UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CELLCO PARTNERSHIP D/B/A
VERIZON WIRELESS
Petitioner,

v.

BRIDGE AND POST, INC.,
Patent Owner

Case IPR2018-00055
Patent 8,862,747

PATENT OWNER'S NOTICE OF APPEAL

Notice is hereby given, pursuant to 37 C.F.R. § 90.2(a)(1), that Patent Owner Bridge and Post, Inc. ("Patent Owner" or "Bridge and Post") hereby timely appeals under 35 U.S.C. §§ 141, 142, and 319 to the United States Court of Appeals for the Federal Circuit from the Final Written Decision entered on April 15, 2019 (Paper No. 40), and from all underlying orders, decisions, rulings, and opinions.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Bridge and Posts states that the issues for appeal include, but are not limited to: (i) whether the Board erred in finding that claims 10−17 of U.S. Patent No. 8,862,747 (the "'747 patent") were unpatentable under 35 U.S.C. §103; (ii) the Board's claim constructions or failure to construe any terms; (iii) whether the Board erred in finding that claims 10-17 of the '747 patent are not entitled to the benefit of the filing date of the '195 provisional application; and (iv) any findings or determinations supporting or related to the aforementioned issues as well as other issues decided adversely to Patent Owner in any order, decisions, rulings, or opinions.

A copy of the Final Written Decision is attached hereto.

Simultaneous with this submission, a copy of this Notice of Appeal is being filed with the Patent Trial and Appeal Board. In addition, a copy is being electronically filed with the Clerk's Office for the United States Court of Appeals

for the Federal Circuit (via CM/ECF), along with the required docketing fee.

Furthermore, a copy of this Notice of Appeal is being served on Petitioners Cellco Partnership D/B/A Verizon Wireless.

Dated: May 31, 2019

Respectfully submitted,

By */s/ Lauren N. Robinson*

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that, in addition to being filed electronically through the Patent Trial and Appeal Board's End to End System (PTAB E2E), the foregoing PATENT OWNER'S NOTICE OF APPEAL was served by Express Mail, tracking number EH 823108489 US, May 31, 2019, with the Director of the United States Patent and Trademark Office, at the following address:

Office of the General Counsel
United States Patent and Trademark Office
Madison Building East, Room 10B20
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In addition, the undersigned certifies that a copy of the foregoing Notice of Appeal, along with the required docket fee, was filed on May 31, 2019, with the Clerk's Office for the United States Court of Appeals for the Federal Circuit through the Court's CM/ECF filing system.

The undersigned certifies pursuant to 37 C.F.R. § 42.6(e) that a true copy of the foregoing PATENT OWNER'S NOTICE OF APPEAL has been served in its entirety on May 31, 2019, by electronic mail on the Petitioners via its attorneys of record:

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Paper 40
Entered: April 15, 2019

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS,
Petitioner,

v.

BRIDGE AND POST, INC.,
Patent Owner.

Case IPR2018-00055
Patent 8,862,747 B2

Before JONI Y. CHANG, BARBARA A. PARVIS, and KEVIN C. TROCK, *Administrative Patent Judges.*

CHANG, *Administrative Patent Judge.*

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

I. INTRODUCTION

Cellco Partnership d/b/a Verizon Wireless ("Petitioner") filed a Petition requesting an *inter partes* review of claims 10−17 ("the challenged claims") of U.S. Patent No. 8,862,747 B2 (Ex. 1101, "the '747 patent"). Paper 1 ("Pet."). Bridge and Post, Inc. ("Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp."). We concluded that Petitioner has established a reasonable likelihood that it would prevail with respect at least one claim, and we instituted this *inter partes* review proceeding as to claims 10−17 of the '747 patent and all the grounds asserted by Petitioner. Paper 7 ("Dec."), Paper 13.

Subsequently, Patent Owner filed a Response (Paper 15, "PO Resp."), and Petitioner filed a Reply (Paper 22, "Reply"). Patent Owner also filed a Motion to Exclude certain evidence (Paper 30, "Mot."); Petitioner filed an Opposition to the Motion to Exclude (Paper 32, "Opp."); and Patent Owner filed a Reply in Support of its Motion to Exclude (Paper 34, "Mot. Reply"). A transcript of the oral hearing held on January 17, 2019, has been entered into the record as Paper 39 ("Tr.").

This Decision is a final written decision under 35 U.S.C. § 318(a) as to the patentability of the challenged claims. For the reasons provided below, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 10−17 of the '747 patent are unpatentable.

A. Related Matters

The parties indicate that the '747 patent is involved in *Bridge and Post, Inc. v. Verizon Communications,* Case No. 3:17-cv-00094 (E.D. VA)

and other proceedings. Pet. 1−2; Paper 4, 2−3. Petitioner also filed another petition requesting an *inter partes* review of claims 1−9 of the ’747 patent. Pet. 1−2; Case IPR2018-00054, Paper 1.

B. The ’747 Patent

The ’747 patent claims priority to U.S. Provisional Patent Application No. 60/894,195 (Ex. 1103, “the ’195 provisional application”), which was filed on March 10, 2007. Ex. 1101, at [60]. The ’747 patent describes a method and system for tagging network traffic with user-relevant information using extensible fields in message headers. *Id*. at [54], 1:15−17. The ability to provide directed or targeted message delivery to users based on network access is important to content providers, such as online advertisers. *Id*. at 1:21−23. Figure 2 of the ’747 patent is reproduced below.

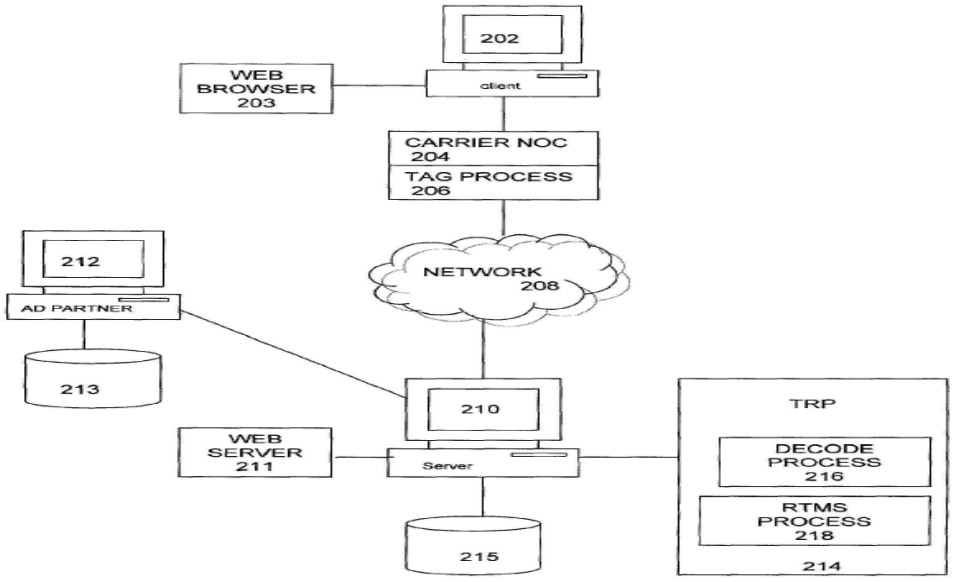


Figure 2 above illustrates a client-server network including a network tagging component. *Id*. at 7:53−54. According to the ’747 patent, Figure 2 shows a standard Internet Protocol (“IP”) based access system in which

client device 202 executing web browser 203 accesses a web site destination that has server computer 210 executing web server process 211. *Id*. at 7:55−8:25. Client device 202 accesses network 208 through a telecommunication pathway provided by carrier network operation center ("NOC") 204. *Id*. Server computer 210 provides web page content. *Id*. Ad server 212 generates advertisements to be displayed with the content. *Id*. Tag processor 206 generates a request identifier based on information associated with client computer 202 and the user. *Id*. at 8:26−28.

Figure 3 of the '747 patent is reproduced below.

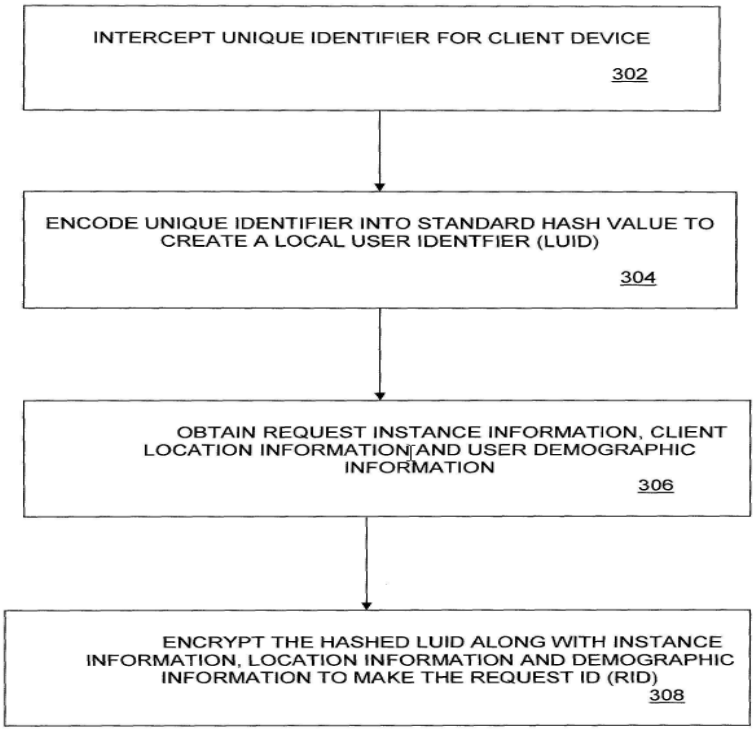


Figure 3 above is a flowchart illustrating a method of generating a request identifier. *Id*. at 4:5−6. At block 302, tag processor 206 intercepts the device identifier (e.g., the MAC address of client device 202). *Id*. at 8:30−34. At block 304, tag processor 206 encodes the device identifier to

create a local user identifier, by using a standard one-way hash algorithm or any equivalent coding method that ensures adequate privacy. *Id*. at 8:38−40. At block 306, tag processor 26 obtains request instance information (e.g., time of the request), location information of client device 202 (e.g., zip code, phone area code, or street address), and demographic information (e.g., gender, age, race, occupation of the user). *Id*. at 8:40−57. At block 308, tag processor 26 generates a request identifier by encrypting the local user identifier, instance information, location information, and demographic information. *Id*. at 57−60.

C. Illustrative Claim

Of the challenged claims, claim 10 is independent. Claims 11−17 depend directly or indirectly from claim 10. Claim 10 is illustrative:

> 10. [10.0][1] A system for processing network traffic transmitted between a client computer and a server computer over a network, comprising:
>
> [10.1] a router device coupled to the network between the client computer and the server computer,
>
> [10.2] wherein the network is the World Wide Web portion of the Internet, the router device intercepting request and response messages transmitted between the client computer and server computer,
>
> [10.3] wherein the client computer is selected from the group consisting of: a personal computer, a mobile computing device, a cellular phone, a personal digital assistant, a media playback device and a gaming device;

[1] We use the same claim element reference numbers used by the parties.

[10.4] an authentication server coupled to the router device through a gateway, and providing information related to the client computer;

[10.5] a tag processor component closely coupled to the router device located within the network and configured to intercept a request message from the client computer to the server computer over the network,

[10.6] wherein the request is in a hypertext transport protocol (HTTP) format,

[10.7] determine a *unique device identifier* corresponding to the client computer,

[10.8] *extract non-personal information* about the user during a Media Access Control (MAC) layer process,

wherein the non-personal information includes one or more of data related to the client computer, software on the client computer, information associated with the client computer regarding use of the client computer, and non-personal data associated with the user;

[10.9] generate *a local user identifier* for the client computer based on the unique device identifier,

[10.10] derive instance information regarding timing of the request provided by the client computer, and

[10.11] geographic location and demographic information from the information provided by the authentication server of the client computer,

[10.12] generate a *request identifier* associated with the intercepted request by encrypting and

[10.13] embedding the local user identifier and geographic location and demographic information in an extensible field of a packet within the request to generate a tagged request identifier from the non-personal information,

> [10.7] wherein the *unique identifier* is based directly on at least one of a MAC address, port identifier, or hardcoded identifier in software or hardware and assigned to the client computer, and
>
> [10.13] wherein the extensible field comprises a portion of an HTTP header field of the packet that is normally unused or essentially left blank; and
>
> [10.14] a *tag-related processor component* coupled to the server computer and configured to receive a decode request from the server computer upon interception of the tagged request identifier by the server computer.

Id. at 18:24–19:6 (bracketed matter and emphases added).

D. Evidence Relied Upon

Petitioner relies upon the references listed below (Pet. 3).

Harada	WO 00/73876 A2	Dec. 7, 2000	(Ex. 1104)[2]
Roker	WO 2006/081680 A1	Aug. 10, 2006	(Ex. 1105)[3]
Brijesh[4]	US 2006/0265507 A1	Nov. 23, 2006	(Ex. 1106)
Candelore	US 6,996,238 B2	Feb. 7, 2006	(Ex. 1107)

[2] Citations of Harada refer to the original page number at the bottom, center of each page.

[3] Citations of Roker refer to the original page number at the top, center of each page.

[4] Although Banga is listed as the first named inventor, Petitioner refers Exhibit 1006 as "Brijesh," another named inventor. Pet. 3. For consistency, we refer Exhibit 1006 as "Brijesh" in this Decision.

E. Asserted Grounds of Unpatentability

Petitioner asserts the following grounds of unpatentability (Pet. 4):

Challenged Claims	Basis	References
10−17	§ 103(a)[5]	Harada, Roker, and Brijesh
10−17	§ 103(a)	Harada, Roker, and Candelore

II. DISCUSSION

A. Claim Construction

The instant Petition was filed on October 11, 2017, prior to the effective date of the rule change that replaces the broadest reasonable interpretation ("BRI") standard. *See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board*, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (final rule) ("This rule is effective on November 13, 2018 and applies to all IPR, PGR and CBM petitions filed on or after the effective date."). We, therefore, apply the BRI standard in this proceeding. Under this standard, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R.

[5] Because the claims at issue have a filing date prior to March 16, 2013, the effective date of the Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), we apply the pre-AIA version of 35 U.S.C. §§ 102 and 103 in this Decision.

§ 42.100(b) (2017). And claim terms generally are given their 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).

Neither party proposes any claim construction expressly. Pet. 4−5; Prelim. Resp. 7−8. Nevertheless, Patent Owner raises a claim construction issue implicitly in its argument that the cited references do not teach or suggest encrypting and embedding the claimed information "within a single extensible HTTP header field." PO Resp. 10, 20−26. In particular, Patent Owner interprets the claim term "an extensible field" to require a single extensible field. *Id*. However, during oral hearing, Patent Owner conceded that "[i]t's certainly the case that 'a' or 'an' traditionally in claim construction means one *or more*." Tr. 41:13−42:2 (emphasis added).

In any event, we agree with Petitioner (Reply 4−6) that "the words 'a' or 'an' in a patent claim carry the meaning of 'one or more,'" absent "extremely limited" exceptions. The United States Court of Appeals for Federal Circuit "has repeatedly emphasized that an indefinite article 'a' or 'an' in patent parlance carries the meaning of 'one or more' in open-ended claims containing the transitional phrase 'comprising.'" *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008); *see also 01 Communique Lab., Inc. v. LogMeIn, Inc.*, 687 F.3d 1292, 1297 (Fed. Cir. 2012). Those exceptions arise only "where the [intrinsic evidence] necessitate[s] a departure from the rule," by evincing "'a clear intent' to limit 'a' or 'an' to 'one.'" *Baldwin Graphic*, 512 F.3d at 1342−43. Here, the specification of the '747 patent does not evince such a clear intent, as it

indicates that the singular embodiment is merely illustrative and that "[t]he length and position of the RID tag within the HTTP header can be modified depending upon system constraints and requirements." Ex. 1101, 9:20, 35−37, 52, Fig. 5. Hence, in light of the specification, we interpret the claim term "an extensible field" to mean "one or more extensible fields."

B. Principles of Law on Obviousness

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.[6] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

C. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are

[6] Neither party presents arguments regarding, or evidence allegedly constituting, objective evidence of nonobviousness in this proceeding.

made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quoting *Custom Accessories, Inc. v. Jeffrey–Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986)). Petitioner's declarant, Mr. Stephen Gray, testifies that a person of ordinary skill in the art "would have had an electrical engineering, computer engineering, or a computer science degree, or the equivalent knowledge gained through experience; and two years of experience in the design and implementation of client-server class computing system with at least some familiarity with online advertising." Ex. 1108 ¶ 68.

In its Response, Patent Owner proposes that such an artisan would have had an "associate's or bachelor's degree in computer or electrical engineering, computer science, or an equivalent degree, training, or experience, with at least two years of experience in network engineering and network applications engineering in a web-based environment." PO Resp. 7. Patent Owner also argues that Petitioner's definition is overly broad and vague, and not sufficiently tied to the challenged claims, and that Petitioner has not demonstrated that its expert, Mr. Gray, meets its definition. *Id*. at 6.

However, Petitioner's declarant, Mr. Gray, testifies that "[b]y February 2007, [he] would have been a person of at least ordinary skill in the art under either [Patent Owner's] definition or my definition." Ex. 1135 ¶ 23. Moreover, Patent Owner's declarant, Mr. Steve Smoot, testifies that there is no meaningful difference between the parties' proposed definitions as to the opinions he has given in this proceeding. Ex. 1136, 45:7−18.

We note that either assessment appears consistent with the level of ordinary skill in the art at the time of the invention as reflected in the prior art in this proceeding. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). Our analysis in this Decision is supported by either assessment.

D. Overview of the Asserted Prior Art

Harada (Ex. 1104)

Harada discloses a data transfer method performed at a proxy server, which includes intercepting a data request from a client computer that is directed to a target server, encrypting profile information, augmenting the data request by adding the encrypted profile information to the data request, and sending the augmented data request to the target server. Ex. 1104, Abstract. Figure 2 of Harada is reproduced below.

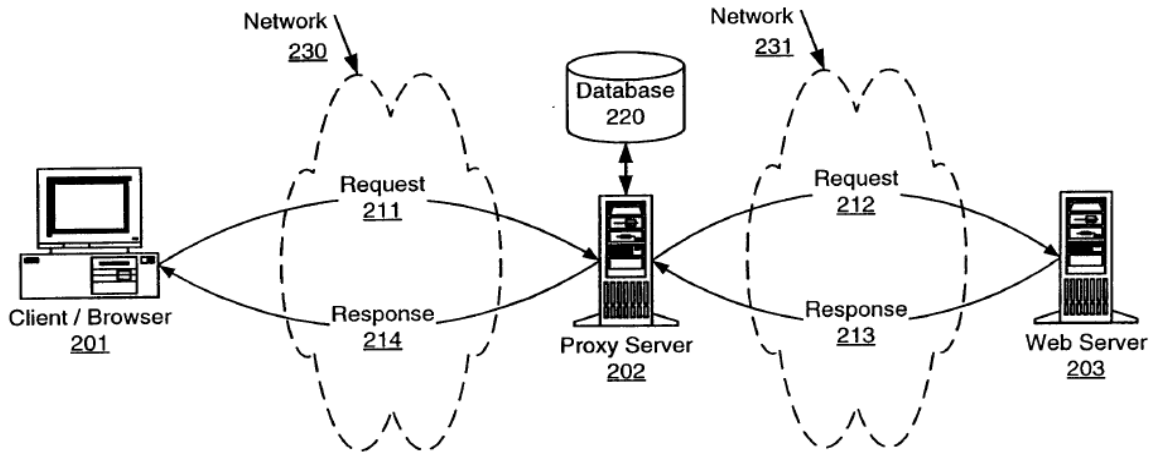


Fig. 2

As shown in Figure 2 of Harada, data request 211 from client 201 to web server 203 is intercepted at proxy server 202. According to Harada, the user profile information is stored first at proxy server 202 in database 220. *Id*. at 5:13−15. When HTTP data request 211 is received by proxy server

202 from client/browser 201, the user profile information from database 220 is encapsulated in request 212 by adding HTTP headers containing the user profile information to the headers received in request 211, and then request 212 is forwarded to web server 203. *Id*. at 5:15−19.

Roker (Ex. 1105)

Roker discloses a system and method for providing Internet content that is personalized and therefore more relevant to the individual user. Ex. 1105, 4:11−13. According to Roker, protection for users from ad ware, spy ware, cookies, web bugs and other invasive schemes are provided by the system. *Id*. at 4:23−24. Figure 2 of Roker is reproduced below.

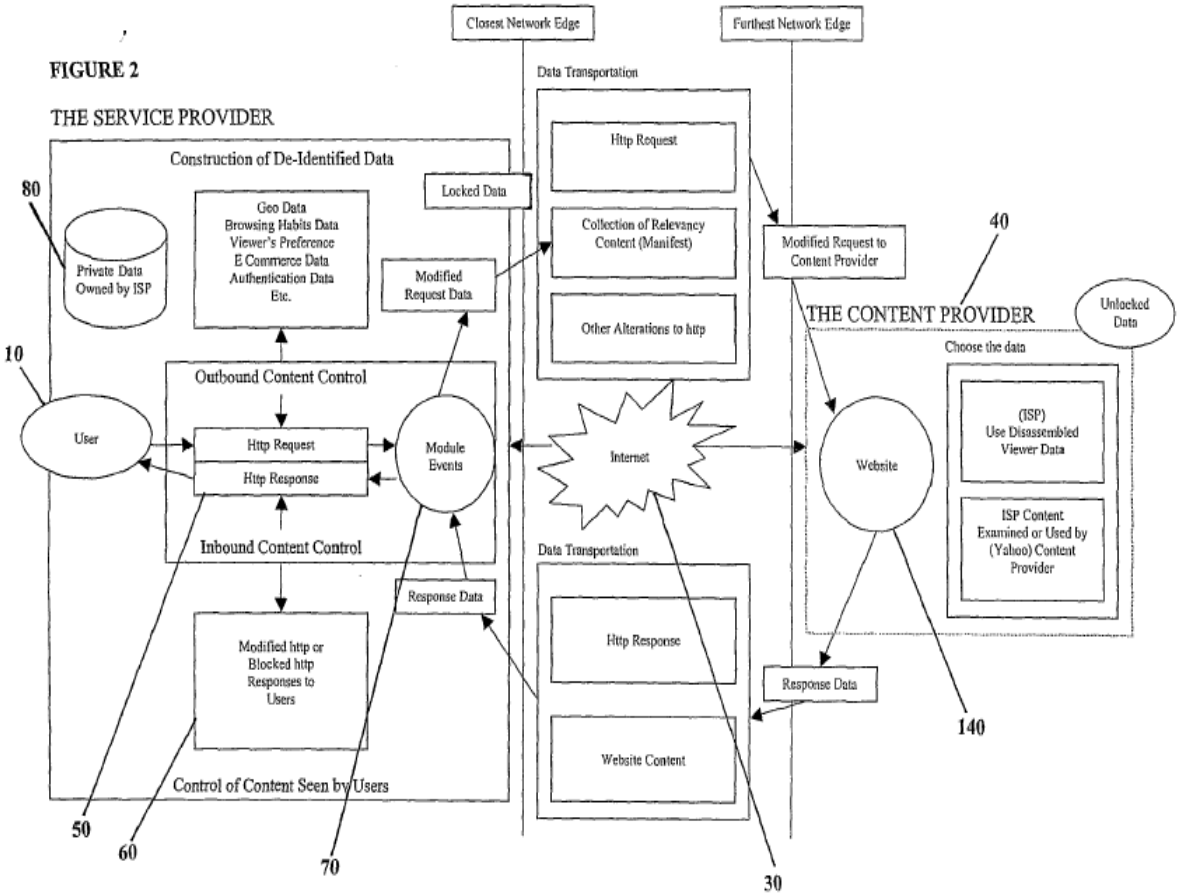


Figure 2 above illustrates the manner in which network device 70 interacts with user's computer 10, service provider 20, and content provider 40. *Id*. at 13:12−21. When user's computer 10 makes an HTTP request, the message is sent to router 50. *Id*. Network device modifies the request and adds information from database 80, and then encodes the information. *Id*. The user information can be placed in additional headers in the outgoing request. *Id*. at 8:24−27. The encoded, modified request is then sent through the Internet 30 to content provider 40. *Id*. at 13:12−21. Service provider 20 acts as a trusted keeper of information about the user, and removes identifiable information ("anonymizes") from the user's personal information before allowing it to leave service provider 20. *Id*. at 11:1−7. Network device 70 may apply several method to obscure the identity of the user's profile and to ensure that acceptable levels of privacy are maintained. *Id*. at 17:26−28. Content provider 40 decodes the information, and reacts by transmitting an HTTP response. *Id*. at 13:12−21.

Roker also uses a unique code, such as a static IP address, for accessing the user profile. *Id*. at 16:10−16. The purpose of the identification is to link the user's Internet address to a static unique identifier for the authenticated user on the network. *Id*.

Brijesh (Ex. 1106)

Brijesh discloses a system and method for providing directed media to a user. Ex. 1106, Abstract, ¶ 21. Figure 2 of Brijesh is reproduced below.

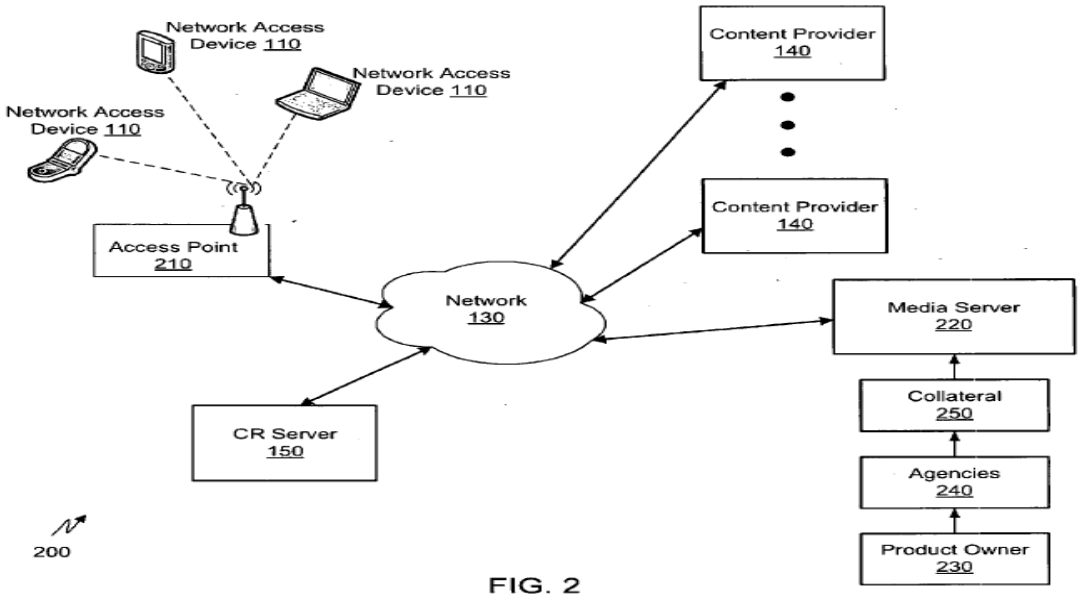


FIG. 2

Figure 2 of Brijesh shows computer network environment 200 that includes network access devices 110 coupled to network 130 via access point 210, a plurality of content providers 140, client relationship ("CR") server 150, and media server 220. *Id*. ¶ 33. Media server 220 works with product owners 230, agencies 240, and collaterals 250. *Id*. Brijesh teaches that network access device 110 may comprise a device identifier (e.g., MAC address or any anonymous device identifier) which is used by CR server 150. *Id*. ¶ 25. With the device identifier of network access device 110, CR server 150 obtains a corresponding user profile associated with the device identifier. *Id*. ¶ 59. After the information is analyzed, media server 220 then provides the directed media that is tailored to the user profile/preferences to content provider 140 and network access device 110. *Id*.

Candelore (Ex. 1107)

Candelore discloses a "method and apparatus for generating keys to encrypt communication in a network using distinctive device identification."

Ex. 1107, 1:36−38. "In an IP network, the invention makes use of the unique Media Access Control (MAC) address header information as the distinctive device identification." *Id*. at 1:37−1:39. The MAC address is used as a unique identifier to generate unique keys to identify devices. *Id*.

Figure 4 of Candelore is reproduced below.

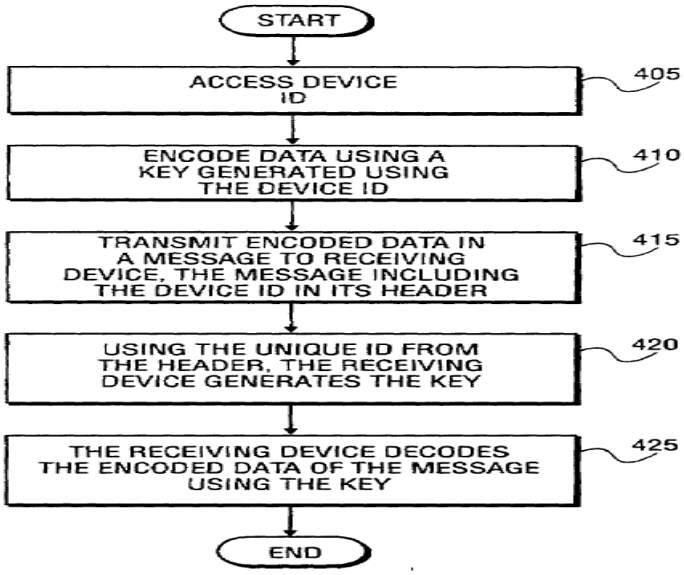


Figure 4 of Candelore above illustrates a flow chart of one of the embodiments. At block 405, the device identification is accessed. *Id*. at 3:50−52. The device identification may be a distinctive device identification, such as the MAC address delivered as part of the header source address information of an IP message. *Id*. at 3:52−55. At block 410, data is encoded using a key generated using the device ID. *Id*. at 3:55−56. At block 415, the encoded data is transmitted in a message to a receiving device, the messaging including the device ID in its header. *Id*. at 3:56−58. At block 420, using the device ID from the header, the receiving device accesses the key. *Id*. at 3:59−60. At block 425, the receiving device decodes the encoded data of the message using the key. *Id*. at 3:63−65.

E. Obviousness Over Harada and Roker in combination with Brijesh or Candelore

Petitioner asserts that claims 10−17 are unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Harada, Roker, and Brijesh, and over the combination of Harada, Roker, and Candelore. Pet. 14–66. Petitioner relies on Brijesh to teach using a MAC address to create a device identifier and extracting the MAC address during a MAC-layer process, as required by Elements 10.7−10.9, and claim 11. *Id*. at 22−24, 35−40, 49−50. Petitioner presents Candelore as an alternative disclosure to Brijesh for teaching these claim elements and claim 11. *Id*. at 24−26, 60−66.

Patent Owner opposes, arguing that: (1) Brijesh is not prior art; (2) Candelore is non-analogous art; (3) the asserted combinations do not teach or suggest certain claim limitations; (4) a person of ordinary skill in the art would not have been motivated to combine Candelore with Harada and Roker; (5) a person of ordinary skill in the art would not have combined the prior art teachings because Harada teaches away from non-personal information and the architectures of Harada and Roker teach away from the claimed subject matter; and (6) Petitioner's obviousness analysis is insufficient. PO Resp. 8–63.

Upon consideration of the parties' contentions and supporting evidence, we determine that Petitioner has established by a preponderance of the evidence that claims 10−17 are obvious over the combination of Harada, Roker, and Brijesh, and over the combination of Harada, Roker, and Candelore. We address each of the parties' contentions in turn.

Whether Brijesh is prior art to the challenged claims of the ’747 patent

Petitioner asserts that Brijesh is prior art under §§ 102(a) and (e), as well as § 102(b). Pet. 12−14, 22−24. Specifically, Petitioner asserts that Brijesh is prior art under § 102(b) because Brijesh was published on November 23, 2006—more than one year prior to the actual filing date (March 10, 2008) of the ’747 patent. *Id*. As support, Petitioner contends that claims 10−17 are not entitled to the benefit of the filing date of the ’195 provisional application. *Id*. In addition, Petitioner argues that, even if the challenged claims are entitled to the earlier priority date, Brijesh still qualifies as prior art under §§ 102(a) and (e) because: (1) Brijesh was filed on May 12, 2006, and published on November 23, 2006, prior to March 10, 2007, the filing date of the ’195 provisional application; and (2) Brijesh and the ’747 patent have different inventive entities. *Id*.

In this proceeding, Petitioner has the burden of persuasion to prove unpatentability by a preponderance of the evidence, which never shifts to Patent Owner, and Petitioner also has the initial burden of production. *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1378−80 (Fed. Cir. 2015). We determine that Petitioner has satisfied the initial burden of production by arguing that Brijesh is prior art to the ’747 patent under §§ 102(a), (b), and (e), and that claims 10−17 are unpatentable under § 103(a) as obvious over the combination of Harada, Roker, and Brijesh, as noted in the Institution Decision. Dec. 7−39.

As such, the burden of production has shifted to Patent Owner to argue or produce evidence that the asserted prior art combination does not render the challenged claims unpatentable, or Brijesh is not prior art to the

'747 patent, by arguing that: (1) Brijesh is not prior art under § 102(a) because Brijesh is not "by others"; (2) Brijesh is not prior art under § 102(e) because Brijesh and the '747 patent were commonly owned so that Brijesh is disqualified as prior art under § 103(c); and (3) Brijesh is not prior art under § 102(b) because the challenged claims are entitled to the benefit of the filing date of the '195 provisional application. *Cf. Dynamic Drinkware*, 800 F.3d at 1380.

Upon consideration of the parties' contentions and supporting evidence in this entire trial record, we determine that Brijesh qualifies as prior art under §§ 102(a) and 102(b) as to the challenged claims of the '747 patent for the reasons set forth below. As such, it is not necessary for us to determine whether Brijesh qualifies as prior art under § 102(e).

Brijesh is a printed publication "by others" under § 102(a)

Petitioner argues that Brijesh is prior art under §§ 102(a) and (e) because: (1) Brijesh was filed and published prior to the earliest priority date, i.e., the filing date of the '195 provisional application; and (2) Brijesh and the '747 patent have different inventive entities. Pet. 12−14, 22−23. Petitioner relies on Brijesh to teach using a MAC address to create a device identifier and extracting the MAC address during a MAC-layer process (Ex. 1106 ¶¶ 21, 25, 29−30, 35, 52, 58−61, 72). Pet. 22−24, 35−45, 49−50.

Patent Owner does not dispute that Brijesh was filed and published prior to the filing date of the '195 provisional application. *See generally* PO Resp. Rather, Patent Owner argues that Brijesh and the '195 provisional application "were 'commonly owned or subject to an obligation of

assignment to the same person' (*see* 35 U.S.C. § 103(c)) when the ['195] provisional [application] was filed on March 10, 2007." *Id*. at 38−41.

However, the prior art exclusion under § 103(c) applies to "[s]ubject matter developed by another person, which qualifies as prior art *only under one or more of subsections (e), (f), and (g) of section 102* of this title." 35 U.S.C. § 103(c)(1) (emphasis added). The statutory exclusion does not apply to subject matter that qualifies as prior art under § 102(a).

Section 102(a) recites "[a] person shall be entitled to a patent unless . . . (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent." 35 U.S.C. § 102(a) (2010). "The significant words in § 102(a) are 'known or used by others . . . before the invention thereof by the applicant.'" *In re Land*, 368 F.2d 866, 878 (CCPA 1966). The relevant inquiry is what the evidence shows as to who invented the portions of Brijesh relied upon as prior art. *See id*. at 879−80 n.11 ("[T]he proper subject of inquiry was . . . what the evidence showed as to who invented the subject matter disclosed by [the reference] which was relied on to support the rejection."); *In re DeBaun*, 687 F.2d 459, 462−63 (CCPA 1982) ("The only question . . . is whether appellant invented the relevant disclosure in the [prior art] patent.").

Here, Patent Owner's "common ownership" argument improperly conflates common ownership (who owns the patent rights) with inventive entity (who invented the subject matter). PO Resp. 38−41; Tr. 46:1−3. The court has "reject[ed] the premise that common ownership and copendency in themselves necessarily preclude consideration of a patent as a part of the

prior art." *In re Fong*, 378 F.2d 977, 980 (CCPA 1967). "A patent is 'to another' when the 'inventive entities' are different," generally. *Id*.

As Petitioner points out, the '747 patent and Brijesh have different inventive entities. Pet. 23. In particular, the '747 patent was issued to: Nitin Shan, Jasminder Banga, *Miten Sampat*, and Amul Patel. Ex. 1101, at [75]. Brijesh's inventors are Jaz Banga[7], Nitin Shah, *Brijesh Patel*, and Amul Patel. Ex. 1106, at [76]. Moreover, Patent Owner concedes that, although the '747 patent and Brijesh have three overlapping inventors, *Miten Sampat* is not an inventor of Brijesh, and *Brijesh Patel* is not an inventor of the '747 patent. PO Resp. 40; Ex. 2119, 37.

The '195 provisional application and Brijesh also have different inventive entities. *Compare* Ex. 1104, 4, 6, *with* Ex. 1106, at [76]. The '195 provisional application lists Nitin Shah and Jasminder Banga as the inventors, but not *Brijesh Patel* and *Amul Patel*. Ex. 1104, 4, 6. The fact that the '195 provisional application names two of the four inventors of Brijesh does not show that the '195 provisional application and Brijesh have the same inventive entity, as Patent Owner suggests (Tr. 50:19−20). *See Land*, 368 F.2d at 880−81 (holding that Land, as sole inventor, and Roger, as sole inventor, were each "another" to Land and Rogers as joint inventors, despite the common ownership of the references and application on appeal).

We recognize that "one's own work is not prior art under § 102(a) even though it has been disclosed to the public in a manner or form which

[7] For purposes of this Decision, we consider Jaz Banga to be the same person as Jasminder Banga.

otherwise would fall under § 102(a)." *In re Katz*, 687 F.2d 450, 454 (Fed. Cir. 1982). "What is significant is . . . whether the portions of the reference relied on as prior art, and the subject matter of the claims in question, represent the work of a common inventive entity." *Riverwood Int'l. Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1356 (Fed. Cir. 2003); *see also EmeraChem Holdings, LLC v. Volkswagen Grp. of America, Inc.*, 859 F.3d 1341, 1345 (Fed. Cir. 2017).

Here, Patent Owner proffers a Declaration of Nitin Shah, Ph.D., the first named co-inventor of the '747 patent and the '195 provisional application. Ex. 2109. However, Dr. Shah's Declaration merely authenticates the evidence (i.e., certain employment agreements, prior litigation documents, and patent assignment agreement) that supports Patent Owner's "common ownership" argument. Ex. 2109 ¶¶ 6−10; PO Resp. 39−42. Significantly, Dr. Shah's Declaration does not address who invented the subject matter disclosed in Brijesh, let alone contain a statement or explanation that Dr. Shah, himself, invented the portions of Brijesh relied upon as prior art. Ex. 2109 ¶¶ 6−10.

The Federal Circuit has explained that "it was incumbent on appellant to provide satisfactory evidence, in light of the total circumstance of the case, that the reference reflected his own work." *EmeraChem*, 859 F.3d at 1345−48 (citing *DeBaun*, 687 F.2d at 463) (holding that a naked assertion by the inventor is insufficient to demonstrate that the cited portions of the reference are not "by another" because the case law "does not stand for the proposition that a declaration alone is always sufficient to support an inventor's claim to inventorship"); *see also Allergan, Inc. v. Apotex Inc.*, 754

F.3d 952, 968−970 (Fed. Cir. 2014) (holding that the references are prior art to the patent at issue because "appellees have produced no evidence . . . and provided no supported explanation demonstrating that the Brandt references were in fact printed publications authored by [the patent's co-inventor] for the purposes of § 102(a)").

Here, as in *Allergan*, Dr. Shah's Declaration does not provide evidence or explanation demonstrating that Brijesh represents Dr. Shah's own work. Ex. 2109. Nor does Patent Owner proffer other evidence or sufficient explanation to show the subject matter disclosed in Brijesh and the '747 patent have a common inventive entity. PO Resp. 39−42.

Moreover, the fact that the '195 provisional application names two of the four inventors of Brijesh does not show that the portions of Brijesh relied on as prior art, and the subject matter of the challenged claims, represent the work of a common inventive entity, as Patent Owner suggests. As discussed below, the '195 provisional application lacks adequate written support for the challenged claims. It refers to Brijesh, but it does not incorporate Brijesh by reference. The two quotations from Brijesh in the '195 provisional application merely relate to the general description of a "directed media component." Ex. 1103, 7. The '195 provisional application contains no disclosure of the portions of Brijesh relied on as prior art—namely, using a MAC address to create a device identifier or extracting a MAC address during a MAC-layer process. In fact, the '195 provisional application makes clear that its "novel concept" differs from Brijesh's disclosure. Ex. 1103, 7 ("This novel concept is further application of a previous disclosure 'Directed media based on user preferences' Application #: 20060265507 [of

Brijesh].”). There is no description or explanation as to how the system in the ’195 provisional application “is further application” of Brijesh. *Id*.

For the foregoing reasons, there is insufficient evidence in the record to show that the portions of Brijesh relied on as prior art, and the subject matter of the challenged claims, represent the work of a common inventive entity. Therefore, we find that Brijesh is prior art under § 102(a) to the ’747 patent, regardless of whether the ’747 patent is entitled to the benefit of the ’195 provisional application’s filing date.

Brijesh is a printed publication under § 102(b)

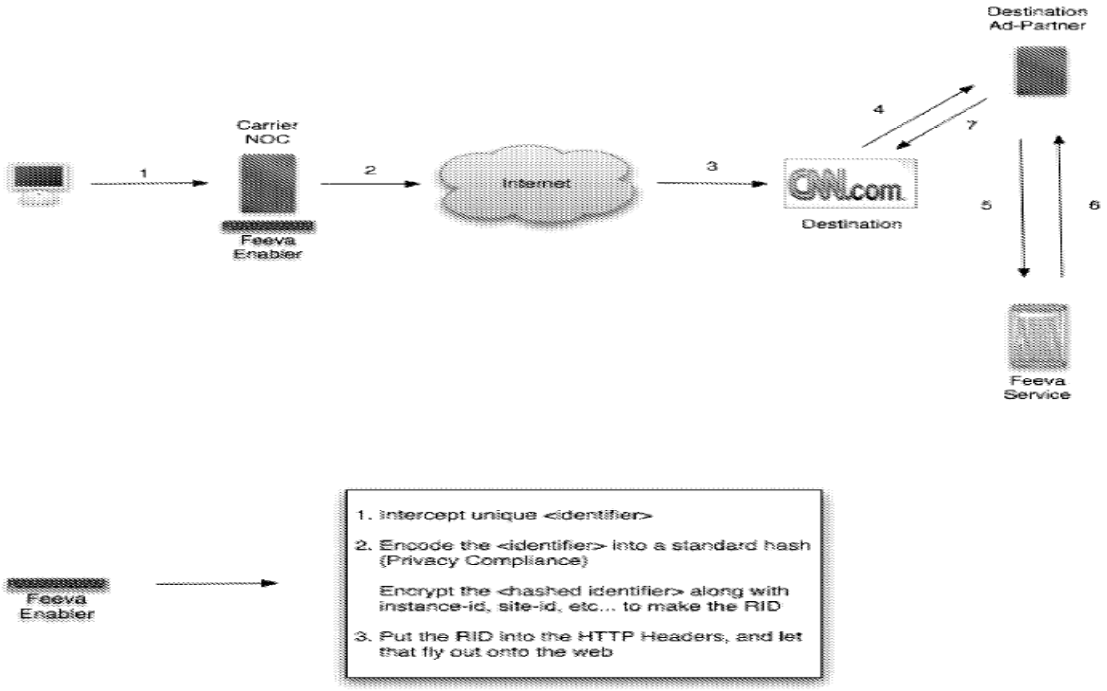
Petitioner asserts that Brijesh is prior art under § 102(b) because Brijesh was published more than one year prior to the actual filing date of the ’747 patent. Pet. 22−23. As support, Petitioner contends that claims 10−17 are not entitled to the benefit of the ’195 provisional application’s filing date, citing Mr. Gray’s Declaration (Ex. 1108 ¶ 3) for support. Pet. 12−14.

For a “non-provisional utility application to be afforded the priority date of the provisional application,” “the written description of the provisional [application] must adequately support the claims of the non-provisional application” by showing the applicant “had invented each feature that is included as a claim limitation.” *New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1294−95 (Fed. Cir. 2002). The test for determining compliance with the written description requirement under 35 U.S.C. § 112, ¶ 1, is whether the original disclosure of the earlier-filed application reasonably would have conveyed to one with ordinary skill in the

art that the inventor had possession of the claimed subject matter at the time of the earlier-filed application. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc); *In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983). The specification must convey with reasonable clarity to those skilled in the art that the inventor was in possession of the claimed subject matter, as of the filing date of the earlier-filed application. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563−64 (Fed. Cir. 1991).

Here, upon review of the evidence in the entire trial record, we find Petitioner's showing persuasive. Mr. Gray testifies that the '195 provisional application does not provide adequate written description support for at least Elements 1.6 and 1.7 in claim 1. Ex. 1108 ¶ 3. Mr. Gray explains that the '195 provisional application contains no disclosure of any actions occurring during a MAC-layer process or the use of "a MAC address, port identifier, or hardcoded identifier." *Id*. (citing Ex. 1103; Ex. 1101, 5:11−39, 6:29−44, 8:26−60, 11:25−43, 12:21−42, Fig. 5).

Indeed, the 2-page specification and the sole figure of the '195 provisional application do not disclose any actions occurring during a MAC-layer process or the use of a device identifier, much less a MAC address, port identifier, or hardcoded identifier. Ex. 1103, 6−8. The sole figure of the '195 provisional application is reproduced below.



The figure above depicts an access network. *Id*. According to the '195 provisional application, "[t]he user (user device) logs onto the network, and attempts to connect to the world-wide-web." *Id*. "During this process, the HTTP requests being made will pass through the Carrier's Network Operation Center (NOC)." *Id*. "At the Carrier NOC, the Feeva Enabler will intercept this traffic," and "tag the outgoing HTTP request HEADERS to embed Feeva Request ID's (RID)." *Id*.

The '195 provisional application, however, is silent as to generating a unique device identifier based directly on at least one of a MAC address, port identifier, or hardcoded identifier assigned to the client computer, and is also silent as to extracting non-personal information about the user during a MAC-layer process, as required by claim 10.

We are cognizant that the '195 provisional application need not describe the claimed subject matter in exactly the same way as the terms

used in the claims of the ’747 patent. *See In re Wright*, 866 F.2d 422, 425 (Fed. Cir. 1989). Nonetheless, in order to satisfy the written description support requirement, a person with ordinary skill in the art would need to have recognized that the inventor possessed what is claimed in the later-filed application as of the filing date of the earlier-filed application. *See Noelle v. Lederman*, 355 F.3d 1343, 1348 (Fed. Cir. 2004). The specification of the earlier-filed application “must contain an equivalent description of the claimed subject matter.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997).

For these reasons, we agree with Petitioner’s showing that the ’195 provisional application lacks adequate written description support for claim 10, as well as for claims 11−17, which depend from claim 10.

In its Response, Patent Owner maintains that the ’747 patent is entitled to the benefit of the filing date of the ’195 provisional application. PO Resp. 30−38. As support, Patent Owner advances several arguments. *Id*. First, Patent Owner argues that an ordinarily skilled artisan would have understood that the “unique <identifier>” corresponds to *an identifier for the user device* because the diagram and description in the ’195 provisional application disclose “a client device logging onto a carrier’s network,” citing to Mr. Smoot’s testimony for support. *Id*. at 32−33 (citing Ex. 2114 ¶¶ 65−66, 77).

Patent Owner’s argument and Mr. Smoot’s testimony are conclusory and unsupported by the disclosure of the ’195 provisional application. Nothing in the ’195 provisional application indicates that the “unique <identifier>” corresponds to a *device* identifier, as Patent Owner alleges.

Ex. 1103, 6−8. There is no description as to how the "unique <identifier>" was created or what information it contains or is based upon. *Id*. A general description of "a client device logging onto a carrier's network" does not fill the gap. Other information, such as username, identifying the specific user, could be used for logging onto a network. Ex. 1135 ¶¶ 4−5.

Indeed, Mr. Smoot conceded during cross-examination that it was possible for the system to use a *username*, instead of a device identifier. Ex. 1136, 19:6−20:7, 21:17−22:3. And Mr. Gray testifies that one of ordinary skill in the art "would have understood that a username associated with the user who is using a particular device would be able to identify both the user and the device." Ex. 1135 ¶¶ 4−5. Mr. Gray explains that the system would work if the unique identifier were a username because the username would generally be able to uniquely identify a user in a carrier network. *Id*.

Mr. Gray's testimony is consistent with the prior art of record. Notably, Roker discloses that identifying information could be the user's name, an arbitrary code assigned to the user such as a billing or accounting code, or a static IP address. Ex. 1105, 16:5−16. Thus, we credit Mr. Gray's testimony (Ex. 1135 ¶¶ 4−5) over Mr. Smoot's testimony (Ex. 2114 ¶¶ 65−66, 77). *See Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding that Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so"); *Velander v. Garner*, 348 F.3d 1359, 1371 (Fed. Cir. 2003) (noting that "[i]t is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate").

It is well settled that "[e]ntitlement to a filing date does not extend to subject matter which is not disclosed but would be obvious over what is expressly disclosed." *Lockwood*, 107 F.3d at 1571−72. "It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose." *Id*.

Accordingly, the disclosure of the '195 provisional application is not sufficient to convey to one with ordinary skill in the art that the inventors of the '195 provisional application had possession of the claimed "device identifier."

Second, Patent Owner argues, citing Mr. Smoot's testimony for support, that an ordinarily skilled artisan would have understood that: (1) a request from the client would encounter an *edge router* at the Carrier NOC where MAC address, port identifier, or other hardcoded information for the client device would be available to the Feeva Enabler; (2) the identifier would have been "based directly on at least one of a MAC address, port identifier, or hardcoded identifier . . . assigned to the client computer"; and (3) the information to be non-personal information that would have been extracted during a MAC-layer process. PO Resp. 33−34 (citing Ex. 2114 ¶ 66).

Again, Patent Owner's argument and Mr. Smoot's testimony are conclusory and unsupported by the disclosure of the '195 provisional application. Notably, the '195 provisional application is silent as to: (1) having an edge router at the Carrier NOC; (2) creating a device identifier

that is based on a MAC address, port identifier, or hardcoded identifier; and (3) extracting the user's non-personal information during a MAC-layer process. Ex. 1103.

Moreover, even assuming that an edge router exists at the Carrier NOC, Mr. Smoot does not explain adequately why the client device's MAC address, port identifier, or other hardcoded information would be available to the Feeva Enabler. Ex. 2114 ¶ 66. Mr. Smoot concedes that there could be intervening routers between the client device and carrier NOC. Ex. 1136, 7:11−21, 12:3−12. The intervening routers would render the client MAC address unavailable to the Carrier NOC because, as Mr. Smoot confirms, the intervening router would change the client device's MAC address to the intervening router's MAC address. Ex. 2114 ¶ 105; Ex. 1135 ¶¶ 6−7. Therefore, Mr. Smoot's testimony that a request from the client would encounter an edge router at the Carrier NOC where MAC address, port identifier, or other hardcoded information for the client device would be available to the Feeva Enabler is mere speculation. Ex. 2114 ¶ 66.

In addition, as discussed above, the '195 provisional application does not disclose a *device* identifier, much less a device identifier "based directly on at least one of a MAC address, port identifier, or hardcoded identifier . . . assigned to the client computer," as required by the challenged claims. Hence, there is no basis for the system in the '195 provisional application to extract the user's *non-personal* information, instead of personal information (e.g., a username), during a MAC-layer process.

As noted above, "a description which renders obvious the invention for which an earlier filing date is sought is not sufficient." *Lockwood*, 107

F.3d at 1571−72. Nor is it sufficient that the claimed subject matter merely could have been "envisioned" from the earlier disclosure. *Goeddel v. Sugano*, 617 F.3d 1350, 1356 (Fed. Cir. 2010).

Based on the evidence in this entire trial record, we do not agree with Patent Owner that the '195 provisional application would have conveyed to one of ordinary skill in the art that the inventors of the '195 provisional application had possession of Elements 1.7 and 1.8 of claim 10.

Third, Patent Owner argues that the '195 provisional application incorporates Brijesh by reference, and that Brijesh teaches both aforementioned limitations of claim 10. PO Resp. 33−36. We do not agree with Patent Owner that the '195 provisional application incorporates Brijesh by reference.

"Incorporation by reference provides a method for integrating material from various documents into a host document . . . by citing such material in a manner that makes clear that the material is effectively part of the host document as if it were explicitly contained therein." *Advanced Display Sys., Inc. v. Kent State Univ.*, 212 F.3d 1272, 1282 (Fed. Cir. 2000). "[T]he standard is whether one reasonably skill in the art would understand the application as describing with sufficient particularity the material to be incorporated." *Harari v. Lee*, 656 F.3d 1331, 1334 (Fed. Cir. 2011).

To support its "incorporation-by-reference" theory, Patent Owner relies on the following statement in the '195 provisional application: "This novel concept is further application of a previous disclosure 'Directed media based on user preferences' Application #: 20060265507 [of Brijesh]." PO Resp. 33−36 (citing Ex. 1103, 7). This statement does not contain

"incorporation-by-reference" language whatsoever. Ex. 1103, 7. There is no description or explanation as to how the system in the '195 provisional application "is further application" of Brijesh. *See generally id.* In fact, the plain language of this statement makes clear that the "novel concept" described in the '195 provisional application differs from Brijesh's disclosure. *Id*. at 7. "[A] mere *reference* to another application, or patent, or publication is not an *incorporation* of anything therein." *Callaway Golf Co. v. Acushnet Co.*, 576 F.3d 1331 (Fed. Cir. 2009) (citing *In re DeSeversky*, 474 F.2d 671, 674 (CCPA 1973)) (emphases in the original).

Furthermore, the cases cited by Patent Owner do not support Patent Owner's "incorporation-by-reference" theory. PO Resp. 35 (citing *Callaway*, 576 F.3d at 1346 (Fed. Cir. 2009); *Harari*, 656 F.3d at 1334; *Paice LLC v. Ford Motor Co.*, 881 F.3d 894, 906−10 (Fed. Cir. 2018); *Husky Injection Molding Sys. Ltd. v. Athena Automation Ltd.*, 838 F.3d 1236, 1248 (Fed. Cir. 2016)). In *Callaway*, the court explained that "the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents." *Callaway*, 576 F.3d at 1346. The court found that the host document in *Callaway*, unlike here, "identifies with specificity both what material is being incorporated by reference . . . and where it may be found." *Id*. In *Harari*, unlike here, the host document expressly states that "[t]he disclosure of the two applications are hereby *incorporate[d] by reference*." *Harari*, 656 F.3d at 1335 (emphasis added). In *Paice*, unlike here, the host document also included an unambiguous statement that "[t]his application discloses a number of improvements over and enhancements to

the hybrid vehicles disclosed in [Severinsky], which *is incorporated herein by this reference*." *Paice*, 881 F.3d at 907 (emphasis added). Also, in *Husky*, unlike here, the host document included an unambiguous statement that "[a]ll cross-referenced patents and application[s] referred to in this specification are hereby *incorporated by reference*." *Husky*, 838 F.3d at 1248 (emphasis added).

For these reasons, we find that the aforementioned statement relied upon by Patent Owner is insufficient to establish that the '195 provisional application incorporated Brijesh's disclosure by reference.

In addition, Patent Owner notes that the '195 provisional application contains two quotations from Brijesh, which are reproduced below.

> The directed media component may be a media tag identifying a media, or type of media, which should be presented to the user. Alternatively, the directed media component may be the directed media, itself.
>
> Once the directed media component is determined, the directed media component may be forward to a media server which provides the corresponding directed media to the user. The directed media may comprise advertisement, coupons, video, music, or any other media which is tailored to the user preferences.

Ex. 1103, 7; Ex. 1106 ¶¶ 11, 13.

Patent Owner argues that one of ordinary skill in the art would have looked to Brijesh to assess what the '195 provisional application adds to Brijesh. PO Resp. 33−36. Patent Owner also argues that such an artisan would have understood that Brijesh discloses creating a unique device identifier based on a MAC address, and extracting the MAC address during a MAC-layer process, as recited in claim 10. *Id*.

However, Patent Owner's argument improperly rests on the premise that Brijesh's "MAC address" disclosure is incorporated by reference. As noted above, "the standard is whether one reasonably skill in the art would understand the application as describing with sufficient particularity the material to be incorporated." *Harari*, 656 F.3d at 1334.

Nothing in those quotations teaches a unique device identifier, let alone "extracting non-personal information about the user during a [MAC] layer process" and "creating a unique device identifier . . . based directly on at least one of a MAC address, port identifier, or hardcoded identifier" as recited in claim 10. Ex. 1103, 7. Rather, the quotations expressly limit the general description of a "directed media component." *Id*. Therefore, we do not agree with Patent Owner that the '195 application incorporates by reference Brijesh's "MAC address" disclosure. PO Resp. 33−36.

Furthermore, even assuming one of ordinary skill in the art would have combined Brijesh's disclosure with the '197 provisional application's "novel concept," Patent Owner does not show that the two inventors of the '197 provisional application "had invented each feature that is included as a claim limitation." *New Railhead*, 298 F.3d at 1294−95. The '197 provisional application makes clear that its "novel concept" differs from Brijesh's disclosure. Ex. 1103, 7. As noted above, it is well settled that "[e]ntitlement to a filing date does not extend to subject matter which is not disclosed but would be obvious over what is expressly disclosed." *Lockwood*, 107 F.3d at 1571−72. "It is not sufficient for purposes of the written description requirement of § 112 that the disclosure, when combined with the knowledge in the art, would lead one to speculate as to

modifications that the inventor might have envisioned, but failed to disclose." *Id*. A "mere wish or plan" for obtaining the claimed invention does not satisfy the written description requirement. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997).

For the foregoing reasons, we determine that claims 10−17 of the '747 patent are not entitled to the benefit of the filing date of the '195 provisional application. Hence, Brijesh also qualifies as prior art under § 102(b).

Whether Candelore is analogous art

A prior-art reference is considered to be analogous if it is either: (1) from the same field of endeavor, regardless of the problem addressed; or (2) reasonably pertinent to the particular problem with which the inventor is concerned, regardless of the field of endeavor. *See In re Clay*, 966 F.2d 656, 658–59 (Fed. Cir. 1992). "A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." *Id.* at 659.

Petitioner argues that Candelore is analogous art to the '747 patent because it is reasonably pertinent to the problem addressed by the '747 patent. Pet. 24−26. According to Petitioner, Candelore is directed to addressing "security problems such as privacy and denial of service" in protecting "data communicated across a network" from a user's device. *Id*. (citing Ex. 1107, 1:10−32, 2:6−12). Candelore indicates that its invention

also applies when the user's device accesses data from web pages and web sites. Ex. 1107, 2:9−25, 5:17−20. The '747 patent similarly recognizes that its disclosed invention may provide benefit in the areas of security and access control. Ex. 1101, 14:28−35. Mr. Gray testifies that a person of ordinary skill in the art would have understood that Candelore "logically would have commended itself to an inventor considering the problems addressed by the '747 patent." Ex. 1108 ¶ 55.

We agree with Petitioner and Mr. Gray's testimony that Candelore is reasonably pertinent to the '747 patent's problem, at least with the problem of maintaining user privacy in an electronic communication over a network, as they are consistent with the '747 patent disclosure and Candelore. *See, e.g.*, Ex. 1101, 2:59−60 (noting "increasing concerns about privacy and data security"), 6:44−48 (noting "prohibitions dictating that end user name, race, phone numbers, addresses, and other personally identifiable or sensitive information is not collected/disclosed in adherence to restriction or local laws, such as those directed to privacy, and user trust"), 8:38−39 (noting that the unique device identifier is encoded using a standard one-way hash algorithm to create a local user identifier and, "[a]lternatively, any equivalent coding method that *ensures adequate privacy* may be used to encode the [unique device identifier]" (emphasis added)), 14:29−30 (noting "the present invention may also provide benefit in the areas of security and access control"); Ex. 1107, 1:12−13 (noting that "security problems such as privacy and denial of service exist"), 1:30−32, 1:36−40, 2:6−9, 3:4−5 (noting that "[a]ll sensitive messages sent and received by the device can be sent encrypted using these keys"), 3:50−65.

Indeed, Patent Owner and Mr. Smoot concede that the '747 patent is concerned with the problem of "maintaining user privacy." PO Resp. 15; Ex. 2114 ¶ 98 (noting that the '747 patent "sought to . . . maintain user privacy"). Nevertheless, Patent Owner argues that Candelore is non-analogous art as it is not reasonably pertinent to the problem addressed by the '747 patent. PO Resp. 41−54. As support, Patent Owner avers that the problem Candelore sought to solve and its solution are narrower than Petitioner argues. *Id*. at 42−44. Patent Owner contends that "Candelore sought to solve a specific problem in the cable set-top box context, arising from a signaling method that did not have built in scrambling/de-scrambling capability." *Id*. at 43−44. Patent Owner alleges that Candelore was drawn to protecting data *to* the user's device, not *from* the user's device. *Id*. Patent Owner further argues that the '747 patent does not seek to address security in cable networks or Internet Protocol Television (IPTV) networks. *Id*. at 44−50.

However, Patent Owner's arguments rest on an unduly narrow reading of Candelore, focusing on a few exemplary alternative embodiments. Significantly, Candelore defines its invention broadly by stating that its invention is directed to "[a] method and apparatus for generating keys to encrypt communication in a network using distinctive device identification," and "[i]n an [Internet Protocol] network, the invention makes use of the unique Media Access Control (MAC) address header information as the distinctive device identification." Ex. 1107, 1:36−40. Candelore also broadly states that "[t]he present invention provides a method and apparatus for generating a secure key which may be used to encode and decode data

communicated across a network, such as a cable network," noting that a cable network is simply an example. *Id*. at 2:6−9.

Nothing in Candelore restricts its invention to solving the user privacy problem in the limited context of a set top box, a DAVIC OOB connection, or cable network, as Patent Owner alleges. *Id*. at 1:36−40, 1:65−2:9. Notably, the embodiment shown in Figure 4 is not limited to a set-top box, a DAVIC OOB connection, or a cable network, but rather illustrates Candelore's invention broadly by teaching that "the device identification may be a distinctive device identification, such as the MAC address delivered as part of the header source address information of an [Internet Protocol] message." *Id*. at 3:50−65.

In addition, Patent Owner's assertion that Candelore was drawn to protecting data *to* the user's device, not *from* the user's device, is contrary to Candelore's disclosure. *Id*. at 43−44. Candelore expressly teaches *two-way communications* in that "[a]ll sensitive messages *sent and received by the device* can be sent encrypted using these [device] keys." Ex. 1107, 3:4−5 (emphasis added).

For these reasons, we are not convinced by Patent Owner's arguments that the problem Candelore sought to solve and its solutions are narrower than Petitioner argues, or that "Candelore sought to solve a specific problem in the cable set-top box context, arising from a signaling method that did not have built in scrambling/de-scrambling capability." PO Resp. 43−44.

Furthermore, Patent Owner's argument that the '747 patent does not seek to address security in cable networks is unavailing. *Id*. at 44−54. The '747 patent clearly indicates that the problem of maintaining user privacy is

a concern regardless of the network type. Ex. 1101, 2:59−60, 6:44−48, 8:38−39, 14:29−30. For instance, the '747 patent discloses that systems and methods of the present invention can be implemented on a variety of networks, including cable network. *Id*. at 6:18−28.

For these reasons, we determine that Petitioner has established that Candelore is analogous art to the '747 patent because Candelore is reasonably pertinent to the patentee's problem, at least with respect to providing user privacy in an electronic communication over a network.

Claims 10, 11, and 17

Request identifier

One of the parties' disputes centers on the limitation of claim 10 that requires generating a *request identifier* from non-personal information and embedding it in an extensible field. Ex. 1001, 18:58−63. In this regard, Petitioner asserts that Harada teaches augmenting an HTTP header with a UserName, location information, demographic information, and instance information. Pet. 43 (citing Ex. 1104, 6:25, 7:9, 11:1−21, Fig. 3B). Although Petitioner acknowledges that Harada does not disclose a hashed MAC address, Petitioner maintains that one of ordinarily skill in the art would have substituted a hashed MAC address for Harada's UserName in the HTTP fields, in view of Roker and Brijesh, or in view of Roker and Candelore. *Id*. at 43−46, 60−66.[8] Petitioner submits that the combined

[8] For the second obviousness ground based on Candelore, Petitioner expressly incorporates by reference its analysis (Pet. 26−60) for the first obviousness ground. *Id*. at 60−61.

information discloses the claimed "request identifier" because it meets all the parameters recited in claim 10 and it is embedded in the request. *Id*. at 45; Ex. 1108 ¶ 109.

Patent Owner contends that the references do not disclose generating and embedding a request identifier, advancing several arguments. PO Resp. 10−11, 20−26. First, Patent Owner argues that the references do not disclose encrypting and embedding the claimed information within a *single* extensible HTTP header field. *Id*. Patent Owner admits that Harada "discloses spreading various types of profile data, some encrypted and some unencrypted, across multiple header fields," and that "Roker states that information is included in additional headers (plural) or HTTP header tags (plural)." *Id*. at 22−23, 25.

However, during oral hearing, Patent Owner conceded that "[i]t's certainly the case that 'a' or 'an' traditionally in claim construction means one or more." Tr. 41:13−42:2. Additionally, as discussed above in our claim construction analysis, in view of the specification, we interpret the claim term "an extensible field" to mean "one or more extensible fields."

Second, Patent Owner argues that Harada's UserName cannot be the local user identifier because it is not a MAC address and not hashed, and that Harada does not disclose the request identifier because the UserName is not encrypted and combined with the other information. PO Resp. 22−26. Patent Owner also contends that, for claim 17, Petitioner relies only on Harada's UserName to teach the user identifier. *Id*. at 23−26.

However, Patent Owner's arguments improperly attack Harada individually, while each of Petitioner's obviousness grounds is based on a

combination of prior art references. The test for obviousness is whether the references, taken as a whole, would have suggested the claimed subject matter to a person of ordinary skill in the art at the time the invention was made. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (noting that one cannot show nonobviousness by attacking references individually where the rejections are based on a combination of references).

It is undisputed that Harada teaches augmenting an HTTP header with location information, demographic information, and instance information. PO Resp. 22−26. As Petitioner notes, Harada discloses placing the following four specified pieces of information in an augmented HTTP request: (1) user identifier ("User Name," Ex. 1104, 6:25); (2) timing information ("the session key can include . . . a timestamp," *id*. at 11:1−4, 17−21); (3) geographic information ("ZipCode," *id*. at 6:25); and (4) demographic information ("YoungTeen," *id*. at 7:9). Pet. 43. Figure 3B of Harada, reproduced below with blue annotation added, shows that the combined information is embedded in the HTTP header.

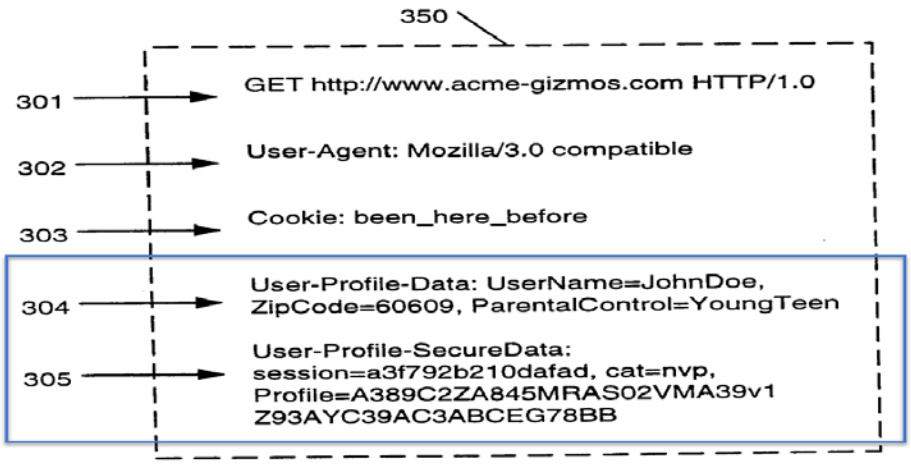


Fig. 3B

Figure 3B above shows a HTTP header containing user profile data fields 304 and 305 (highlighted with a blue box). Ex. 1104, Fig. 3B.

We agree with Petitioner that a relevant artisan would have had reason to substitute a hashed MAC address for the UserName as the user identifier in the HTTP fields, and to encrypt all of the user profile information, to protect user privacy. Pet. 31−37, 40−44, 62−67. "[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR*, 550 U.S. at 417. Here, the evidence of record shows that substituting a hashed MAC address for the UserName in the HTTP field and encrypting all of the user profile information to protect user privacy is not beyond the skill of a pertinent artisan.

Notably, Mr. Gray testifies that such an artisan would have been motivated to substitute a hashed MAC address for the UserName because: (1) it is desirable for service providers to act as trusted keepers of user information by removing identifiable information before allowing it to leave service provider's network; (2) "the request can be further intercepted along its path"; and (3) replacing the UserName with a hashed MAC address would have the predictable result of providing a unique identifier for the user that obscures the user's identity, maintaining user privacy. Ex. 1108 ¶ 108 (citing Ex. 1105, 11:1−10, 12:4−10). Mr. Gray explains that a relevant artisan also would have been motivated to preserve a user identifier, rather than eliminate it from the augmented HTTP request, so that the content server could avoid showing duplicate advertisements to the same

user. *Id*. (citing Ex. 1129, 1:23−27). Further, Mr. Gray testifies that an ordinarily skilled artisan would have been motivated to encrypt all of the user profile information because: (1) Harada discloses that "field 305 may include encrypted user profile data" using its SecureData protocol; (2) Roker teaches that it is "preferable to use" encryption since "the request can be further intercepted along its path"; and (3) substituting encrypted user profile information for unencrypted user profile information would provide the predictable result that user profile information would be transmitted from proxy server to the content provider in encrypted, rather than unencrypted, form. Ex. 1108 ¶ 107 (citing Ex. 1104, 6:25−26; Ex. 1105, 12:4−10). We credit Mr. Gray's testimony as it is consistent with the prior art of record. Ex. 1104, 6:25−26; Ex. 1105, 11:1−10, 12:4−10; Ex. 1129, 1:23−27.

For claim 17, Petitioner relies on its analysis for claims 10 and 11. Pet. 59−60. As discussed above, Petitioner has shown that one of ordinary skill in the art would have substituted a hashed MAC address for the UserName as the user identifier in HTTP field 304, and would have encrypted all of the user profile information, including the hashed MAC-address user identifier, in HTTP fields 304, 305. *Id*. at 43−46. Petitioner further explains that Harada's user profile data field 305 is an alphanumeric string and a portion of it is in hexadecimal format ("session=a3f792b210dafad"). Pet. 59−60. Mr. Gray also testifies that a pertinent artisan would have been motivated to place all of fields 304, 305 in hexadecimal form, as it was well known in the art that expressing information as hexadecimal value is more efficient, allowing it to be

expressed in fewer bits at a lower data transmission costs. Ex. 1108 ¶¶ 40, 120, 121, 138−140.

Therefore, we are not convinced by Patent Owner's arguments that Harada does not disclose a local user identifier or a request identifier, or that Petitioner relies only on Harada's UserName to teach the user identifier.

Rather, based on the evidence in this entire trial record, we determine that Petitioner has demonstrated by a preponderance of the evidence that the combination of Harada, Roker, and Brijesh, as well as the combination of Harada, Roker, and Candelore, teach or suggest generating and embedding a request identifier in an HTTP header field, as recited in claims 10, 11, and 17. And, Petitioner has adequately articulated a reason supported by rational underpinnings for combining the teachings of Harada, Roker, and Brijesh, as well as the teachings of Harada, Roker, and Candelore.

Using a MAC address to create a device identifier and extracting the MAC address during a MAC-layer process

Petitioner relies on Brijesh, and alternatively Candelore, in combination with Harada and Roker, to disclose using a MAC address to create a unique device identifier and extracting the MAC address during a MAC-layer process. Pet. 22−26, 35−40, 49−50, 60−66.

Patent Owner opposes, advancing several arguments. PO Resp. 9−20. First, Patent Owner argues that Harada relies heavily on *personal* information (e.g., a user name) to identify a user and Harada uses the IDENT protocol, which uses personal information. *Id*. (citing Ex. 1104, 6:11−19, 6:24−25). According to Patent Owner, Harada uses the network information in conjunction with the user name to look up the user profile

information in a database and place that in the header, but the network information is not being used as a device identifier or embedded in an HTTP header field. Tr. 29:17−30:2, 32:21−33:18.

However, Patent Owner's arguments improperly rest on the premise that Harada's teaching is limited to personal information, failing to consider Harada as a whole. PO Resp. 9−20. As Petitioner notes, Harada's proxy server already makes use of *non-personal* information extracted during a network process by extracting the user's TCP/IP address and port number from the packet headers in order to link the user's device with the user's profile stored in database. Pet. 35 (citing Ex. 1108 ¶ 90; Ex. 1104, 6:9−16). Mr. Smoot conceded during cross-examination that this network connection information was "not personal information." Ex. 1136, 38:16−39:14.

In addition, the sentence "[a] proxy server *also may* identify a user using the IDENT protocol" (Ex. 1104, 6:16−17, emphasis added) does not show that Harada is "relying only on personal identifiable information," as Patent Owner argues (Tr. 33:12−18; PO Resp. 15). Indeed, Mr. Smoot admitted that the IDENT protocol is merely an *alternative embodiment*. Ex. 1136, 39:20−40:3. More importantly, Harada makes clear that "[a] user profile may be selected from the database 220 based on the *identifying information associated with a particular computer or user of that computer*." Ex. 1104, 6:6−7 (emphasis added). The Patent Owner's disregard of Harada's teaching concerning non-personal identifying information violates the principle that "[a] reference must be considered for everything it *teaches* by way of technology and is not limited to the particular *invention* it is describing and attempting to protect." *EWP Corp.*

v. Reliance Universal Inc., 755 F.2d 898, 907 (Fed. Cir. 1985) (emphases in original); *see also In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012).

Therefore, we are not convinced by Patent Owner's argument that Harada relies heavily on *personal* information (e.g., a user name) to identify a user and Harada uses the IDENT protocol.

In addition, Patent Owner's argument that Harada uses the network information to look up the user profile information in a database and place that in the header, but the network information is not being used as a device identifier or embedded in an HTTP header, is inapposite. Patent Owner again improperly attacks Harada individually. *See Merck*, 800 F.2d at 1097; *Keller*, 642 F.2d at 426.

Petitioner relies on Brijesh, and alternatively Candelore, in combination with Harada and Roker, to teach using a MAC address to create a device identifier and extracting the MAC address during a MAC-layer process. Pet. 22−26, 35−40, 49−50, 60−66. Indeed, Patent Owner and Mr. Smoot concede that Brijesh "disclose[s] the 'unique device identifier' limitation, including that the identifier be 'based directly on at least one of a MAC address, port identifier, or hardcoded identifier embodied in software or hardware and assigned to the client computer,'" and a pertinent artisan would have understood that "the information described [in Brijesh] would have been extracted during a MAC-layer process." PO Resp. 33−35; Ex. 2114 ¶ 69 (citing Ex. 1106, Abstract, ¶¶ 25, 35, 41, 58, 72). And there is no dispute that Candelore discloses creating a device identifier based on a MAC address and one of ordinary skill in the art would have recognized that

the MAC address is extracted during a MAC-layer process. *See generally* PO Resp.; Pet. 24−26, 60−66; Ex. 1105, Abstract, 2:42−50, 3:44−49, 3:66−4:3, Figs. 3, 5.

As discussed previously, we agree with Petitioner that, in view of Roker and Brijesh or Roker and Candelore, one of ordinary skill in the art would have had reason to substitute a hashed MAC address for Harada's UserName in the HTTP fields and to encrypt all of the user profile information, to protect user privacy. In addition, Mr. Gray testifies that such an artisan would have had reason to use a MAC address to create a device identifier because Roker teaches that "[t]he purpose of the identification is to link the user's Internet address to a static unique identifier for the authenticated user on the network," and Brijesh teaches that its device identifiers are "persistent" and based on MAC address, to create a unique anonymous identifier. Ex. 1108 ¶¶ 90−96 (citing Ex. 1105, 16:14−16 and Ex. 1106 ¶¶ 21, 25). Mr. Gray also testifies that a relevant artisan would have used a MAC address to create a device identifier, as taught by Candelore, in the combination of Harada and Roker because a MAC address is assigned to a network interface card ("NIC") of a computer and is one of the best ways to ensure that it statically and uniquely identifies the user's computer. *Id*. ¶¶ 18−27, 141−144 (citing Ex. 1107, 1:38−49, 2:42−50, 3:54; Ex. 1111, 4). We credit Mr. Gray's testimony as his explanations and reasoning are consistent with the prior art of record. Ex. 1105, 16:13−16; Ex. 1106 ¶¶ 21, 25; Ex. 1107, 1:38−49, 2:42−50, 3:54; Ex. 1111, 4.

For these reasons, we are not convinced by Patent Owner's argument that Harada uses the network information to look up the user profile

information in a database and place that in the header, but the network information is not being used as a device identifier or embedded in the HTTP header.

Second, Patent Owner argues that Harada does not support an "obvious to try" rationale for "extracting information from the MAC layer to identify the user." PO Resp. 15−17. However, as Petitioner notes, "the standard Open System Interconnection (OSI) network model traditionally contains only seven layers of which the MAC layer is the second"—a finite number of identified, predictable solutions. Pet. 36 (citing Ex. 1108 ¶¶ 16−19, 91). In any event, that is only one of several alternative reasons submitted by Petitioner as to why an ordinarily skilled artisan would have had reason to extract information during a MAC-layer process. *Id*.

Notably, Mr. Gray testifies that there were two well-known methods for extracting the MAC address of a device: (1) extracting it from an Ethernet frame sent by the device, or (2) using the Address Resolution Protocol (ARP) to obtain the MAC address associated with a particular network address (e.g., IP address). Ex. 1108 ¶¶ 18−26, 93 (citing Ex. 1125, 30; Ex. 1132, 11:17−45). Mr. Gray explains that in both of these methods, MAC addresses are extracted during a MAC-layer process. *Id*. ¶ 93. Mr. Gray also testifies that Brijesh provides further reasons for a service provider to obtain the MAC address by extracting it from an Ethernet header during a MAC-layer process. *Id*. ¶ 94 (citing Ex. 1106 ¶¶ 35, 52, 58).

As noted above, Patent Owner and Mr. Smoot concede that Brijesh "disclose[s] the 'unique device identifier' limitation, including that the identifier be 'based directly on at least one of a MAC address, port identifier,

or hardcoded identifier embodied in software or hardware and assigned to the client computer,'" and a pertinent artisan would have recognized "the information described [in Brijesh] would have been extracted during a MAC-layer process." PO Resp. 33−35; Ex. 2114 ¶ 69 (citing Ex. 1106, Abstract, ¶¶ 25, 35, 41, 58, 72). And, there is no dispute that Candelore discloses creating a device identifier based on a MAC address and a pertinent artisan would have recognized that the MAC address is extracted during a MAC-layer process. *See generally* PO Resp.; Pet. 24−26, 60−66; Ex. 1105, Abstract, 2:42−50, 3:44−49, 3:66−4:3, Figs. 3, 5.

Therefore, Patent Owner's argument that Harada does not support an "obvious to try" rationale for "extracting information from the MAC layer to identify the user" is misplaced. PO Resp. 15−17.

Finally, Patent Owner argues that, unlike a router or gateway, a MAC address would generally not be available to Harada's proxy server because the MAC address would be removed by an intermediary router between the client device and the proxy server. *Id*. at 17−18.

However, Patent Owner's argument again improperly attacks Harada individually, ignoring Petitioner's other explanations and evidence (Pet. 28−29 (citing Ex. 1105, Abstract, 9:6−8, 8:12−14, 13:12−21, Fig. 2)). *Keller*, 642 F.2d at 426. In particular, Patent Owner fails to recognize that Petitioner relies on both Harada and Roker to teach the claimed "router device" in Element 10.1. Pet. 27−29 (asserting that "[a person of ordinary skill in the art] would have had reason to couple router 50 [of Roker] with . . . the proxy server in Harada in order to reduce latency"). Notably, Mr. Gray testifies that an ordinarily skilled artisan would have understood that

Roker discloses intercepting a request at a router or routing device because: (1) router 50 intercepts requests by passing them to other location (e.g., network device 70, cache 60); and (2) network device 70, which "intercepts incoming and outgoing packets," "may include . . . router 50." Ex. 1108 ¶ 75 (citing Ex. 1105, Abstract, 9:6−8, 13:12−21, Fig. 2). Mr. Smoot conceded during cross-examination that he had no reason to believe that client 10's MAC address in Roker would not be available to router 50 or network device 70. Ex. 1136, 33:8−12.

Moreover, Mr. Gray testifies that, in light of Roker's teachings, an ordinarily skilled artisan "would have been motivated to couple router 50 [of Roker] with . . . the proxy server in Harada in order to reduce latency." Ex. 1008 ¶ 75 (citing Ex. 1105, Abstract, 9:6−8, 13:12−21, Fig. 2). Mr. Gray explains that "close physical proximity reduces travel time over wires, thereby decreasing the amount of time it takes for a packet to travel from one network device to another." *Id*. We credit Mr. Gray's testimony as it is supported by the prior art disclosures. Ex. 1105, 9:6−8, Fig. 2.

Accordingly, Patent Owner's argument that a MAC address would generally not be available to Harada's proxy server is unavailing.

For the foregoing reasons, we determine that Petitioner has established by a preponderance of the evidence that the combination of Harada, Roker, and Brijesh, as well as the combination of Harada, Roker, and Candelore, teach or suggest Elements 10.7−10.9 and claim 11 and Petitioner has adequately articulated reasons supported by rational underpinnings to combine the prior art teachings. Patent Owner's arguments do not undermine Petitioner's showing.

Motivation to combine Candelore with Harada and Roker

As discussed above, we determine that Petitioner has articulated reasons to combine Candelore with Harada and Roker. In its Response, Patent Owner advances several arguments asserting that one of ordinary skill in the art would not have been motivated to combine Candelore with Harada and Roker. PO Resp. 19−20, 54−55. First, Patent Owner argues that Candelore's MAC address header information is used "for generating keys to encrypt communication in a network" (Ex. 1107, 1:36−37), not for the purpose of serving as a "code unique to the permitted user (subscriber) profile," as in Roker (Ex. 1105, 16:11). PO Resp. 54.

However, it is well-settled that simply because two references have different objectives does not preclude one of ordinary skill in the art from combining their respective teachings. *In re Heck*, 699 F.2d 1331, 1333 (Fed. Cir. 1983) ("The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned."); *KSR*, 550 U.S. at 420 ("The second error of the Court of Appeals lay in its assumption that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem."). Instead, "[a] reference must be considered for everything it *teaches* by way of technology and is not limited to the particular *invention* it is describing and attempting to protect." *EWP*, 755 F.2d at 907; *Applied Materials*, 692 F.3d at 1298.

Here, Candelore discloses that "[i]n an IP network, the invention makes use of the unique Media Access Control (MAC) address header information as the distinctive device identification," and that a MAC address

"provides a unique identifier." Ex. 1107, 1:36−40, 2:43−44. Harada makes clear that either the computer identifying information or user information may be used for identifying the user. Ex. 1104, 6:6−7. Moreover, Roker teaches that, because the user's request can be further intercepted, it is preferable to use the encoded key to protect the privacy of the user's information. Ex. 1105, 12:6:10.

As discussed above, Mr. Gray testifies that replacing the UserName with a hashed MAC address would have the predictable result of providing a unique identifier for the user that obscures the user's identity, maintaining user privacy. Ex. 1108 ¶ 108 (citing Ex. 1105, 11:1−10, 12:4−10). Mr. Gray also testifies that it is desirable for service providers to act as trusted keepers of the user information by removing identifiable information before allowing it to leave service provider's network. *Id*. Mr. Gray explains that an ordinarily skilled artisan would have been motivated to preserve a user identifier, rather than eliminate it from the augmented HTTP request, so that the content server could avoid showing duplicate advertisements to the same user. *Id*. (citing Ex. 1129, 1:23−27). We credit Mr. Gray's testimony as it is consistent with the prior art of record. *See, e.g.*, Ex. 1104, 6:25−26; Ex. 1105, 11:1−10, 12:4−10; Ex. 1129, 1:23−27.

Therefore, we are not convinced by Patent Owner's argument that Candelore's MAC address header information is used "for generating keys to encrypt communication in a network," (Ex. 1107, 1:36−37), not for the purpose of serving as a "code unique to the permitted user (subscriber) profile," as in Roker (Ex. 1105, 16:11).

Second, Patent Owner argues that Roker would not have encouraged an ordinarily skilled artisan to use different identifiers, but instead would have cautioned such an artisan to rely on the relevant service provider's identifier. PO Resp. 19−20, 54−55 (citing Ex. 2114 ¶¶ 134−137). In Patent Owner's view, Roker seeks to mine a service provider's information about a particular user, and therefore relies on the service provider's chosen method of identifying a user, so that the user information can be located in the service provider's database. *Id*. (citing Ex. 1105, 16:10−14).

Patent Owner rests on an unreasonable narrow reading of Roker, however. Roker teaches that "[t]he nature of the identification method is arbitrary" and provides examples in which the system can "link the user's Internet address to a static unique identifier for the authenticated user on the network." Ex. 1105, 16:10−16. Roker indicates that a "static IP address" may be used as a unique code for identifying the user, not limited the billing or accounting code of the service provider. *Id*. Moreover, Mr. Gray testifies that it was well known in the art that a commonly used method by service providers for identifying user devices involved using MAC addresses. Ex. 1135 ¶ 11 (citing Ex. 1106 ¶ 35; Ex. 1108 ¶¶ 25−26). Mr. Gray explains that the fact that some service providers may use a proprietary method for identifying users does not mean that a pertinent artisan would have been discouraged from using commonly known identifiers. *Id*. Indeed, there is no dispute that Candelore teaches using a MAC address to create a unique device identifier for identifying the user's computer. Ex. 1107, 1:33−40, 2:42−44. "The 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.

Therefore, we are not convinced by Patent Owner's argument that an ordinarily skilled artisan would not have been encouraged to use a MAC address as a unique device identifier, in light of Roker and Candelore.

Third, Patent Owner argues that the cited portions of Roker do not provide specific motivation to combine Candelore with Harada and Roker for applying a one-way hash on the unique device identifier, as required by Element 10.9 and claim 11. PO Resp. 55.

However, Patent Owner narrowly focuses only on a portion of Petitioner's analysis in isolation, ignoring other supporting explanations and evidence.[9] As Petitioner notes, Roker provides evidence that a person of ordinary skill in the art would have had reason to protect a user's identity, maintaining user privacy. Pet. 39, 49. Indeed, Roker discloses that, because the request can be further intercepted, it is preferable to use the encoded key to protect the privacy of the user's information, and that "[t]he encryption and encoding method in the preferred embodiment are conventionally available in the art." Ex. 1105, 12:6−10.

Further, Mr. Gray testifies that it is important to protect the privacy of a client's MAC address because MAC addresses are sensitive information that usually are not known beyond the local area network, and not available

[9] For the second obviousness ground based on Harada, Roker, and Candelore, Petitioner expressly incorporates by reference its analysis (Pet. 26−60) for the first obviousness ground. *Id*. at 60−61.

across the Internet. Ex. 1108 ¶¶ 27, 99. Mr. Gray explains that the need to protect the privacy of the client MAC address would have motivated a relevant artisan to hash the MAC address before it left the service provider's network, and to apply a one-way hash because a reversible hash would inadequately protect privacy. *Id*. ¶¶ 34, 99 (citing Ex. 1111, 3). We credit Mr. Gray's testimony as it is consistent with the prior art of record. Ex. 1105, 12:6−10; Ex. 1111, 3; Ex. 1107, 2:42−45, 3:66−4:3, Fig. 5.

We agree with Petitioner that an ordinarily skilled artisan would have had reason to apply a one-way hash algorithm to the MAC address disclosed in Candelore (Ex. 1107, 2:42−45, 3:66−4:3, Fig. 5) in order to prevent the MAC address from being known outside the network. Pet. 39−40. And, it would have been obvious because it would merely be the application of known methods for maintaining user privacy. *KSR*, 550 U.S. at 417.

Therefore, we are not convinced by Patent Owner's argument that the cited portions of Roker do not provide specific motivation to combine Candelore with Harada and Roker for applying a one-way hash on the unique device identifier. For the foregoing reasons, we determine that Petitioner has articulated sufficient reasons supported by rational underpinnings to combine Candelore with Harada and Roker.

Teaching away arguments

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553

(Fed. Cir. 1994). Thus, the "mere disclosure of alternative designs does not teach away." *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004). Furthermore, just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes. *Gurley*, 27 F.3d at 553.

Patent Owner advances two teaching away arguments. First, Patent Owner argues that Harada teaches away from using non-personal information to create a device identifier because of "Harada's heavy reliance on personally identifiable information." PO Resp. 15.

However, nothing in Harada discourages an ordinarily skilled artisan from using non-personal information to creating a unique device identifier, or to lead the ordinarily skilled artisan in a direction divergent from the path taken by Applicant. More importantly, Patent Owner's argument erroneously rests on the premise that Harada is relying only on personal information to identify the user. As discussed above, Harada makes clear that either the computer identifying information (i.e., non-personal information) or user information may be used. *See, e.g.*, Ex. 1104, 6:6−7. Using personal information is an alternative way to identify the user in Harada, but it is not the only way, as Patent Owner avers. "[M]ere disclosure of alternative designs does not teach away." *Fulton*, 391 F.3d at 1201; *Gurley*, 27 F.3d at 553 (noting that just because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes). For these reasons, we are not convinced by Patent Owner's argument that Harada teaches away from using non-personal information to create a device identifier.

Second, Patent Owner argues that the architectures of Harada and Roker teach away from the challenged claims because "the systems of both Harada and Roker involve substantial additional features and complexity that are not required by the challenged claims, and would ultimately result in higher cost of operation, due to equipment, maintenance, and configuration overhead." PO Resp. 26−29; Ex. 2114 ¶¶ 81− 95.

However, Petitioner does not rely on the additional optional features in Roker, including the capability to "optimize" advertising content or "pre-empt" an advertising request. Ex. 1105, 12:16−18, 13:22−15:17, 16:26−27; Ex. 1135 ¶ 10; Tr. 18:10−18. Patent Owner admits that the "additional features and complexity . . . are not required by the challenged claims." PO Resp. 26−29. "[J]ust because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes." *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012).

More importantly, neither physical combinability nor bodily incorporation is required to establish obviousness. *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016). "It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements." *Mouttet*, 686 F.3d at 1332; *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc) (noting that the criterion for obviousness is not whether the references can be combined physically, but whether the claimed invention is rendered obvious by the teachings of the prior art as a whole); *Keller*, 642 F.2d at 425 (explaining that obviousness does not

require that all of the features of the secondary reference be bodily incorporated into the primary reference).

Furthermore, we are not convinced by Patent Owner's argument that the combination of Harada and Roker "would ultimately result in higher cost of operation." PO Resp. 26−29. As explained by the Federal Circuit, "the fact that the two disclosed apparatus would not be combined by businessmen for economic reasons is not the same as saying that it could not be done because skilled persons in the art felt that there was some technological incompatibility that prevented their combination. Only the latter fact is telling on the issue of nonobviousness." *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1013 (Fed. Cir. 1983); *see also In re Farrenkopf*, 713 F.2d 714, 718 (Fed. Cir. 1983) (holding that the additional expense would not have discouraged one of ordinary skill in the art from seeking the benefit expected with the additional features). And, the mere fact that different types of tagging devices—be they simple or complex—offer different advantages or disadvantages does not establish a teaching away sufficient to preclude a conclusion of obviousness. *See Fulton*, 391 F.3d at 1200 (noting that "case law does not require that a particular combination must be the preferred, or the most desirable, combination described in the prior art in order to provide [the] motivation for the current invention").

In addition, Patent Owner relies on the "general" manner in which a proxy server supposedly functions, rather than specific evidence of how the particular proxy server in Harada functions. PO Resp. 27−29. Indeed, Mr. Smoot conceded during cross-examination that Harada's proxy server has access to the user's TCP/IP address and port number. Ex. 1136,

38:8−14. And Patent Owner does not take into account that Roker teaches that "network device 70 may include . . . router 50" and Petitioner's asserted prior art combination includes coupling router 50 with the proxy server in Harada in order to reduce latency. Pet. 28−29; Ex. 1108 ¶ 75; Ex. 1105, Abstract, 9:6−8.

In view of the foregoing reasons, we are persuaded that Petitioner has articulated a sufficient reason why one of ordinary skill in the art would have been motivated to combine the prior art teachings. As discussed above, we determine that Petitioner has demonstrated by a preponderance of the evidence that the combination of Harada, Roker, and Brijesh, as well as the combination of Harada, Roker, and Candelore, teach or suggest each limitation of claims 10, 11, and 17. We do not find Patent Owner's arguments and supporting evidence undermine Petitioner's showing. Consequently, we conclude that Petitioner has established by a preponderance of the evidence that claims 10, 11, and 17 are unpatentable under § 103(a) as obvious over the combination of Harada, Roker, and Brijesh, and over the combination of Harada, Roker, and Candelore.

Whether Petitioner's obviousness analysis is sufficient

Petitioner asserts that claims 10−17 are unpatentable as obvious over the combination of Harada, Roker and Brijesh, as well as unpatentable over the combination of Harada, Roker and Candelore. Pet. 15−66. Petitioner provides detailed explanations as to how the prior art combinations teach or suggest each limitation of the challenged claims, and articulates reasons to

combine the prior art teachings, citing Mr. Gray's testimony for support. *Id*.; Ex. 1108.

Patent Owner counters that Petitioner fails to present legally sufficient obviousness theories under *KSR* and *Graham*, arguing that Petitioner fails to identify the differences between the claimed subject matter and the prior art. PO Resp. 56−63. In particular, Patent Owner argues that Petitioner does not explain (1) what is missing from Harada that makes the addition of Roker necessary; (2) how the asserted combination results in the challenged claim elements; and (3) how or why a person of ordinary skill in the art would have been motivated to modify Harada to include features of Roker. *Id*.

In its Reply, Petitioner notes that, for each claim limitation, the Petition explains where that limitation is taught or suggested, and where Harada does not disclose a claim limitation (e.g., a unique device identifier based directly on a MAC address or hashing a MAC address), and the Petition also explains how the combination of references would have rendered the claimed subject matter as a whole obvious. Reply 28−29; *see also* Tr. 56:13−57:20.

We agree with Petitioner. Indeed, Patent Owner admits that the Petition clearly indicates that neither Harada nor Roker alone expressly discloses using a MAC address to create a device identifier, and "relies on Brijesh (Ground I) or Candelore (Ground II) in combination with Harada and Roker." PO Resp. 11−12 (citing Pet. 35−36, 62−63). As noted above, Petitioner also relies on both Harada and Roker to teach the claimed "router device" in Element 10.1. Pet. 27−29 (asserting that "[a person of ordinary skill in the art] further would have had reason to couple router 50 [of Roker]

with . . . the proxy server in Harada in order to reduce latency"). Therefore, the Petition clearly explains what is missing from Harada that makes the addition of Roker and Brijesh, or Roker and Candelore, necessary.

In addition, we do not find Patent Owner's arguments undermine Petitioner's showing. Rather, we find Petitioner has shown sufficiently how the combination of Harada, Roker, and Brijesh, as well as how the combination of Harada, Roker, and Candelore, teach or suggest each limitation of the challenged claims. Notably, Petitioner explains how each combination arrives at the claimed subject matter, and adequately articulates reasons supported by rational underpinnings to combine the teachings, citing to Mr. Gray's testimony for support. Pet. 15−66; Ex. 1108.

For example, for the preamble of claim 10, Petitioner notes that Harada discloses a "system for processing network traffic transmitted between a client computer and a server computer over a network" because Harada discloses a system in which data needed to process request 211 from client computer 201 is stored at proxy server 202 and automatically transferred to information servers by adding HTTP headers containing the user profile information to the headers received in request 211.[10] Pet. 27 (citing Ex. 1104, 1:8−22, Fig. 2). Petitioner also notes that Roker discloses this limitation because Roker discloses a "'content request/response process', allowing the addition, removal or blocking of arbitrary information

[10] Because both parties treat the preamble of claim 10 as limiting, we likewise proceed on the assumption that the preamble is for purposes of this Decision.

in an HTTP stream of content" between a client and server. *Id*. (citing Ex. 1005, 8:22−24, Fig. 1).

Element 10.1: To account for the limitation "a *router device* coupled to the network between the client computer and the server computer . . . *intercepting request and response messages* transmitted between the client computer and server computer," Petitioner argues that proxy server 202 in Harada is a routing device because it routes (e.g., forwards) request from client 201 to web server 203 and vice versa for response, and Harada discloses that an HTTP request is intercepted at the "proxy server that includes a database, a network interface, a processor, and a memory." Pet. 27−28 (citing Ex. 1104, 2:28−30, 3:17−25, 5:13−30, Fig. 2; Ex. 1108 ¶ 73). Petitioner also contends that Roker discloses that, when user 10 makes an HTTP request, the message is sent to router 50, which routes the request through network device 70, and that network device 70 intercepts incoming and outgoing packets from user computer 10 within the service provider's network and modifies HTTP request packets before sending the packets through the Internet to content provide 40. *Id*. at 28 (citing Ex. 1105, Abstract, 8:12−14, 13:13−16, Fig. 2). In one of the disclosed embodiments, Roker's network device 70 includes cache 60, database 80, and router 50. *Id*. at 28−29 (citing Ex. 1105, 9:6−8).

Petitioner avers that a person of ordinary skill in the art would have understood that Roker discloses intercepting a request at a routing device because router 50 intercepts requests by passing them to other locations (e.g., network device 70), Ex. 1105, 13:12−21, Fig. 2. Mr. Gray testifies that such an artisan "would have been motivated to couple router 50 with

either network device 70 of Roker or the proxy server in Harada in order to reduce latency because close physical proximity reduces travel time over wires, thereby decreasing the amount of time it takes for a packet to travel from one network device to another." Ex. 1108 ¶ 75.

Element 10.2: In connection with the limitation "the network is the World Wide Web portion of the Internet," Petitioner argues that Figure 3A of Harada discloses that its HTTP requests use the World Wide Web portion of the Internet network denoted by the "www" in Field 301. Pet. at 29 (citing Ex. 1104, Fig. 3A).

Element 10.3: Regarding the limitation "the client computer is selected from the group consisting of: a personal computer . . . and a gaming device" (referred as Element 10.3 by Petitioner), Petitioner explains that Figures 2 and 5 of Harada depict client/browser 201, 501 as a personal computer. *Id*. at 30−31 (citing Ex. 1104, Figs. 2, 5; Ex. 1108 ¶ 79).

Element 10.4: For the limitation "an authentication server coupled to the router device through a gateway, and providing information related to the client computer," Petitioner avers that, because Harada discloses that a "client computer's user may submit name and password information to a POP [point of presence] or to a login server" when connecting to a network, a person of ordinary skill in the art would have recognized that these servers as "authentication servers," authenticating the user based on name and password information. *Id.* at 31 (citing Ex. 1104, 6:9−11; Ex. 1108 ¶ 81; Ex. 1124, 32). Petitioner also contends that Roker similarly discloses that service provider 20 authenticates a user as a subscriber using a "RADIUS authentication database," and that traffic flows to network device 70 as

service provider 20 also authenticates a user in which the service provider is a wireless hotspot. *Id*. at 31−32 (citing Ex. 1105, 11:28−12:1, 15:25−16:4). Mr. Gray testifies that one of ordinary skill in the art would have had reason to couple the disclosed authentication servers to the router device through a gateway because the authentication server may be on a different network than the router device. Ex. 1108 ¶ 82 (citing Ex. 1104, 1:12−16; Ex. 1105, 8:12−16, Fig. 2; Ex. 1124, 157) (defining a "gateway" as a "means by which users of one computer service or network can access . . . information on a different service or network" and may be implemented in hardware, software, or both)). Mr. Gray also testifies that such an artisan "would have been motivated to use a wireless gateway with Roker's disclosure of Roker's disclosure of a 'wireless hotspot' because Roker teaches that 'traffic will flow in and out from' 'service provider 20's network,'" (citing to Ex. 1105, 15:25−16:1) and to "combine the wireless hotspot disclosed in Roker with the proxy server disclosed in Harada because Harada discloses that its authentication server 'may include . . . wireless communication equipment'" (citing to Ex. 1104, 1:6−11). Ex. 1108 ¶ 83.

Element 10.5: Claim 10 also recites the limitation "a tag processor component closely coupled to the router device located within the network and configured to intercept a request message from the client computer to the server computer over the network." According to Petitioner, the memory of Harada's proxy server "includes executable instruction for causing the processor to intercept a data request that is directed to a target server, retrieve a record from the database, encrypt profile information in the record, augment the data request by adding the encrypted profile information, and

send the augmented data request to the target server." Pet. 32−34 (citing Ex. 1104, 3:17−25, 5:15−17, Fig. 2). Petitioner asserts that, in light of Roker's disclosure of a router and reason to combine the router with the network device or proxy server in Harada, a person of ordinary skill in the art would have included a "tag processor component closely coupled to the router device," as required by claim 10, in Harada's proxy server. *Id*. at 33−34 (citing Ex. 1108 ¶¶ 86, 87).

Element 10.6: In regard to the limitation "request that is in a hypertext transport protocol (HTTP) format," Petitioner notes that Harada discloses that the request intercepting by proxy server is a HTTP data request, and that Roker discloses that "user 10 makes an HTTP request" that "is sent to router 50." *Id*. at 34 (citing Ex. 1104, 5:15−21, Fig. 3A; Ex. 1105, 13:13−14, 7:11−12, 8:28−9.3, 11:25−27; Ex. 1108 ¶¶ 88, 89).

Element 10.7: Claim 10 further recites "determine a unique device identifier corresponding to the client computer . . . wherein the unique identifier is based directly on at least one of a MAC address, port identifier, or hardcoded identifier in software or hardware and assigned to the client computer." Petitioner asserts that one of ordinary skill in the art would have had reason to use the MAC address as a device identifier in the combination of Harada and Roker because Roker teaches that the "purpose of the identification is to link the user's Internet address to a static unique identifier for the authenticated user on the network," Ex. 1105, 16:14−16, and Brijesh teaches that its device identifiers are persistent and based on "MAC addresses, to create a unique anonymous identifier," Ex. 1106 ¶¶ 21, 25. Pet. 35 (citing Ex. 1108 ¶ 90).

Alternatively, Petitioner relies on Candelore, in combination with Harada and Roker, to teach that a MAC address is a unique device identifier. *Id*. at 60−62 (citing Ex. 1107, 2:42−45).[11] Candelore discloses the "MAC address is delivered as part of the header source device address information of an IP (internet protocol) message," and the device that receives the request then uses "the device identification received in the header of the message" to determine keys and decode encoded data. Ex. 1007, Abstract, 2:46−50, 3:44−49. As noted above, Mr. Gray testifies that a relevant artisan would have used a MAC address to create a device identifier, as taught by Candelore, in the combination of Harada and Roker because a MAC address is assigned to a NIC of a computer and is one of the best ways to ensure that it statically and uniquely identifies the user's computer. Ex. 1108 ¶¶ 18−27, 141−144 (citing Ex. 1107, 1:38−49, 2:42−50, 3:54; Ex. 1111, 4).

Element 10.8: For the limitation "extract non-personal information about the user during a [MAC] layer," Petitioner argues that Brijesh provides reason for a service provider to obtain the MAC address by extracting it from an Ethernet header during a MAC layer process. Pet. 36−37 (citing Ex. 1104, 6:9−16; Ex. 1106 ¶¶ 35, 52, 58). Brijesh discloses that the network access device provides its device identifier such as a MAC address to access point 210, which may be configured to authenticate and assign an IP address to allow network access device 110

[11] For the second obviousness ground based on Candelore, Petitioner expressly incorporates by reference its analysis (Pet. 26−60) for the first obviousness ground. *Id*. at 60−61.

access to the network. Ex. 1106 ¶ 35. Mr. Gray testifies that Brijesh's disclosure would have provided a relevant artisan with reason to extract the MAC address from the header of an Ethernet frame because that is the primary way in which a network access device provides its MAC address to obtain an IP address. Ex. 1108 ¶¶ 24, 94.

Alternatively, Petitioner relies on Candelore, in combination with Harada and Roker. Pet. 63. Candelore discloses the "MAC address is delivered as part of the header source device address information of an IP (internet protocol) message," and the device that receives the request then uses "the device identification received in the header of the message" to determine keys and decode encoded data. Ex. 1007, Abstract, 2:46−50, 3:44−49. Mr. Gray testifies that one of ordinary skill in the art would have understood that the receiving device would have extracted the MAC address during a MAC-layer process, because MAC addresses are used as headers in the MAC layer. Ex. 1008 ¶¶ 18−27 (citing Ex. 1125, 30; Ex. 1132, 11:17−45), 144.

As discussed above, Patent Owner and Mr. Smoot concede that Brijesh "disclose[s] the 'unique device identifier' limitation, including that the identifier be 'based directly on at least one of a MAC address, port identifier, or hardcoded identifier embodied in software or hardware and assigned to the client computer,'" and one of ordinary skill in the art would have understood that "the information described [in Brijesh] would have been extracted during a MAC-layer process." PO Resp. 34−35; Ex. 2014 ¶ 69. And, there is no dispute that Candelore discloses creating a device identifier based on a MAC address and one of ordinary skill in the art

would have recognized that the MAC address is extracted during a MAC-layer process. *See generally* PO Resp.; Pet. 60−66; Ex. 1105, Abstract, 2:42−50, 3:44−49, 3:66−4:3, Figs. 3, 5.

Element 10.9 and claim 11: For the limitations "generat[ing] a *local user identifier* for the client computer based on the unique device identifier" by performing a one-way hashing operation, as recited in claims 10 and 11, Petitioner avers that, as discussed previously, a person of ordinary skill in the art would have had a reason to use a MAC address as a device identifier. Pet. 38−40 (citing Ex. 1108 ¶ 97; Ex. 1106 ¶¶ 21, 25; Ex. 1127 ¶ 47), 63−66 (emphasis added). Petitioner notes that Harada discloses hashing information from the client HTTP request to make forging or tampering more difficult, but does not teach hashing a MAC address. *Id*. (citing Ex. 1104, 11:22−23). Petitioner also notes that Roker teaches that it is important to obscure the identity of the user's profile to ensure that acceptable levels of privacy are maintained, as the augmented request can be further intercepted along its path by other devices. *Id*. (citing Ex. 1105, 12:6−8, 17:27−28). Mr. Gray testifies that an ordinarily skilled artisan would have had reason to hash the user's MAC address before it left the service provider's network to protect a user's privacy and to use a one-way hash because a reversible hash would not provide acceptable privacy levels. Ex. 1108 ¶¶ 98, 99.

Element 10.10: In connection with the limitation "deriv[ing] instance information regarding timing of the request provided by the client computer," Petitioner notes that Harada discloses using a timestamp in the session key (Ex. 1104, 11:2−4), and Roker discloses that the "encoded key can be time-limited to further protect the privacy of the user's information"

(Ex. 1105, 12:8−9). Pet. 40−41. Petitioner also asserts that an ordinarily skilled artisan would have had reason to base timing information on request timing information provided directly by the client computer because it was well known in the art that HTTP requests could contain timing information, such as in a "Date" header field, and that was one of only a few sources for timing information. *Id*. Mr. Gray testifies that a person of ordinary skill in the art would have been motivated to base the time-limit of the encoded key on the time at which the client computer sent its HTTP request, because it would ensure that the encoded key would be operable for only a limited period of time after the client sent its request, thus helping protect the privacy of the user's information. Ex. 1108 ¶ 103 (citing Ex. 1105, 12:8−9).

Element 10.11: As to the limitation "derive . . . geographic location and demographic information from the information provided by the authentication server on the client computer," Petitioner notes that, as discussed previously, Harada and Roker disclose authentication servers that provide information related to the client computer in the form of login servers and RADIUS authentication databases and that those authentication servers are coupled to the router devices. Pet. 41−42 (citing Ex. 1104, 6:11−14; Ex. 1105, 11:24−12:20, Fig. 2). For instance, Harada discloses that, when the proxy server receives a subsequent HTTP request, it can identify the user associate with the request by querying the database and then retrieve a user profile associated with that user from its database 220, which includes geographic information ("ZipCode") and demographic information ("YoungTeen"). Ex. 1104, 6:22−26.

Element 10.12: To account for the limitation "generat[ing] a request identifier associated with the intercepted request by encrypting and embedding the local user identifier and geographic location and demographic information in an extensible field of a packet within the request to generate a tagged request identifier from the non-personal information," Petitioner notes that, as discussed previously, Harada discloses placing the following information in an augmented HTTP request: (1) user identifier ("User Name"), Ex. 1104, 6:25; (2) timing information ("the session key can include . . . a timestamp"), *id*. at 11:1−4, 17−21; (3) geographic information ("ZipCode") *id*. at 6:25; and (4) demographic information ("Young Teen" and "age"), *id*. at 6:25, 7:9, Fig. 3B. Petitioner notes that, as discussed previously, an ordinarily skilled artisan would have had reasons to use a hashed MAC address as a user identifier, and substitute a MAC address for Harada's UserName in the HTTP fields because it is desirable for service providers to "act as trusted keepers of information about the user" by removing identifiable information before allowing it to leave service provider's network and the request can be further intercepted along its path, making it preferable to use encryption. Pet. 43−44 (citing Ex. 1105, 11:10, 12:4−10; Ex. 1108 ¶ 108). According to Petitioner, such an artisan would have preserved a user identifier, rather than eliminate it from the augmented information, so that the content server could avoid showing duplicate ads to the same user. *Id*. (citing Ex. 1129, 1:23−27).

Petitioner also avers that a person of ordinary skill in the art would have had reason to encrypt unencrypted the profile information in light of both Harada and Roker. *Id*. Harada teaches that field 305, as shown in

Figure 3B of Harada, "may include encrypted user profile data" using its SecureData protocol. Ex. 1104, 6:25−26. Roker teaches that "the request can be further intercepted along its path," making it "preferable to use" encryption. Ex. 1105, 12:4−10.

Element 10.13: In connection with the limitation "embedding" the "tagged request identifier" in "an extensible field of a packet within the request . . . wherein the extensible field comprises a portion of an HTTP header field of the packet that is normally unused or essentially left blank," Petitioner notes that Harada discloses that proxy server 202 can add user profile information to request 211 by adding additional HTTP fields 304−305. Pet. 46 (citing Ex. 1104, 5:27−30, 6:20−24). Petitioner asserts that fields 304−305 in Harada are "extensible fields" because they are not required fields under the HTTP protocol for an HTTP request. *Id*. (citing Ex. 1108 ¶ 15, 112).

Element 10.14: As to the limitation "a tag-related processor component coupled to the server computer and configured to receive a decode request from the server computer upon interception of the tagged request identifier by the server computer," Petitioner notes that Harada discloses that the user profile information is encrypted using the session key, and that the session key is encrypted using the web server's public key. Pet. 47. Harada also discloses that when the web server has received the encrypted session key and user profile data, the web server can decrypt its session key by using the public key cryptography algorithm and the web server's private key, and then decrypt the user profile information using the decrypted session key. Ex. 1104, 8:19−20, 12:9−12. Harada further

discloses that when the web server receives a request, the request can be passed to proxy data exchange filter software that can extract the added fields, and then decrypt the session key and the user profile information to make the user profile information available to web server applications. *Id*. at 12:9−12. Mr. Gray testifies that an ordinarily skilled artisan would have understood that Harada's exchange filter software corresponds to the claimed "tag-related processor component" because the server passes the request to the exchange filter for decoding. Ex. 1108 ¶ 116.

Petitioner also provides detailed explanations with supporting evidence as to how the prior art combinations teach and suggest each limitation of claims 11−17. Pet. 49−60.

Patent Owner argues that, for certain elements of dependent claims (Elements 14.1, 14.2, and 16.2), "Petitioner relies only on the Roker reference, citing no support from Harada." PO Resp. 58−59 n.10. However, Patent Owner fails to recognize that dependent claims 14 and 16 incorporate the limitations of claims 10−13, and that Petitioner relies on Harada, Roker, and Brijesh, and alternatively Harada, Roker, and Candelore, to teach the limitations of claims 10−13. Pet. 27−54. More importantly, Petitioner provides detailed explanation how the prior art references teach or suggest each limitation of claims 11−17. *Id*. at 49−60. For example, for claim 14, Petitioner explains that a person of ordinary skill in the art would have had reason to direct advertising messages associated with content provided to the client computer because employing both user profiles and considering content type would further improve the efficiency and accuracy of the

advertisement targeting, citing Mr. Gray's testimony for support. Pet. 55 (citing Ex. 1105, 1:3−4; Ex. 1108 ¶ 130).

Upon review of Petitioner's detailed explanations and supporting evidence, we determine that Petitioner has demonstrated by a preponderance of the evidence that the combination of Harada, Roker, and Brijesh, as well as the combination of Harada, Roker, and Candelore, render the challenged claims obvious. For the foregoing reasons, we do not find Patent Owner's argument Petitioner fails to present legally sufficient obviousness theories undermines Petitioner's showing. PO Resp. 58−65.

Claims 12−16

Claims 12−16 depend directly or indirectly from claim 10. Petitioner also provides detailed explanations, citing to Mr. Gray's testimony for support, how the combination of Harada, Roker, and Brijesh, and how the combination of Harada, Roker, and Candelore, teach or suggest each limitation of claims 12−16. Pet. 50−66 (citing Ex. 1108 ¶¶ 122−136).[12]

We have reviewed Petitioner's explanations and supporting evidence, and agree with Petitioner's explanations and Mr. Gray's unrebutted testimony. We adopt Mr. Gray's analysis as our own. Ex. 1108 ¶¶ 122−136.

Patent Owner does not provide separate arguments with respect to claims 12−16. Rather, Patent Owner relies upon the same arguments

[12] For the second obviousness ground based on Candelore, Petitioner expressly incorporates by reference its analysis (Pet. 26−60) for the first obviousness ground. *Id*. at 60−61.

presented in connection with claims 10 and 11. PO Resp. 8−63. We already addressed those arguments in our analysis above regarding claims 10, 11, and 17, and we find those arguments unavailing here for the reasons stated above.

Based on the evidence in this entire trial record, we conclude that Petitioner has established by a preponderance of the evidence that claims 12−16 are unpatentable under § 103(a) as obvious over the combination of Harada, Roker, and Brijesh, as well as over the combination of Harada, Roker, and Candelore.

Conclusion

For the foregoing reasons, Petitioner has demonstrated by a preponderance of the evidence that claims 10−17 are unpatentable under § 103(a) as obvious over the combination of Harada, Roker, and Brijesh, as well as over the combination of Harada, Roker, and Candelore.

F. Waiver of Arguments

Patent Owner asserts that it focuses on specific shortcomings of Petitioner's theories, and does not concede that the cited references teach or suggest other elements of the challenged claims. PO Resp. 9 n.3. However, Patent Owner does not explain persuasively why it could not have presented all of its arguments in the Response. Moreover, the Scheduling Order specifically states "[t]he patent owner is cautioned that any arguments for patentability not raised in the response will be deemed waived." Paper 8, 3. Therefore, we only consider Patent Owner's arguments presented in this

proceeding, and any arguments for patentability not raised in its Response will be deemed waived.

G. Patent Owner's Motion to Exclude Evidence

Patent Owner filed a Motion to Exclude Evidence, seeking to exclude Exhibits 1110, 1112, 1120, 1121, 1128, and 1131 (hereafter the "state-of-the-art" exhibits), which are cited in the Technical Background Section of the Gray Declaration. Mot. 1−7. Patent Owner argues that the "state-of-the-art" exhibits should be excluded under the Federal Rules of Evidence ("Fed. R. Evid.") 401, 402 and 403, as they are not relevant to this proceeding. *Id*. According to Patent Owner, these exhibits are merely cited in the Gray Declaration (Ex. 1108), but not cited in the Petition. *Id*. Patent Owner argues that evidence not presented and developed in the Petition is not relevant, has little probative value, and is improper incorporation by reference. Mot. Reply 1−2. Petitioner counters that the "state-of-the-art" exhibits meet the low bar for relevancy and there is no prejudice to Patent Owner if these exhibits are not excluded. Opp. 1−5.

As the movant, Patent Owner has the burden of proof to establish that it is entitled to the requested relief. *See* 37 C.F.R. § 42.20(c). For the reasons stated below, Patent Owner's Motion to Exclude Evidence is *denied*.

"Evidence is relevant if: (a) it has any tendency to make a fact more or less probable than it would be without the evidence; and (b) the fact is of consequence in determining the action." Fed. R. Evid. 401. "Irrelevant evidence is not admissible." Fed. R. Evid. 402. "The court may exclude relevant evidence if its probative value is substantially outweighed by a

danger of one or more of the following: unfair prejudice, confusing the issues, misleading the jury, undue delay, wasting time, or needlessly presenting cumulative evidence." Fed. R. Evid. 403. The courts have recognized that Fed. R. Evid. 401 sets a "low threshold for relevancy." *OddzOn Prods., Inc. v. Just Toys Inc.*, 122 F.3d 1396, 1407 (Fed. Cir. 1997); *United States v. Whittington*, 455 F.3d 736, 739 (6th Cir. 2006) ("[T]he district court correctly noted that the relevance threshold is very low under Rule 401."); *see also Google Inc. v. Performance Price Holdings, LLC*, Case CBM2016-00049, 2017 WL 4082446, at *15 (PTAB Sept. 13, 2017).

Here, Petitioner does not rely on the "state-of-the-art" exhibits to meet the claim limitations, but rather to support Mr. Gray's testimony as to the state of the art at the time of the invention, regarding certain technological features related to the claimed subject matter or the prior art disclosure—namely, Harada, a prior art reference relied upon in the obviousness grounds of unpatentability. The mere fact that the exhibits are cited by an expert witness to support his or her testimony on the state of the art, but not cited in the Petition, does not establish automatically that they are irrelevant or an improper incorporation by reference, as Patent Owner alleges.

The Federal Circuit has recognized that non-prior art evidence "can be relied on for their proper supporting roles, e.g., indicating the level of ordinary skill in the art, and how one with ordinary skill in the art would have understood a prior art disclosure." *Yeda Research v. Mylan Pharm. Inc.*, 906 F.3d 1031, 1041 (Fed. Cir. 2018) (citing *Dominion Dealer Sols., LLC v. AutoAlert, Inc.*, Case IPR2014-00684, 2014 WL 5035359, at *5 (PTAB Oct. 6, 2014)). Indeed, "evidence of the background understanding

of skilled artisans" is admissible in an *inter partes* review, and references "can legitimately serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness." *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1365 (Fed. Cir. 2015) (citing *Randall Mfg. v. Rea*, 733 F.3d, 1355, 1362−63 (Fed. Cir. 2013)).

In addition, "[e]xpert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight." 37 C.F.R. § 42.65(a). Therefore, an expert witness may cite references to support his or her testimony, as such supporting evidence would assist the fact finder to accord the appropriate weight to the testimony. *See Rohm and Hass co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) ("Nothing in the rules or in our jurisprudence requires the fact finder to credit the unsupported assertions of an expert witness."); *Inwood Labs., Inc. v. Ives Labs., Inc.*, 456 U.S. 844, 856 (1982) ("Determining the weight and credibility of the evidence is the special province of the trier of fact."); *see also Tr. of Columbia Univ. v. Illumina, Inc.*, 620 F.App'x 916 (Fed. Cir. 2015) ("The PTAB was entitled to weigh the credibility of the witnesses in light of their qualifications and evaluate their assertions accordingly.").

Here, the "state-of-the-art" exhibits are:

Exhibit No.	Description
1110	U.S. Patent No. 7,409,402 B1, issued to Chan et al., entitled "Systems and Methods for Presenting Advertising Content Based on Publisher-Selected Labels."
1112	Bernd Kurz et al., FAÇADE – A FrAmework for Context-aware content Adaptation and DElivery, Proceedings of the Second Annual Conference on Communication Networks and Services Research (CNSR'04) (2004)
1120	R. Fielding et al., Hypertext Transfer Protocol -- HTTP/1.1, Jan. 1997, *available at* https://www.ietf.org/rfc/rfc2068.txt
1121	Advanced Encryption Standard (AES) - Federal Information Processing Standards Publication 197, released Nov. 26, 2001, *available at* http://nvlpubs.nist.gov/nistpubs/FIPS/NIST.FIPS.197.pdf
1128	Gustavus J. Simmons, "Symmetric and Asymmetric Encryption," Association for Computing Machinery, Computing Surveys, Vol. 11, No. 4, Dec. 1979
1131	Glick et al., U.S. Patent Application Publication No. 2002/0051541, published on May 2, 2002

As Petitioner notes, Exhibit 1110 describes a system architecture in which a third party ad server sends suggested media to the server computer to provide the content selected by the ad server to the client computer. Ex. 1110, 24:3−52. The '747 patent also addresses and claims providing targeted media to users. Ex. 1101, 1:21−33, 19:23−27. The Gray Declaration cites Exhibit 1110 with other materials to show that Mr. Gray had reviewed Exhibit 1110 and the other materials. Ex. 1108 ¶ 2.

Accordingly, Exhibit 1110 showing the state of the art regarding targeted media to users is relevant to this proceeding.

The Gray Declaration cites Exhibit 1112 to show the general knowledge of an ordinarily skilled artisan regarding one-way hashing operation, as of the priority date of the '747 patent. Ex. 1108 ¶ 37. Claim 11 requires "generat[ing] the local user identifier for the client computer by performing a *one-way hashing operation* on the unique device identifier." Ex. 1101, 19:7−11 (emphasis added). Therefore, Exhibit 1112 showing the state of the art regarding one-way hashing operation is relevant to this proceeding.

The Gray Declaration cites Exhibit 1120 to explain the functionality of HTTP and proxy servers as they were known in the art as of the priority date of the '747 patent. Ex. 1108 ¶¶ 13, 28. Claim 10 requires intercepting a request that "is in a [HTTP] format" and embedding information in "a portion of an HTTP header field." Ex. 1101, 18:43−44, 18:67−19:1. Petitioner relies on Harada's disclosure of a proxy server in its obviousness analysis. Pet. 27. Hence, Exhibit 1120 showing the state of the art regarding HTTP and proxy servers is relevant to this proceeding.

The Gray Declaration cites Exhibits 1121, 1128, and 1131 to explain the general knowledge of an ordinarily skilled artisan regarding encryption and public and private keys, as of the priority date of the '747 patent. Ex. 1108 ¶¶ 29, 38−39. Claim 10 requires "generat[ing] a request identifier associated with the intercepted request by *encrypting*" certain user information. Ex. 1101, 18:59−61 (emphasis added). Further, the Petition includes discussions on Harada's disclosure of using public and private keys

to secure communications. Pet. 18, 47, 60. Therefore, Exhibits 1121, 1028, and 1031 showing the state of the art regarding encryption and public and private keys are relevant to this proceeding.

As for Patent Owner's arguments that the evidence should be excluded under Fed. R. Evid. 403, we do not discern any unfair prejudice to Patent Owner, under Fed. R. Evid. 403, in admitting the "state-of-the-art" exhibits into the record of this proceeding. In a bench trial, as here, the risk that a verdict will be unfairly affected by the admission of improper evidence is far less than in a jury trial. *See E.E.O.C. v. Farmer Bros. Co.*, 31 F.3d 891, 898 (9th Cir. 1994). As the factfinder, we are able to consider the evidence and the parties' arguments, and give it the proper weight. *See* 22 CHARLES ALAN WRIGHT & KENNETH W. GRAHAM, JR., FEDERAL PRACTICE AND PROCEDURE § 5213 (1978 & Supp. 1999) ("Since the judge must hear the evidence in ruling on the motion to exclude the evidence under Rule 403, exclusion of the evidence on grounds of prejudice in a bench trial is described as a 'useless procedure.'"); *see also Schultz v. Butcher*, 24 F.3d 626, 632 (4th Cir. 1994) (finding court should not exclude evidence under Rule 403 in bench trial on grounds of unfair prejudice); *Gulf States Utilities Co. v. Ecodyne Corp.*, 635 F.2d 517, 519 (5th Cir. 1981) (finding unfair prejudice portion of Rule 403 "has no logical application to bench trials").

For the foregoing reasons, Patent Owner's Motion to Exclude is *denied*.

H. Patent Owner's Listing of Improper Reply Arguments

Patent Owner filed a Listing of Improper Reply Arguments (Paper 26) and Petitioner filed a Response (Paper 27). Patent Owner lists several

portions of Petitioner's Reply and evidence as being allegedly beyond the scope of what can be considered appropriate for a reply. *See* Paper 26. We have considered Patent Owner's listing, but disagree that the cited portions of Petitioner's Reply are beyond the scope of what is appropriate for a reply. Replies are a vehicle for responding to arguments raised in a corresponding patent owner response. Petitioner's arguments that Patent Owner objects to are not beyond the proper scope of a reply because we find that they fairly respond to Patent Owner's arguments raised in Patent Owner's Response. *See Idemitsu Kosan Co. v. SFC Co.*, 870 F.3d 1376, 1381 (Fed. Cir. 2017) ("This back-and-forth shows that what Idemitsu characterizes as an argument raised 'too late' is simply the by-product of one party necessarily getting the last word. If anything, Idemitsu is the party that first raised this issue, by arguing—at least implicitly—that Arkane teaches away from non-energy-gap combinations. SFC simply countered, as it was entitled to do.").

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has established by a preponderance of the evidence that claims 10−17 are unpatentable as obvious over the combination of Harada, Roker, and Brijesh, as well as over the combination of Harada, Roker, and Candelore.

IV. ORDER

Accordingly, it is

ORDERED that claims 10−17 of the ’747 patent are held unpatentable; and

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

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