted or received data. There is no dispute that Arent discloses a digitally signed web page offer from a merchant web server. *See, e.g.*, Ex. 1003, 6:2–6. This is substantially similar to the embodiment using a web server that digitally signs information and does not use a separate authentication server

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disclosed in the '191 patent. Ex. 1001, 4:13–21, Fig. 5. As explained by Dr. Tygar, Arent's merchant web server includes the requisite authentication logic and so discloses the "authentication host computer" recited in claim 1. Ex. 1002 ¶¶ 51, 54, 55. As discussed previously, Dr. Tygar testifies that the authentication host computer receives data from another component on the server (Ex. 1002 ¶ 61), which is not precluded by the claims and comports with the embodiment of the '191 patent that combines the authentication server logic with web server logic (Ex. 1001, 4:57–58).

Patent Owner contends that Arent does not disclose these limitations based on its incorrect interpretation of the transforming limitation requiring receiving data sent from outside the authentication host computer or from a device other than the authentication host computer. PO Resp. 30–31. Testimony by Patent Owner's declarant is based on the same incorrect interpretation (Ex. 2007 ¶ 24) and so is not persuasive.

We credit Dr. Tygar's testimony that Arent's merchant web server discloses the "authentication host computer" required by claim 1 (Ex. 1002 ¶¶ 51, 54, 55), as well as his testimony that one of ordinary skill in the art would understand Arent to disclose the requisite transformation and formatting required by claims 1, 31, and 32 (*id.*).

For the foregoing reasons, we are persuaded that Petitioner has demonstrated sufficiently that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, transforming and formatting received data as arranged in the independent claims 1, 31, and 32.

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Inserting an Authenticity Key

Independent claims 1, 17, 31, and 32 each recite “inserting an authenticity key.” Independent claims 1, 31, and 32 require inserting an authenticity key *to create* formatted (or received) data, whereas independent claim 17 recites “insert[ing] an authenticity key *into* formatted data.” Independent claim 29 does not require an authenticity key be inserted, only that formatted data has an authenticity key.

For these limitations, Petitioner relies on Arent’s disclosure of a signed web page offer. There is no dispute that Arent describes a signed web page offer. The dispute is whether, as Petitioner contends, a signed web page offer discloses “inserting an authenticity key” as required by independent claims 1, 17, 29, 31, and 32. Petitioner’s position, with support of its declarant, is that Arent’s digital signature discloses the recited “authenticity key” and Arent’s digitally signed web page offer discloses the recited “formatted data.”

Patent Owner, with support from its declarant, contends that Arent merely sends a proof of certification (which may be a digital signature) separately from the message. According to Patent Owner, this is insufficient to disclose inserting an authenticity key, which must be placed within the formatted data. PO Resp. 18–19, 26–28.

Petitioner’s declarant counters, testifying that one of ordinary skill in the art would understand “Arent’s ‘signed offer’ was a conventionally signed web page (formatted data), containing both the web page (received data) and the signature (authenticity key).” Ex. 1035 ¶ 50; *see* Reply 3

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(citing Ex. 1035 ¶¶ 50, 55; Ex. 1002 ¶¶ 51,121). Thus, according to Dr. Tygar, a signed web offer (disclosing the recited “formatted data”) necessarily includes a digital signature (disclosing the recited authenticity key) that is within the signed offer.

As initial matter, other than the claims, the ’191 patent refers to inserting an authenticity key only once and does so without providing details as to how the insertion occurs. Ex. 1001, 8:1–3 (describing block 610 in Fig. 10). For example, the ’191 patent does not describe whether the authenticity key is inserted into the middle of the data and cannot be inserted at the beginning or end of the data into which the authenticity key is inserted. The ’191 patent, however, refers to an authentication server “adding” authentication information to information received from a web server. *Id.* at 3:50–55.

The ’191 patent describes a web server digitally signing a web page with a private key and returning the signed page to the web browser, where the signature is verified and subsequently an authenticity stamp is displayed. *Id.* at 4:13–43. Here, again, the ’191 patent does not provide details as to how the web page is signed digitally.

Weighing the testimony of the declarants, as discussed above, we credit Dr. Tygar’s testimony over Dr. Katz’s testimony that Arent discloses sending the digital signature separately from the message. *See, e.g., Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another “unless no reasonable trier of fact could have done so”); *In re Am. Acad. of Sci. Tech*

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Ctr., 367 F.3d at 1368 (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”).

First, Dr. Katz does not address sufficiently the Petitioner’s position regarding the *signed web offer* being the formatted data recited in claims 1, 31, and 32. Rather, Dr. Katz focuses his testimony on Arent’s technology for authentication of a merchant, whereas Petitioner relies on Arent’s authentication of the offer. *Compare* Pet. 29–32, Reply 3–4 *with* Ex. 1034 153:10–154:21, 159:17–160:19; *see also* Ex. 1035 ¶ 52 (Dr. Tygar confirming Dr. Katz based his understanding on Arent’s discussion of the authentication of a merchant).

Second, Dr. Tygar directly counters Dr. Katz’s testimony. Dr. Tygar testifies that “[c]onventional digital signature techniques would not have sent the message and signature separately, especially in the context of signing web pages.” Ex. 1035 ¶ 53 (explaining how “an elaborate system would be needed to correlate specific instances of web pages for specific user/browser combinations and specific moments in time and the corresponding digital signatures” if digital signatures were sent separately from messages/web pages).

Third, Dr. Katz was unable to identify a system that sends a digital signature for a message separately from the message itself, as he contends Arent describes. Ex. 1034, 147:9–18. This testimony undercuts Dr. Katz’s testimony concerning one of ordinary skill in the art would understand Arent to send the digital signature separately from the message.

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Fourth, in determining how one of ordinary skill in the art at the time of the invention would understand Arent, we give some weight to Dr. Katz' authorship of a book on digital signatures published in 2010 (Ex. 2009, 2), a decade after the time of the invention. *See* Paper 23, 9–10 (Patent Owner's observation 6 on Dr. Tygar's testimony).

We also note Arent's embodiment of a signed web page offer is substantially similar to the embodiment of a digitally signed web page in the '191 patent. Although the '191 patent does not state this embodiment "inserts" an authenticity key, neither does the '191 patent give any indication that a signed web page is precluded from being considered an example of inserting an authenticity key. The dearth of details in the '191 patent describing how an authenticity key is inserted further supports the view that the digital signature may be an example of inserting an authenticity key.

For the foregoing reasons, we are persuaded that Petitioner has demonstrated sufficiently that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, inserting an authenticity key or having an authenticity key, as required in independent claims 1, 17, 29, 31, and 32.

Retrieving an Authenticity Stamp from the Preferences File

Regarding independent claims 1, 17, 29, 31, and 32, Patent Owner additionally contends, without apparent support from its declarant, that Arent does not disclose "retrieving an authenticity stamp from the preferences file." PO Resp. 33–34. According to Petitioner, Arent's

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certification indicator (which Petitioner alleges corresponds to the recited “authenticity stamp”) is generated dynamically from components stored separately in a software wallet (which Petitioner alleges corresponds to the recited “file”) and, therefore, is not retrieved from a file as purported required by all of the independent claims. *Id.*

The parties do not dispute that Arent’s certification indicator is stored as components, which are retrieved from storage, assembled, and displayed as a certification indicator.¹⁴ *See* PO Resp. 33 (citing Ex. 1003, 6:35–37); Ex. 2008, 26:12–18 (transcript of Dr. Tygar’s deposition); Hearing Tr. 50:22–51:6 (Patent Owner indicating that it does not contest that Arent’s wallet stores information in a file). Petitioner’s declarant Dr. Tygar testifies that one of ordinary skill in the art would have understood “retrieving an authenticity stamp from the preferences file” to include retrieving a single component or separate components. Ex. 1035 ¶ 66. Dr. Tygar further testifies that the ’191 patent does not preclude storing the authenticity stamp as separate components. *Id.*

The ’191 patent comports with Dr. Tygar’s testimony. First, the independent claims do not limit how the authenticity stamp is stored within the preferences file and so, the claim language itself does not preclude storing the authenticity stamp as multiple components that are retrieved and then assembled.

¹⁴ We do not agree with Patent Owner (Paper 23, 7–8) that Dr. Tygar’s acknowledgement that Arent’s certification indicator is stored as components equates with an admission that Arent does not disclose the limitation “an authenticity stamp is retrieved from the preferences file.”

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Moreover, claim 15, which depends indirectly from claim 1, additionally requires the retrieval of an image selection that is “*at least one of: a graphic, text, video, or audio.*” Ex. 1001, 12:56–57 (emphasis added). Although claim 15 does not link expressly the selected image with the authenticity stamp, the selected image, in the context of the ’191 patent, is an example of an authenticity stamp and is treated as such by Petitioner and its declarant Dr. Tygar, without challenge by Patent Owner. *See, e.g.*, Pet. 40 (equating selected images in claims 14, 15, and 27 with authenticity stamps) (citing Ex. 1002 ¶ 98); *see generally* PO Resp. 40–41 (addressing asserted ground against claims 14, 15, and 27 without contesting that the selected images are examples of authenticity stamps). By reciting “the image selection is at least one of” several options, claim 15 expressly contemplates a multiple-component authenticity stamp. This further supports Dr. Tygar’s position (Ex. 1035 ¶ 66).

Additionally, the ’191 patent describes that the preferences file is read “to determine the authenticity stamp and how it is to be displayed.” Ex. 1001, 4:38–41. This further provides support for Dr. Tygar’s position that a person of ordinary skill in the art would have understood “retrieving an authenticity stamp from the preferences file” to include retrieving a single component or separate components (Ex. 1035 ¶ 66) because it does not preclude storing the authenticity stamp as separate components and indicating processing is required to determine how to display the authenticity stamp.

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Finally, the '191 patent describes “an unlimited number of variations” for authenticity stamps, as well as describing the ability of a user to configure the visual qualities and display location of an authentication stamp. The breadth of these descriptions also provides some support that an authenticity stamp can be comprised of, and stored, as multiple components. *See, e.g.*, Ex. 1001, 2:67–3:5, 6:13–16 (describing an authenticity stamp as having “an unlimited number of variations,” including graphics only, text only, a combination of graphics and text, blinking, various colors, and an audio indication); *id.* at 6:1–11 (describing the ability of a user to configure the visual appearance and location of an authenticity stamp).

For these reasons, we are persuaded that Petitioner has demonstrated sufficiently that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, retrieving an authenticity stamp from a preferences file.

Other Contentions Regarding Independent Claims 1, 17, 29, 31, and 32

Many of Patent Owner’s other contentions concerning the independent claims flow from its incorrect position that Arent does not disclose, expressly or inherently, the required inserting the authentication key, the required retrieval of the authenticity stamp, or hiding the location of the preferences file. PO Resp. 28–29.

Patent Owner further contends that Arent does not disclose the act of inserting the digital signature (disclosing the recited “authenticity key”) enables authentication of the digital signature to retrieve the certification indicator (disclosing the recited “authenticity stamp”) from the wallet file

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(disclosing the recited “preferences file”). PO Resp. 30. Thus, Patent Owner contends Arent does not disclose “insert[ing] an authenticity key into formatted data to enable authentication of the authenticity key to verify a source of the formatted data and to retrieve an authenticity stamp from a preferences file,” as recited in claim 17. For support, Patent Owner indicates this position is “[e]xplained by Dr. Katz.” PO Resp. 30 (citing Ex. 2007 ¶¶ 22–23). In the testimony by Dr. Katz cited by Patent Owner, however, Dr. Katz testifies concerning inserting an authenticity key but does not testify concerning the enabling limitation. *See* Ex. 2007 ¶¶ 22–23.

Conclusion Regarding Independent Claims 1, 17, 29, 31, and 32

For these reasons, having considered the parties’ contentions and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, every limitation of independent claims 1, 17, 29, 31, and 32 as arranged in the claims.

3. Dependent Claims 4–6, 18, and 21

Claims 4–6, 18, and 21 depend from independent claims 1 or 17 and each recites additional limitations concerning displaying the authenticity stamp or the formatted data. Petitioner contends, with support from its declarant, that Arent’s certification stamp (corresponding to the recited “authenticity stamp”) is displayed if Arent’s web page offer (corresponding to the recited “formatted data”) is determined to be authentic. Pet. 34–35 (citing Ex. 1002 ¶¶ 38–39, 69–74). As Dr. Tygar correctly indicates, Arent

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describes displaying the certification indicator for a signed web page offer that has been verified and displays a different indicator when the offer is not signed. Ex. 1002 ¶ 71 (citing Ex. 1003, 6:6–37, 6:44–57, Fig. 8). Dr. Tygar also testifies that Arent describes verifying the authenticity of a web page based on a digital signature and displaying a symbol to indicate whether the web page offer is verified. Ex. 1002 ¶¶ 37–40. Dr. Tygar opines that Arent’s logic is “virtually identical” to that of the ’191 patent and provides, among other analysis, annotations of Arent’s Figure 2 and Figure 8 of the ’191 patent showing the similarities. Ex. 1002 ¶¶ 38–39.

Concerning claim 6, which depends indirectly from independent claim 1, Patent Owner further contends that Arent does not disclose that “the authenticity stamp is displayed for a graphical image within the formatted data.” PO Resp. 34. Thus, a central issue of the parties’ dispute concerning claim 6 is whether the recited authenticity stamp is required to be displayed *within the formatted data* (as Patent Owner contends) or whether the recited authenticity stamp is required to be displayed *for a graphical image* and the graphical image, in turn, is within the formatted data (as Petitioner contends). PO Resp. 34 (citing Ex. 1003, 4:17–24); Pet. 34–35 (citing Ex. 1002 ¶ 72); Reply 11.

We agree with Petitioner’s interpretation, which is supported by its declarant and the disclosure of the ’191 patent, and is confirmed by the prosecution history of the ’191 patent. As noted above, Petitioner’s declarant testifies that one of ordinary skill in the art would understand Arent’s web page 100 (corresponding to the recited formatted data) shown in

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Figure 6 to include the graphical image 150 (corresponding to the recited graphical image). *See* Pet. 34–35 (citing Ex. 1002 ¶ 72); Reply 11; Ex. 1002 ¶ 72 (testifying). Further, the applicants amended claim 6 during examination to add the phrase “within the formatted data” immediately after the phrase “graphical image.” Ex. 3001, 10 (amendment in response to the Office action dated July 16, 2008). *See Microsoft Corp.*, 789 F.3d at 1298 (“The PTO should also consult the patent’s prosecution history in proceedings in which the patent has been brought back to the agency for a second review.”).

In accordance with the precepts of English grammar, the position of the words in a sentence is the principal means of showing their relationships, and modifiers should be placed next to the words that they modify. William Strunk, Jr. & E.B. White, *The Elements of Style* 28, 30 (4th ed. 2000); *In re Hyatt*, 708 F.2d 712, 714 (Fed. Cir. 1983) (“A claim must be read in accordance with the precepts of English grammar.”); *see, e.g., HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1274–75 (Fed. Cir. 2012) (citing Strunk & White for the proposition that, in interpreting claim language, modifiers should be placed next to the words that they modify). Thus, a reader may assume that the graphical image is within the formatted data and the authenticity stamp is displayed for a graphical image. Claim 5, from which claim 6 directly depends, supports this assumption, because claim 5 recites “the authenticity stamp is displayed for formatted data that is verified.” Thus, in claim 5, the authenticity stamp is displayed *for*

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something (“formatted data that is verified”) and not *within the formatted data*.

Further, the ’191 patent describes “an alternative embodiment” in which a web page includes graphical images of a car and a globe, and authenticity stamps also are displayed on the web page and “embedded” in each of the graphical images.” Ex. 1001, 3:16–20 (referring to Fig. 3); *id.* at 2:54–57, 64–67 (referring to Fig. 2 depicting a web page 50 having an authenticity stamp 60 (depicting a diamond with text “Joe’s Seal of Approval”) and graphical images 58A, 58B of a car and a globe). Figure 3 of the ’191 patent depicts two authenticity stamps, one for each of the two graphical images. Notably, in Figure 3 both the authenticity stamps and graphics are depicted on the web page. Thus, this alternative embodiment is consistent with an authentication stamp that is displayed for a graphical image and the graphical image is within the formatted data.

Petitioner, with support of its declarant, asserts Arent’s Figure 6 discloses “the authenticity stamp is displayed for a graphical image within the formatted data,” because the user-defined component 520 of the certification indicator 500 (corresponding to the recited “authenticity key”) is displayed for the “Buy!” image 150 (corresponding to the recited “graphical image”) within the signed web page offer 100 (corresponding to the recited “formatted data”). Pet. 34–35 (citing Ex. 1002 ¶ 72); Reply 11. Dr. Tygar indicates that the graphical image is “Buy!” image 150 on the displayed web page and one of ordinary skill in the art would understand

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Arent's web page 100 shown in Figure 6 includes the graphical image 150.
Ex. 1002 ¶¶ 72.

Patent Owner opposes, contending that the certification indicator is an image that “floats above the merchant web page” and so does not disclose an authenticity stamp displayed within the formatted data. PO Resp. 34 (citing Ex. 1003, 4:17–24). We are not persuaded by Patent Owner's contention because it is predicated on an incorrect understanding of the scope of claim 6.

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, every limitation as arranged in claims 4–6, 18, and 21.

4. Dependent Claims 12 and 25

Claims 12 and 25 each concern retrieving or receiving additional data based on received or formatted data. Specifically, claim 12, which depends from claim 1, recites “retrieving additional data based on the received data.” Claim 25, which depends from independent claim 17, requires that “the authentication processor is further configured to receive additional data based on the formatted data.” For these additional limitations, Petitioner, with support from its declarant, relies on Arent's description of requesting additional data from the user (name, address, and credit card information) through a form displayed on the web page with the web page offer. Pet. 37 (citing Ex. 1003, Figs. 4, 6 (depicting web pages with fill-in forms for receiving additional data); Ex. 1002 ¶¶ 80–82). According to Petitioner's

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declarant, the other information requested through the fill-in forms displayed the web page is based on Arent's signed web page offer, because the data is collected from the fields on fill-in forms displayed on the web page. *Id.*; Reply 12.

Patent Owner, with support from its declarant, contends otherwise. PO Resp. 36. According to Dr. Katz, the additional data sought from the user is not based on the data on the web pages because the data on the web pages concern computers and the additional data sought concerns the user, not computers. *Id.* (citing Ex. 2007 ¶ 26).

Weighing the testimony of the declarants, we credit Dr. Tygar's testimony over Dr. Katz's testimony. *See, e.g., Yorkey*, 601 F.3d at 1284 (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so"); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368 ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations."). Dr. Katz does not explain persuasively why information about a buyer and credit card information sought through a fill-in form on a web page presenting an offer to sell computers is about "something entirely different" than the computer information on the web pages. PO Resp. 36. Dr. Katz's testimony seems unduly narrow in view of the broad claim language "based on." Rather, we find Dr. Tygar's testimony credible that buyer and credit card information is based on the fill-in form fields displayed on the webpage offering computers for sale more aligned with the

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broad claim language “based on.” Reply 12 (citing Ex. 1035 ¶ 72). Both Arent’s computer information and buyer information relate to the financial transaction of purchasing a computer.

For these reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, every limitation as arranged in claims 12 and 25.

5. Dependent Claims 14 and 27

Claims 14 and 27 each recite “the plurality of images are only known by a client and a challenge server.” More specifically, claim 14, which depends from claim 1, additionally recites “retrieving an image selection based on a selection from a plurality of images, wherein the plurality of images are only known by a client and a challenge server.” Claim 27, which depends from independent claim 17, additionally recites “the authentication processor is further configured to receive an image selection that is at least one of: a graphic, text, video, or audio from the source based on a selection from a plurality of images, wherein the plurality of images are only known by a client and a challenge server.”

For the limitation “the plurality of images are only known by a client and a challenge server,” Petitioner asserts, with support from its declarant, that Arent’s description of allowing a user to select a certification indicator out of a pool of media items discloses the plurality of images, as recited in claims 14 and 27. Pet. 37 (citing Ex. 1003, 5:36–42; Ex. 1002 ¶ 84).

Dr. Tygar explains that one of ordinary skill in the art would have

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understood that Arent’s pool of media items would have been only known by the consumer and the server providing the pool of supplied standard media items “to make it difficult for an unscrupulous merchant to forge a certification indicator.” Ex. 1002 ¶ 84 (citing Ex. 1003, 4:47–50). Patent Owner contends that “a plurality of images are only known by a client and challenge server” is not disclosed by Arent, because Arent’s pool of media items would be known to many clients. PO Resp. 37.¹⁵

A central dispute between the parties concerning claims 14 and 27 is whether the language “the plurality of images are only known by a client and a challenge server” requires a unique set of images be provided to each client (as Patent Owner contends), or whether the plurality of images would have been understood by one of ordinary skill in the art to be a “shared secret” between the client and challenge server (as Petitioner contends). PO Resp. 37; Reply 13 (citing Ex. 1035 ¶¶ 77–81). According to Dr. Tygar, the ’191 patent does not describe “challenge servers” and one of ordinary skill in the art “would understand the term [challenge server] to be used in the conventional manner, *i.e.*, to implement a shared secret between a user and a challenge server.” Ex. 1035 ¶ 81. Dr. Tygar testifies that “only known to the client and the challenge server” means that the recited “plurality of images” are secrets shared between a client and a challenge server, and not

¹⁵ Patent Owner cites to Dr. Katz’s declaration. PO Resp. 37 (citing Ex. 2007 ¶¶ 29–30). The citation to Dr. Katz’s declaration is unavailing, however, because the cited portion relates to a different asserted ground—obviousness over Arent and Merritt—and contends that Merritt (not Arent) does not teach the recited challenge server. *See* Ex. 2007 ¶¶ 29–30.

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shared with others. *Id.* Dr. Tygar’s testimony describes the historical context of such a shared secret, beginning with ancient Roman soldiers and continuing to conventional computer contexts of shared secrets. *Id.* ¶¶ 77–80. Thus, according to Dr. Tygar, the ordinary and customary meaning of the term of “only known by a client and challenge server” does not require a shared secret to be unique across all users. *Id.* ¶ 81.

We weigh Dr. Tygar’s testimony that one of ordinary skill in the art would have understood “only known by a client and a server” to mean a shared, but not necessarily a unique, secret known to the client and the challenge server, but not third parties, against Patent Owner’s argument that “only known by a client and challenge server” requires a unique pool of images across all clients. We give more weight to Dr. Tygar’s testimony, which provides facts supporting his testimony, than to Patent Owner’s assertions that are not supported by testimony or other persuasive evidence. *See, e.g., Yorkey*, 601 F.3d at 1284; *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368.

The prosecution history of the ’191 patent confirms Dr. Tygar’s position. In response to an Office action mailed October 18, 2007, the applicants represented that the prior art reference (Houser) applied in the rejection failed to disclose “using a key that is shared (and known only by a client computer and a server) to locate and open a preferences file located at the client computer.” Ex. 3001, 30–31. Notably, the applicants equated a key that is shared between a client computer and a server equates to “known only by a client computer and a server.” This supports Dr. Tygar’s

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testimony that the “known only” term would be understood by one of ordinary skill in the art to be a “shared secret” and not a plurality of images that are unique across all clients.

We further note that the ’191 patent refers to a “shared secret” in the request for a preferences key sent from the user computer to the web server. Ex. 1001, 4:26–28.

For the foregoing reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, every limitation as arranged in claims 14 and 27.

6. Conclusion Regarding Anticipation by Arent

Having reviewed both parties’ arguments and evidence, we also are persuaded that one of ordinary skill in the art would understand Arent to disclose, expressly or inherently, every limitation as arranged in dependent claims 2, 3, 7–9, 11, 15, 16, 19, 20, 22, 28, and 30.

We, therefore, determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1–9, 11, 12, 14–22, 25, and 27–32 are anticipated by Arent.

E. Obviousness over Arent and Other References

Petitioner asserts claims 10, 13, 23, and 26, each of which depends directly or indirectly from independent claim 1 or 17, would have been obvious over Arent and Schneier (Ex. 1009), a cryptography textbook published in 1996, in combination with Arent. Pet. 39. For the additional

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limitations recited by claims 14, 15, and 27, which also depend from either independent claim 1 or independent claim 17, Petitioner relies on Merritt, a patent issued December 12, 1995, in combination with Arent. Pet. 40. The parties do not dispute whether Schneier or Merritt are prior art to the claims challenged by these asserted grounds.

For these grounds of obviousness relying on Arent and other references, Petitioner substantially relies on the same analysis and supporting evidence described previously with regard to the ground that Arent anticipates independent claims 1 and 17. *See* Pet. 38–39, 40. For the reasons we explained previously, we determine that Petitioner has demonstrated by a preponderance of the evidence that Arent discloses all of the limitations recited by independent claims 1 and 17.

1. Obviousness over Arent and Schneier

Claims 10, 13, 23, and 26 each require “inserting a second authenticity key into the formatted data.” For these limitations, Petitioner, with support from its declarant, relies on Schneier’s description that two parties could digitally sign separately the same document, which would result in multiple signatures being in the same document. Pet. 38–39 (citing Ex. 1009, 39–40; Ex. 1002 ¶ 92). Thus, each of the two digital signatures for the document corresponds to a recited authenticity key inserted into formatted data. Claim 13 and 26 each further require “validating the formatted data based on the authenticity key.” For these additional limitations, Petitioner relies on Arent. Pet. 38.

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As an initial matter, claims 10, 13, 23, and 26 each requires performing the step of inserting an authenticity key a second time. There is insufficient evidence that repeating the inserting step is more difficult or, even, substantially different technically, than performing the inserting step the first time. Nor is there sufficient evidence that performing the step a second time would yield a new or unexpected result than performing the inserting step the first time. *Cf. In re Harza*, 274 F.2d 669, 671 (CCPA 1960) (“It is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced.”).

Patent Owner asserts claims 13 and 26 require “*first* validating formatted data with one authenticity key and then inserting a second authenticity key into the formatted data.” PO Resp. 39, 56 (emphasis added). Patent Owner does not cite to the ’191 patent or otherwise provide sufficient evidence regarding why a temporal requirement is required by these claims. Petitioner’s declarant disagrees with Patent Owner’s interpretation and testifies that one of ordinary skill in the art would not understand claims 13 and 26 to require “a temporal requirement that one signature be authenticated before another signature is inserted.” Ex. 1035 ¶ 74; Reply 14 (citing Ex. 1035 ¶ 74).

We are not persuaded that claims 13 and 26 have a temporal requirement as Patent Owner contends. As a general rule, steps are not construed ordinarily to require a particular order unless “the claim language, as a matter of logic or grammar, requires the steps to be performed in the order written, or the specification directly or implicitly requires an order of

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steps.” *Mformation Technologies, Inc. v. Research in Motion Ltd.*, 764 F.3d 1392, 1398–99 (Fed. Cir. 2014) (citation omitted); *see also Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1342 (Fed. Cir. 2001) (citation omitted) (“Unless the steps of a method [claim] actually recite an order, the steps are not ordinarily construed to require one.”). The plain language of claims 13 and 26 does not require expressly a particular order. Rather, claims 13 and 26 only require two actions be taken—validating and inserting—requiring one action be taken before the other. Claim 13 recites “further transforming by inserting a second authenticity key into the formatted data” and so, based on “further transforming” may be said to require the second authenticity key be inserted after the received data is transformed by inserting a first key. Even so, the claims do not require a second authenticity key to be inserted after the first key *is validated*.

We determine, therefore, that Petitioner has established by a preponderance of the evidence that Arent and Schneier would have conveyed to one of ordinary skill in the art the limitations recited in claims 10, 13, 23, and 26. Our inquiry continues because “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). Dr. Tygar explains that one of ordinary skill in the art would have reason to combine Schneier’s multiple signature techniques with Arent’s technology based on reasons described by Schneier

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itself—to allow two parties to sign the same document. Ex. 1002 ¶¶ 93–96 (citing Ex. 1009, 39–40).

We find Dr. Tygar’s articulated reasoning has some rational underpinning. *See KSR*, 550 U.S. at 418 (“there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). Although the rote application of the teaching-suggestion-motivation test (or TSM test), requiring an express teaching in the prior art, is inappropriate, “[t]here is no necessary inconsistency between the idea underlying the TSM test and the *Graham* analysis.” *KSR*, 550 U.S. at 419.

Moreover, as noted by the Court in *KSR*, “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416. There is no evidence that adding a second digital signature, as described in *Schneider*, to Arent’s web page offer that has a digital signature would be beyond the level of one of ordinary skill in the art. As another factor favoring a finding of obviousness, we note the rather high level of ordinary skill in the art, which requires a bachelor’s degree in computer science and at least two years of work experience. *Innovention Toys*, 637 F.3d at 1323 (“A less sophisticated level of skill generally favors a determination of nonobviousness . . . while a higher level of skill favors the reverse.”).

Therefore, we determine that Petitioner has established by a preponderance of the evidence that the subject matter recited in claims 10, 13, 23, and 26 as a whole would have been obvious to one of ordinary skill in the art in view of Arent and *Schneider*.

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2. *Obviousness over Arent and Merritt*

As discussed above with respect to the asserted ground of anticipation by Arent, claims 14, 15, and 27, which depend from either independent claim 1 or independent claim 17, additionally require “image selection based on a selection from a plurality of images, wherein the plurality of images are only known by a client and a challenge server.” Similarly to Petitioner’s contention regarding anticipation by Arent, Petitioner relies on Merritt’s pool of images. Pet. 40. Specifically, Petitioner relies on Merritt’s description of a challenge server that uses personal security phrases that include “still images” or a “sequence of images” known to a challenge server and a client (automatic teller machine or ATM). *Id.* (citing Ex. 1022, Fig. 3 (element 315), 4:13–21, 4:58–67, 6:2–20, 6:37–40). Merritt teaches that, only if a customer recognizes the customer’s personal security phrase in a response displayed by the ATM, does the customer enter sensitive information, such as the customer’s personal identification number (or PIN). Ex. 1022, 6:35–40.

Patent Owner contends that Merritt has the same purported flaw as Arent—that the plurality of images are not only known to one client and not another. PO Resp. 41. As discussed previously, we do not agree with the Patent Owner’s interpretation. Rather, for the reasons discussed previously, we are persuaded that the preponderance of the evidence demonstrates the “known only” term would be understood by one of ordinary skill in the art to be a “shared secret” and not a plurality of images that are unique across all clients.

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Thus, we are persuaded that the combination of Arent and Merritt would have conveyed to one of ordinary skill in the art all of the limitations recited in claims 14, 15, and 27.

Regarding a reason to combine, Dr. Tygar testifies that using a challenge server in an application involving security would be predictable and obvious, because the challenge server provides an extra security mechanism to manage the selection of images that could be used as “authenticity stamps” taught by Arent. Ex. 1002 ¶ 98; Pet. 40 (citing Ex. 1002 ¶ 98). We are satisfied that Petitioner, with support of its declarant, has provided articulated reasoning with some rational underpinning.

Therefore, we determine that Petitioner has established by a preponderance of the evidence that the subject matter recited in claims 14, 15, and 27 as a whole would have been obvious to one of ordinary skill in the art in view of Arent and Merritt.

F. Anticipation by the Tygar Paper

Petitioner contends claims 1–6, 8, 9, 11, 12, 14–22, 25, and 27–32 are unpatentable under 35 U.S.C. § 102 as anticipated by the Tygar paper. To support its contentions, Petitioner provides detailed analysis, relying on declaration testimony of Dr. Tygar. Pet. 47–49 (citing Ex. 1002). Patent Owner responds, relying on declaration testimony of Dr. Katz. PO Resp. 42–55 (citing Ex. 2007).

Petitioner represents that the Tygar paper was published November 1996 and so qualifies as prior art under 35 U.S.C. § 102(b) to the

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challenged claims. Pet. 3, 27, 28, 47. Patent Owner does not dispute that the Tygar paper is prior art to the challenged claims.

1. Summary of the Tygar Paper

The Tygar paper is titled “WWW Electronic Commerce and Java Trojan Horses” and co-authored by Petitioner’s declarant Dr. Tygar. The Tygar paper describes a “window personalization” technique to address the problem of fraudulent web pages, particularly in the context of electronic commerce. Ex. 1004, 243, 244, Abstract. The appearance of user interface windows is “personalized” based on a user’s choice, to show “window appearances which are easily recognizable to the consumer yet difficult to predict.” *Id.* at 247. The personalized appearance of the standard user interface window indicates to the user that the window can be trusted. *Id.* at 247–48. Figures 1 and 3 of the Tygar paper are set forth below:

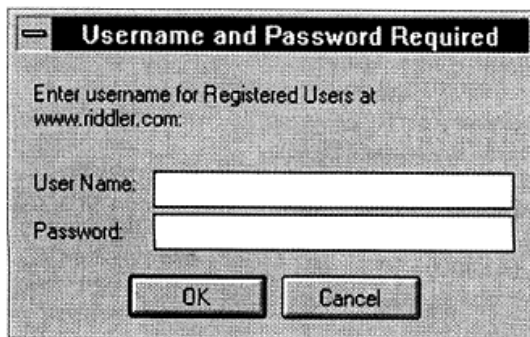


Figure 1

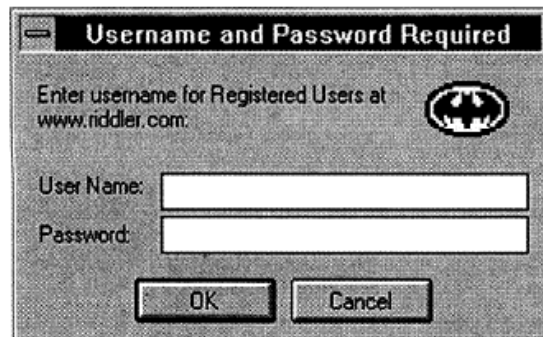


Figure 2

Figure 1 shows a conventional user interface window displayed by an Internet browser, whereas Figure 3 shows the same user interface window that includes a personalization in the form of a logo graphic. *Id.* at 246, 247.

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The Tygar paper describes an example of window personalization using a Java applet, which is executable code embedded on a web page. *Id.* at 244–45, § 2. The Tygar paper also indicates that the known security practice of using applets that are “certified and digitally signed by some trusted authority” “is best used in conjunction with . . . the window personalization technique.” *Id.* at 246, § 2.1.

2. Independent Claims 1, 17, 29, 31, and 32

Similar to the '191 patent, the Tygar paper describes techniques for presenting a user-selected graphic in a web site user interface window to indicate the window can be trusted. Ex. 1004, Abstract, 247–48, § 4. The Tygar paper also describes the program code (applet) that creates web pages that can be digitally signed. Ex. 1004, 246, § 2.1. The Tygar paper further describes that the window personalization techniques are complementary to applet signing. *Id.*

In general, Petitioner relies on the Tygar paper's disclosure of a signed applet in a substantially similar manner as Arent's signed web page offer. Patent Owner raises issues regarding the Tygar paper similar to those it raised regarding Arent.

More particularly, Petitioner asserts the Tygar paper's signed applet discloses an authenticity key has been inserted to create formatted data (claims 1, 31, and 32), an authenticity key inserted into formatted data (claim 17), or formatted data having an authenticity key (claim 29). Pet. 49–50. Addressing “authentication host computer” recited in claim 1, Petitioner's declarant testifies that one of ordinary skill in the art would

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understand the Tygar paper's disclosure of a trusted authority that digitally signs an applet, as disclosing an "authentication host computer" inserting a digital signature into applet. Ex. 1002 ¶¶ 120–21; Pet. 50 (citing Ex. 1002 ¶ 120).

Petitioner asserts the window personalization (i.e., the logo graphic) described in the Tygar paper discloses the recited "authenticity stamp." Petitioner's declarant testifies that a person of ordinary skill in the art would understand the window personalization (i.e., the logo graphic) would be stored as files on a computer system and, in order to display the window personalization, the file first would need to be located and the window personalization retrieved. Pet. 51–52 (citing Ex. 1002 ¶ 132).

As an initial matter, we consider whether Petitioner's position combining the description in the Tygar paper of window personalization (i.e., the logo graphic) with description of the signed applet impermissibly combines distinct disclosures. *See Net MoneyIN*, 545 F.3d at 1371. We determine that the disclosures in the Tygar paper concerning window personalization and signed applets are not unrelated, mutually exclusive disclosures. Rather, we determine those disclosures are directly related to one another. *See In re Arkley*, 455 F.2d at 587 ("The [prior art] reference must clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [invention] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference."). The Tygar paper itself indicates that the two techniques "are complementary" and that the known

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security practice of using applets that are “certified and digitally signed by some trusted authority” “is best used in conjunction with . . . the window personalization technique.” *Id.* at 246, § 2.1. Further, Patent Owner’s declarant confirms windows personalization and applet signing are complementary, not mutually exclusive, and that the Tygar paper discloses “windows personalization in the context of applets.” Ex. 1034, 158:19–22.

A central dispute between the parties is whether the Tygar paper discloses, expressly or inherently, the trusted authority would necessarily insert the digital signature to create the described signed applet. Patent Owner contends the Tygar paper does not do so and, therefore, does not disclose inserting an authenticity key or other claim limitations enabled by the insertion. PO Resp. 43.

According to Dr. Katz, the Tygar paper “only discloses the fact that an applet may be signed” and “does not mention an authenticity key, or an authentication processor inserting an authenticity key into formatted data at all.” Ex. 2007 ¶ 32; PO Resp. 44 (citing Ex. 2007 ¶ 32). Nor, according to Dr. Katz, does the Tygar paper disclose that the signature is inserted into the applet. Ex. 1034, 151:8–11.

Weighing the testimony of the declarants, we credit Dr. Tygar’s testimony over Dr. Katz’s testimony. *See, e.g., Yorkey*, 601 F.3d at 1284; *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d at 1368. First, in indicating the Tygar paper “does not mention an authenticity key, or an authentication processor inserting an authenticity key into formatted data at all,” Dr. Katz’s testimony appears to require the precise claim terms to be used in an

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anticipating reference. This is incorrect—“the reference need not satisfy an *ipsissimis verbis* test,” i.e., identity of terminology is not required. *In re Gleave*, 560 F.3d at 1334; *In re Bond*, 910 F.2d at 832.

Second, the Tygar paper discloses more than “only . . . that an applet may be signed,” as Dr. Katz’s maintains. Rather, as Dr. Tygar testifies based on directly quoting the reference, the Tygar paper teaches “having applets certified and digitally signed by some trusted authority.” Ex. 1002 ¶ 121 (quoting Ex. 1004, 246, § 2.1). Moreover, Dr. Katz acknowledges that he understands only “that applet signing was done” before the time of the Tygar paper and does not understand the “low-level details” about how applet signing was done. Ex. 1034, 149:14–150:2. Dr. Katz also indicated he did not review external resources, such as prior art references of record, to investigate how one of ordinary skill in the art would understand at the time of invention a signed applet. Ex. 1034, 151:12–153:9. Thus, we weigh Dr. Katz’s testimony, taking into account the extent of Dr. Katz’s familiarity with signed applets.

By contrast, Dr. Tygar supports his testimony with evidence, including citing to references explaining how applets were signed (Ex. 1015)¹⁶ and a United States government standard for digital signatures (Ex. 1021)¹⁷, as well as providing analysis as to what one of ordinary skill in

¹⁶ PETER VAN DER LINDEN, NOT JUST JAVA, pp. 111–12 (Sun Microsystems Press 1997) (Ex. 1015, “Linden”).

¹⁷ FIPS Publication 186-1, “Digital Signature Standard (DSS),” U.S. Dept. of Commerce/Nat’l Institute of Standards and Technology pp. 1–21 (Dec. 15, 1998) (Ex. 1021, “FIPS Pub.186-1”).

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the art would have understood about signed applets at the time of the invention. *See* Ex. 1002 ¶¶ 121–22.

Patent Owner also disputes that the Tygar paper discloses a hidden preferences file. PO Resp. 47–48. Patent Owner’s contention is not persuasive because, for the reasons discussed previously, the recited “preferences file” is not required to be hidden.

Patent Owner further contests Dr. Tygar’s testimony (Ex. 1002 ¶ 132) that one of ordinary skill in the art would understand the logo graphic (corresponding to the recited “authenticity stamp”) described in Tygar to be stored in files on a computer system. Patent Owner asserts, without persuasive argument or evidence, that storing an authenticity stamp in a file is not present necessarily in the Tygar paper “because the authenticity stamps could be dynamically generated as in Arent, rather than stored as claimed in the ’191 patent.” PO Resp. 49.

Tellingly, Dr. Katz does not provide support for Patent Owner’s position. *Id.* Moreover, Arent’s certification indicator (corresponding to the recited “authenticity stamp”) is assembled from components stored in a file. Thus, we are not persuaded by Patent Owner’s argument that the logo graphics (corresponding to the recited “authentication stamps”) described in the Tygar paper are not necessarily stored in a file because they might be dynamically generated. Rather, we are persuaded by Dr. Tygar’s testimony that such logo graphics necessarily would be stored in a file on a computer system. Ex. 1002 ¶ 132.

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Thus, we determine that Petitioner has established by a preponderance of the evidence that one of ordinary skill in the art would understand the Tygar paper to disclose, explicitly or inherently, “transforming, at an authentication host computer, received data by inserting an authenticity key to create formatted data,” as arranged in claim 1 and in similar limitations regarding “inserting an authenticity key” recited in independent claims 17, 29, 31, and 32. For these reasons, we determine that Petitioner has established by a preponderance of the evidence that claims 1, 17, 29, 31, and 32 are anticipated by the Tygar paper.

3. *Dependent Claims 2, 4, and 8*

Claims 2, 4, and 8 depend from claim 1 and further recite “formatted data is a web page” (claim 2), “formatted data is at least one of: a screen display or a Uniform Resource Locator (URL)” (claim 8), and “displaying the formatted data in response to the verification of the authenticity key” (claim 4).

Relying on its declarant, Petitioner asserts the Tygar paper discloses Java applets (which, according to Petitioner, discloses the recited “formatted data”) are embedded in web pages and such web pages would constitute screen displays. Pet. 52 (citing Ex. 1002 ¶¶ 144–45). Patent Owner responds that Petitioner’s position with regard to claim 1 is inconsistent with Petitioner’s position regarding claim 2. Specifically, Petitioner’s reliance on the *signed applet* in the Tygar paper as disclosing the formatted data in claim 1 is inconsistent with Petitioner’s position that the web page on which

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the Java applet is embedded as disclosing the formatted data in claim 2. PO Resp. 49–50.

We agree with Patent Owner. The signed applet of the Tygar paper may be embedded in a web page and the web page displayed, which makes the displayed web page a screen display. That disclosure, however, is not arranged as in the claim, which requires the formatted data to be a web page (claim 2) and the formatted data to be a screen display or URL (claim 8). The signed applet, which Petitioner contends discloses the formatted data, is computer code, rather than a web page. The signed applet itself is not displayed as required by claims 4 and 8. Thus, we are not persuaded that the Tygar paper anticipates claims 2, 4, and 8. *See Net MoneyIN*, 545 F.3d at 1369.

Petitioner alternatively contends that a web page having an embedded signed applet, which purportedly is disclosed by the Tygar paper, discloses the recited “formatted data.” Pet. 50. Under this position of Petitioner, the recited “formatted data” is a web page that is displayed and so meets the additional limitations recited in claim 2 (“the formatted data is a web page”), claim 8 (“the formatted data is . . . a screen display”), and claim 4 (“displaying the formatted data”). Pet. 52–53. Using this reasoning, however, the Tygar paper does not meet the transforming limitation of independent claim 1 from which each of claims 2, 4, and 8 depend. This is because the Tygar paper’s trusted authority (which Petitioner indicates corresponds to the recited “authentication host computer”) inserts a digital signature into an applet. Ex. 1004, 245, § 2. There is insufficient record

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evidence for us to conclude the trusted authority also embeds the signed applet into the web page. Accordingly, Petitioner's alternative position—a web page having an embedded signed applet discloses the recited “formatted data”—is not arranged in the same way as the claim; therefore, the Tygar paper does not anticipate claim 2, 4, or 8 under this position.

For these reasons, we determine that Petitioner has not established by a preponderance of the evidence that claims 2, 4, and 8 are anticipated by the Tygar paper.

4. *Dependent Claims 5 and 6*

Claims 5 and 6, each of which depends from independent claim 1, additionally require “the authenticity stamp is displayed.” According to Petitioner the logo graphic of the user-customized window personalization corresponds to the recited “authenticity stamp” and is displayed only if the applet is verified. Pet. 53–54. Also Petitioner asserts the logo graphic is displayed for the dialogue box of Figure 3 in the Tygar paper. *Id.* Petitioner's contention is supported by testimony of its declarant. Ex. 1035 ¶ 71.

Patent Owner challenges Petitioner's position, relying on its overly narrow interpretation of claim 6 that the authenticity stamp must be displayed within the formatted data. PO Resp. 52. For the reasons discussed with respect to claim 6 earlier, we are not persuaded by Patent Owner's contention.

Moreover, the Tygar paper expressly discloses that the logo graphic is displayed for the “windows and dialogue boxes” (Ex. 1004, 244) and does

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so only when the applet has been verified. Thus, we are persuaded that Petitioner has established by a preponderance of the evidence that one of ordinary skill in the art would understand the Tygar paper to disclose, explicitly or inherently, claims 5 and 6.

5. Dependent Claims 12 and 25

Claim 12, which depends from claim 1, further recites “retrieving additional data based on the received data.” Claim 25, which depends from independent claim 17, additionally recites “receive additional data based on the formatted data.” Petitioner, with support from its declarant, contends the Tygar paper discloses these additional limitations because the dialogue box of Figure 3 is created from the signed applet, which corresponds to the recited “formatted data” and the dialogue box requires a username and password to be entered, thus disclosing the recited “additional data.” Pet. 54–55 (citing Ex. 1002 ¶¶ 157–59).

Patent Owner contends that the Tygar paper does not anticipate these claims because the username and password are supplied by a user and so are not “based on any applet.” PO Resp. 53–54. Patent Owner further contends that claim 12 is not anticipated by the Tygar paper because “the dialog box on the user’s machine” receives the additional data (username and password), rather than the authentication host computer. PO Resp. 54. Dr. Katz’s testimony, using nearly identical language as the Patent Owner, does not provide additional or sufficient explanation. Ex. 2007 ¶ 39.

We are not persuaded that claims 12 and 25 preclude additional data being entered by a user, as Patent Owner contends. In the Tygar paper, as

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Dr. Tygar testifies, the applet displays the dialog box in which the username and password are entered and so the entry of the username and password (corresponding to the recited “additional data”) is based on the applet displaying the dialogue box in which the username and password are entered. Ex. 1035 ¶ 72. Nor are we persuaded that claim 12 requires the authentication host computer to receive the additional data. Rather, the plain language of claim 12 recites “retrieving additional data based on the received data,” which does not require a particular computer to perform the retrieving step.

Therefore, we are persuaded that Petitioner has established by a preponderance of the evidence that one of ordinary skill in the art would understand the Tygar paper to disclose, explicitly or inherently, claims 12 and 25.

6. Dependent Claims 14 and 27

Claims 14 and 27 each recite “the plurality of images are only known by a client and a challenge server.” There is no dispute that the Tygar paper discloses a pool of images. PO Resp. 55 (acknowledging the Tygar paper “mentions only one such pool” of images). Rather, Patent Owner argues that claims 14 and 27 require a unique set of images be provided to each client. For the reasons discussed previously, we are not persuaded.

We, therefore, are persuaded that Petitioner has established by a preponderance of the evidence that one of ordinary skill in the art would understand the Tygar paper to disclose, explicitly or inherently, claims 14 and 27.

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7. Conclusion Regarding Anticipation by the Tygar Paper

Having reviewed both parties' arguments and evidence, we also are persuaded that one of ordinary skill in the art would understand the Tygar paper to disclose, expressly or inherently, every limitation as arranged in dependent claims 3, 9, 11, 15, 16, 18–22¹⁸, 28, and 30.

We, therefore, determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1, 3, 5, 6, 9, 11, 12, 14–22, 25, and 27–32 are anticipated by the Tygar paper. We also have determined that Petitioner has not demonstrated by a preponderance of the evidence that claims 2, 4, and 8 are anticipated by the Tygar paper.

G. Obviousness over the Tygar Paper and Other References

For asserted grounds of obviousness relying on the Tygar paper and other references, Petitioner substantially relies on the same analysis and supporting evidence described previously with regard to the ground that the Tygar paper anticipates independent claims 1 and 17. *See* Pet. 56–60. For the reasons we explained previously, we determine that Petitioner has demonstrated by a preponderance of the evidence that the Tygar paper discloses all of the limitations recited by independent claims 1 and 17.

¹⁸ Patent Owner asserts Dr. Tygar's testimony regarding a particular embodiment described in Arent is an acknowledgment that Arent does not disclose a limitation recited in claim 22, a claim that Patent Owner did not provide separate arguments in its Response. Paper 23, 6. We disagree with that characterization of Dr. Tygar's testimony (Ex. 2010, 93:21–94:13). *See* Paper 27, 7–8.

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1. Obviousness over the Tygar Paper and Yoshiura

Petitioner challenges claims 2, 4, and 7, each of which depends from independent claim 1, as obvious over Tygar and Yoshiura. Pet. 56–58 (citing Ex. 1006, 37:8–31, 37:42–38:8, Figs. 9, 28, 29). Claim 2 additionally recites “the formatted data is a web page.” Claim 4 additionally recites “displaying the formatted data in response to the verification of the authenticity key.” Claim 7 additionally recites “a non-authenticity stamp is displayed for formatted data that is not verified.”

Yoshiura (Ex. 1006) is a European patent application published December 9, 1998. The parties do not dispute that Yoshiura is prior art to claims 2, 4, and 7.

Yoshiura checks the validity of a web page by checking the validity of a “mark.” See Ex. 1006, 37:42–45, 37:56–38:1. To do so, a digital signature, which is embedded in the mark displayed on the web page, is validated. See *id.* at 37:19–30, 37:49–38:4. If the digital signature is valid, a message is displayed that the mark was validated; but if the digital signature is not valid, a message is displayed that the mark was not validated. See *id.* at 37:56–38:8, Fig. 9 (display unit 1102).

Petitioner, with support from its declarant, relies on that Yoshiura’s teaching checking the validity of a web page by using a digital signature embedded in a mark on the web page and displaying a message that the mark was validated. Pet. 56–57 (citing Ex. 1002 ¶¶ 169–72). Petitioner contends that Yoshiura’s teachings, in combination with Tygar as applied to the limitations in claim 1, would have conveyed to one of ordinary skill in

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the art all of the limitations recited in claims 2, 4, and 7. *Id.* Petitioner contends that Yoshiura's description of checking the validity corresponds to the recited "authenticating"; Yoshiura's "Web page" corresponds to the recited "formatted data"; Yoshiura's digital signature corresponds to the recited "authenticity key"; and Yoshiura's displayed message stating that the mark was validated corresponds to the recited "authenticity stamp." *Id.* at 56–58. Patent Owner relies on its arguments regarding anticipation of the Tygar paper. PO Resp. 59.

Having reviewed both parties' arguments and evidence, we are persuaded, based on the Petition and the testimony from Dr. Tygar, that the Tygar paper in combination with Yoshiura would have conveyed to one of ordinary skill in the art all of the limitations recited in dependent claims 2, 4, and 7. For instance, and in contrast to the asserted ground of anticipation by the Tygar paper which relied on a signed applet for the received formatted data, Petitioner further relies on Yoshiura's disclosure concerning web pages for formatted data. Moreover, the standards of patentability for proving anticipation are different than the standards for proving obviousness.

Petitioner also contends, with support of Dr. Tygar, one of ordinary skill in the art would have reason to combine the references "to give consumers greater assurance when authenticating a web page." Pet. 57 (citing Ex. 1002 ¶170). Petitioner has articulated reasoning that has some rational underpinning to support the legal conclusion of obviousness.

For these reasons, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter recited in claims 2, 4,

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and 7 as a whole would have been obvious to one of ordinary skill in the art in view of the Tygar paper and Yoshiura.

2. *Obviousness over the Tygar Paper and Schneier*

Referring to arguments advanced with regard to Arent and Schneier, Petitioner contends, again with support from its declarant, that claims 10, 13, 23, and 26 are unpatentable for obviousness under 35 U.S.C. § 103 over Tygar and Schneier. Pet. 58 (indicating the combination would result in a signed applet having multiple signatures); *see id.* at 38–39 (asserting a reason one of ordinary skill in the art would combine Schneier with Arent would be “so that Arent’s web page offers could be signed with multiple digital signatures,” among other contentions).

The additional limitations recited in these claims concern inserting a second authenticity key and validation (claims 13 and 26). Similarly to the ground of obviousness over Arent and Schneier, Petitioner relies on Schneier’s teaching two parties signing the same document, resulting in multiple signatures in the same document, which Patent Owner does not challenge (*see* PO Resp. 56).

Patent Owner relies on its arguments regarding anticipation of the Tygar paper (PO Resp. 56–57), which we do not find persuasive for the reasons noted previously. PO Resp. 56. Patent Owner also challenges this ground because “Schneier makes no mention of signing applets.” *Id.*

We are not persuaded by Patent Owner’s argument, which amounts to a challenge to an individual element in Schneier without sufficient consideration of what the teachings of the Tygar paper and Schneier would

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have suggested to one of ordinary skill in the art regarding the claimed subject matter as a whole. *In re Mouttet*, 686 F.3d 1322, 1333 (Fed. Cir. 2012) (“[T]he test for obviousness is what the combined teachings of the references would have suggested to those having ordinary skill in the art.” (citing *In re Keller*, 642 F.2d 413, 425 (CCPA 1981))).

For the reasons previously given, therefore, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 10, 13, 23, and 26 would have been obvious over Tygar and Schneier.

3. *Obviousness over the Tygar Paper and Merritt*

Referring to arguments advanced with regard to Arent and Merritt, Petitioner contends, again with support from its declarant, that claims 14, 15, and 27 are unpatentable for obviousness under 35 U.S.C. § 103 over Tygar and Merritt. Pet. 58–59 (indicating the challenge server of Merritt could be used in the selection of background displays in the Tygar paper); *see id.* at 40 (asserting a person of ordinary skill in the art would combine Merritt with “an application involving security [because Merritt’s challenge server] provides an extra security mechanism,” among other contentions). The additional limitations recited in claims 14, 15, and 27 concern a challenge server. Patent Owner relies on its arguments regarding anticipation of the Tygar paper (PO Resp. 56–58), which we do not find persuasive for the reasons we explained previously.

Therefore, we determine that Petitioner has demonstrated by a preponderance of the evidence that the subject matter of claims 14, 15, and 27 as a whole would have been obvious over Tygar and Merritt.

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III. CONCLUSION

Petitioner has proven by a preponderance of the evidence that claims 1–9, 11, 12, 14–22, 25, and 27–32 of the '191 patent are unpatentable under 35 U.S.C. § 102 as anticipated by Arent and claims 1, 3, 5, 6, 9, 11, 12, 14–22, 25, and 27–32 of the '191 patent are anticipated by Tygar. Petitioner has not demonstrated, however, that claims 2, 4, and 8 are unpatentable under 35 U.S.C. § 102 as anticipated by Tygar.

We have resolved the questions of obviousness based on factual determinations of (1) the scope and content of the prior art; (2) differences between the subject matter of challenged claims and the teachings of the prior art; and (3) the level of ordinary skill in the art. *Graham*, 383 U.S. at 17–18. Patent Owner did not put forth any objective evidence of nonobviousness. Petitioner has proven by a preponderance of the evidence that the subject matter of claims 10, 13, 23, and 26 of the '191 patent would have been obvious to a person of ordinary skill in the art in view of the teachings of Arent and Schneier; claims 14, 15, and 27 would have been obvious in view of the teachings of Arent and Merritt; claims 2, 4, and 7 would have been obvious in view of the teachings of Tygar and Yoshiura; claims 10, 13, 23, and 26 would have been obvious in view of the teachings of Tygar and Schneier; and claims 14, 15, and 27 would have been obvious in view of the teachings of Tygar and Merritt.

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IV. ORDER

Accordingly, it is hereby

ORDERED that, based on a preponderance of the evidence, claims 1–23 and 25–32 of U.S. Patent No. 7,631,191 B2 are held unpatentable; and

FURTHER ORDERED that, because this is a Final Written Decision, the 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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