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Paper 41
Date: July 18, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

BILLJCO LLC,
Patent Owner.

IPR2022-00427
Patent 10,292,011 B2

Before THU A. DANG, LYNNE H. BROWNE, and GARTH D. BAER, *Administrative Patent Judges.*

DANG, *Administrative Patent Judge.*

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

INTRODUCTION

A. Background

In response to a Petition (Paper 2, "Pet.") filed by Hewlett Packard Enterprise Co., Aruba Networks, LLC, and Apple Inc., we instituted *inter partes* review of claims 1–3, 9, 11–13, 19, and 20 (the "challenged claims") of U.S. Patent No. 10,292,011 B2 (Ex. 1001, "the '011 patent"). *See* Paper 16 ("Dec. Inst."). During trial, Hewlett Packard Enterprise Co. and Aruba Networks, LLC jointly requested termination (Paper 24), and we granted the Motion (Paper 25), leaving Apple Inc. as the sole petitioner ("Petitioner").

BillJCo LLC ("Patent Owner") then filed a Response (Paper 30[1], "PO Resp."), to which Petitioner filed a Reply (Paper 34, "Pet. Reply."). In turn, Patent Owner filed a Sur-Reply. Paper 36 ("PO Sur-Reply"). An oral hearing was held with the parties on April 14, 2023. A transcript of the hearing has been entered into the record. Paper 40.

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) as to the patentability of the claims on which we instituted trial. Based on the record before us, Petitioner has shown by a preponderance of the evidence that claims 1–3, 9, 11–13, 19, and 20 of the '011 are unpatentable.

B. Related Proceedings

The parties identify the '011 patent as the subject of *BillJCo, LLC v. Cisco Systems., Inc.,* Case No. 2:21-cv-181 (E.D. Tex); *BillJCo, LLC v*

[1] We refer to the public, redacted version of the Response.

Apple Inc., Case No. 6:21-cv-528 (W.D. Tex.); and *BillJCo, LLC v. Hewlett Packard Enterprise Co., et al.*, Case No. 2:21-cv-183 (E.D. Tex). Pet. 3; Paper 6, 2 ("Mandatory Notices").

C. The '011 Patent

The '011 patent, titled "System and Method for Location Based Exchange Network," issued on May 14, 2019, from Application No. 16/147,532, with a filing date of September 28, 2018. Ex. 1001, codes (54), (45), (21). The '011 patent relates to "location based services for mobile data processing systems," and more particularly, to "location based exchanges ["LBX"] of data between distributed mobile data processing systems for locational applications." *Id.* at 1:36–40.

An illustration of an embodiment of the '011 patent's location-based services is depicted in Figures 1A and 1B, reproduced below:

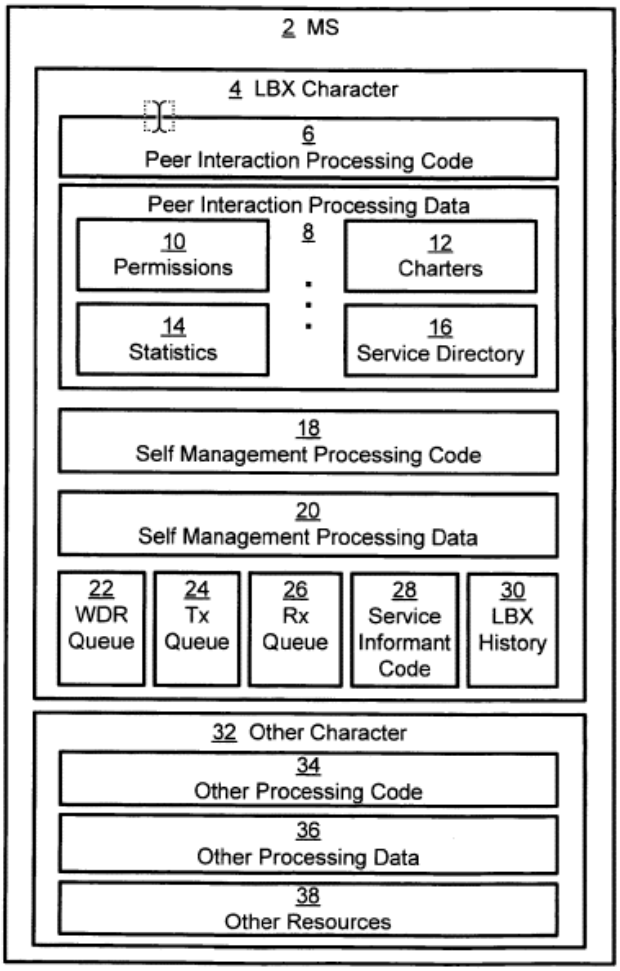

Fig. 1A

Figure 1A depicts a single mobile data processing system (MS) 2. *Id.* at 29:17–20. As shown in Figure 1A, each MS 2 comprises LBX character 4, which is a "processing behavior" that provides each MS with the processing ability to participate in an LBX. *Id.* at 29:21–23. LBX character 4 in turn includes peer interaction processing (PIP) code 6 for interacting with other MSs. *Id.* at 29:40–43. LBX character 4 further includes PIP data 8 that comprises permissions 10 and charters 12 through which MS users can determine the conditions under which they may want to interact with other MSs. *Id.* at 32:4–15; 38:18–22. Lastly, each MS 2 includes send

queue 24 and receive queue 26, which are the interfaces through which MSs send and receive communication data, respectively, to nearby MSs. *Id.* at 30:33–39. For example, these may be notifications or alerts "when MSs are newly nearby, or are newly departing being nearby." *Id.* at 12:3–12.

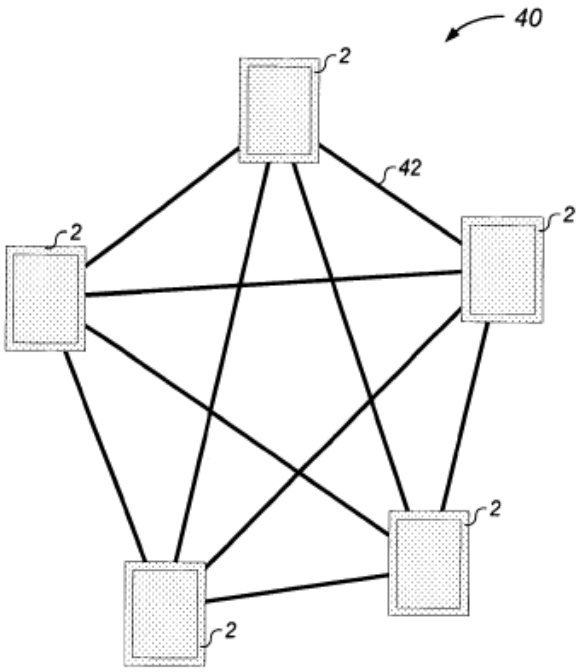

Fig. 1B

Figure 1B depicts a location-based exchange (LBX) comprising a group of MSs that interact with one another in a peer-to-peer manner without a service. *Id*. at 29:17–20; 32:39–43. In an LBX, MSs that are in proximity communicate with each other directly through bidirectional or unidirectional communication path 42 and provide location features and functionality. *Id*. at 1:41–44; 32:63–67. According to the '011 patent, in an

LBX, a "common connected service is not required for location based functionality and features." *Id*. at 1:40–41.

D. Illustrative Claim

Of the challenged claims (1–3, 9, 11–13, and 19–20), claims 1, 11, and 20 are the independent claims. Claims 2, 3, and 9 depend from claim 1, and claims 12, 13, and 19 depend from claim 11. Independent claim 1 is illustrative and is reproduced below:

> 1. A system including one or more sending data processing systems wherein each sending data processing system of the one or more sending data processing systems comprise:
>
> one or more processors; and
>
> memory coupled to the one or more processors and storing instructions, wherein the one or more processors, based on the instructions, perform operations comprising:
>
> periodically beaconing outbound a broadcast unidirectional wireless data record for physically locating in a region of the sending data processing system one or more receiving user carried mobile data processing systems, the broadcast unidirectional wireless data record received directly from the sending data processing system in each receiving user carried mobile data processing system of the one or more receiving user carried mobile data processing systems, and including:
>
> no physical location coordinates of the sending data processing system,
>
> a data field containing a signal strength of the sending data processing system, and
>
> application context identifier data identifying location based content for presenting by a location based application of

> the receiving user carried mobile data processing system to a user interface of the receiving user carried mobile data processing system upon the receiving user carried mobile data processing system determining with a local memory maintained location based configuration monitored with background processing of the receiving user carried mobile data processing system during mobility of the receiving user carried mobile data processing system anticipating receipt of the broadcast unidirectional wireless data record having the application context identifier data in response to a user activating the location based application with the user interface of the receiving user carried mobile data processing system wherein the location based application:
>
> invokes a location based API of the receiving user carried mobile data processing system for the location based configuration anticipating the receipt of the broadcast unidirectional wireless data record having the application context identifier data,
>
> is notified upon the receipt of the broadcast unidirectional wireless data record having the application context identifier data configured in the location based configuration, and
>
> presents the location based content to the user interface of the receiving user carried mobile data processing system, the location based content originating from another data processing system that is remote to both the sending data processing system and the receiving user carried mobile data processing system.

Ex. 1001, 448:11–67. Claims 11 and 20 recite similar limitations, wherein claim 11 is directed to a "method in a location network expense," and claim 20 is directed to a "non-transitory computer readable medium." *Id.* at 449:33–450:15; 450:39–451:23.

E. Asserted Grounds of Unpatentability

We instituted *inter partes* review of all challenged claims on all challenges in the Petition. Petitioner asserts that claims 1–3, 9, 11–13, and 19–20 of the '011 patent are unpatentable based on the following grounds (Pet. 11–12):

Claims Challenged	35 U.S.C. §[2]	References/Basis
1–3, 9, 11–13, 19–20	103	Ribaudo[3], Lorincz[4]
1–3, 9, 11–13, 19–20	103	Ribaudo, Wrappe[5]
1–3, 9, 11–13, 19–20	103	Ribaudo, Lorincz, Evans[6]
1–3, 9, 11–13, 19–20	103	Ribaudo, Wrappe, Evans

Petitioner relies on the declaration of William R. Michalson, Ph.D. (Ex. 1004) in support of its unpatentability contentions. Patent Owner provides the declaration of Jacob Sharony, Ph.D. Ex. 2025. Dr. Michalson was cross-examined by Patent Owner, and a transcript of his deposition was entered into the record. Ex. 2026.

ANALYSIS

A. *Level of Ordinary Skill in the Art*

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[2] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application from which the '011 patent claims priority to was filed before this date, the pre-AIA version of § 103 applies.
[3] US Patent Publication No. 2007/0030824 A1, published February 8, 2007, filed August 8, 2006 (Ex. 1005, "Ribaudo").
[4] Lorincz, K. and Welsh, M., *MoteTrack: A Robust, Decentralized Approach to RF-Based Location Tracking* (Ex. 1006, "Lorincz").
[5] WIPO Publication No. 2005/106523 A1, published November 10, 2005, filed April 2, 2004 (Ex. 1008, "Wrappe").
[6] US Patent No. 6,327,535 B1, issued December 4, 2001, filed April 5, 2000 (Ex. 1007, "Evans").

In determining whether an invention would have been obvious at the time it was made, we consider the level of ordinary skill in the pertinent art at the time of the invention. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). In our analysis, 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 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) (quotation marks omitted). Furthermore, the prior art itself can reflect the appropriate level of ordinary skill in the art. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Relying on the declaration of Dr. Michalson, Petitioner contends that a person of ordinary skill in the art (POSITA) would have had "a bachelor's degree in computer science, computer engineering or an equivalent, as well as two years of professional experience relating to wireless communications," and "a working knowledge of hardware and software for location tracking of mobile devices," wherein "[l]ack of work experience can be remedied by additional education and vice versa." Pet. 12 (citing Ex. 1004 ¶¶ 41–42). Patent Owner does not propose a description of the level of ordinary skill in the art or dispute Petitioner's description. *See* PO Resp. 6–7 ("Patent Owner does not contest this proposal").

We apply Petitioner's definition of a POSITA at the time of the claimed invention because, based on the record, this proposal is consistent with the '011 patent, the asserted prior art, and is supported by the testimony of Dr. Michalson.

B. Claim Construction

We construe each claim "in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. § 42.100(b) (2020). Under this standard, claim terms are generally given their plain and ordinary meaning as would have been understood by a POSITA at the time of the invention and in the context of the entire patent disclosure. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc).

Petitioner does not propose any claim construction. Pet. 12–13 ("the claim terms in the Challenged Claims do not require construction"). Patent Owner proposes a construction for claim term "periodic beaconing." *See* PO Resp. 13–16.

We determine that it is unnecessary to construe any claim term expressly to resolve the disputed issues before us. *See, e.g., Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) ("The Board is required to construe 'only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy'" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (holding that "only those terms need to be construed that are in controversy, and only to the extent necessary to resolve the controversy"))); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of an *inter partes* review). As Patent Owner contends that Ribaudo fails to disclose "periodic beaconing" (PO Resp. 16–18), we do not ignore this claim term but address this term based on the parties' explicit arguments with respect to Ribaudo.

C. Principles of Law

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) objective evidence of non-obviousness. *See Graham*, 383 U.S. at 17–18.

D. Claims 1–3, 9, 11–13, and 19–20 as Obvious over Ribaudo and Lorincz (Ground 1)

Petitioner contends that Ribaudo and Lorincz render obvious claims 1–3, 9, 11–13, and 19–20 of the '011 patent. Pet. 22–51 (ground 1); *see also* Pet. Reply 2–9. In response, Patent Owner contends that "[t]he Petition [] fails to demonstrate Ribaudo's disclosure of multiple elements recited by independent claims 1, 11 and 20 of the '011 Patent" or that "it would have been obvious to a POSITA to combine Ribaudo with Lorincz." PO Resp. 11; *see also* PO Sur-reply 2–9. We summarize the asserted prior art below.

1. Ribaudo

Ribaudo, titled "System and Method for Providing Communication Services to Mobile Device Users Incorporating Proximity Determination," published on February 8, 2007, with a filing date of August 8, 2006.

Ex. 1005, codes (54), (43), (22). Ribaudo discloses a system and method for mobile devices to detect and interact with other mobile devices in proximity through communication services. *Id.* ¶¶ 2, 16. An illustration of Ribaudo's communication services system and method is depicted in Figure 1, reproduced below.

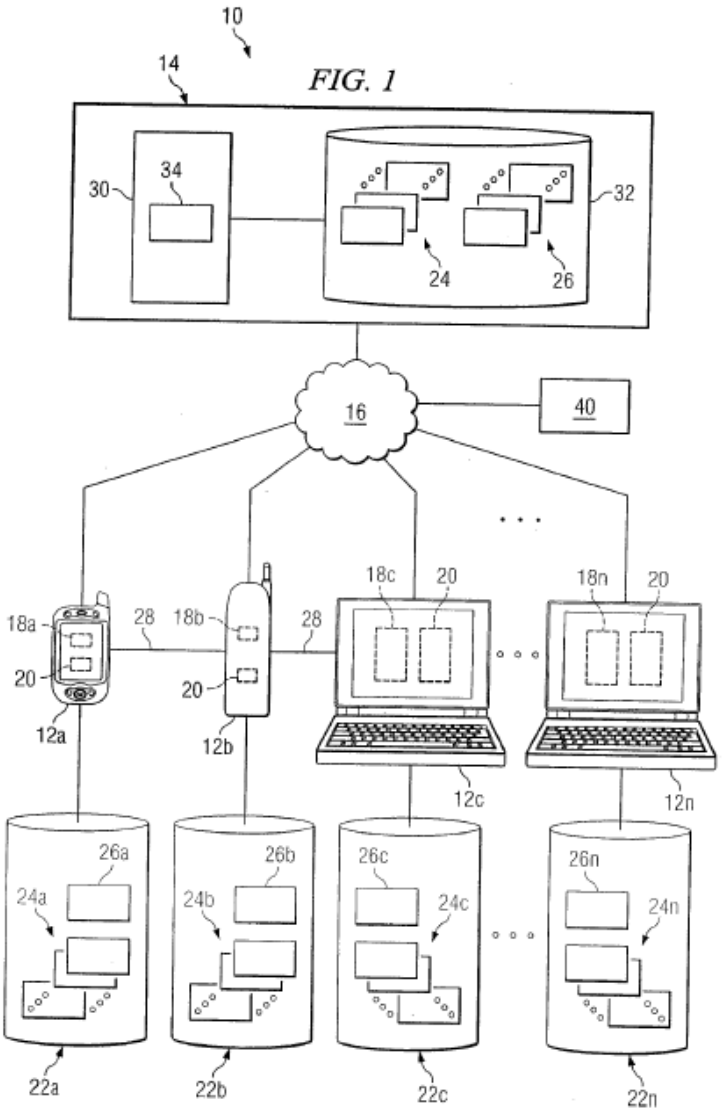


Figure 1 shows a schematic of a communications services system for mobile device users. *Id.* ¶ 15. As shown in Figure 1, mobile devices 12a–b are connected to data center 14 through network 16. Users of mobile devices 12

provide user information to data center 14 so that data center 14 can determine matches between mobile users. *Id.* ¶ 27. Mobile device users may submit user profiles to the data center 14 in any suitable manner according to particular needs. *Id.* These user profiles include personal information about the user including "interests, affiliations, associations, events, business networking, social networking, dating, employment, exchanging goods and services, connecting friends and acquaintances, genealogy trees, and other suitable categories." *Id.* ¶ 29. Data center 14 then stores these user profiles in database 32 and compares the user profiles of multiple users to generate match data 26, which are downloaded to each mobile device 12. *Id.* ¶¶ 39–41.

Data center 14 also assigns one or more identifiers for each mobile user, including a client ID, field ID, and one more match IDs. *Id.* ¶ 45. The client ID is comprised of a public ID that is transmitted from mobile device 12 and is used to detect matches in proximity. *Id.* ¶ 46. The match ID includes the comparisons of user profiles made by data center 14 as well as the field ID. *Id.* ¶ 48. The field ID comprises specific data points of a user profile that is distributed to matched users. *Id.* ¶ 47.

In certain embodiments, a user may share more information from the user profiles based on the location of the detected match, the type of detected match, and the like. *Id.* ¶ 78. For example, a user at a business conference may be willing to share greater information from the user's business user profile if a match is detected at one or more MAC addresses of one or more networks existing at the conference. *Id.*

After the match IDs are downloaded, the user of mobile device 12a may launch an application on the mobile device in order to detect other

mobile devices in proximity. *Id.* ¶ 84. Mobile devices 12 then beacon their client IDs to other mobile devices within a suitable range. *Id.* These client IDs are used to determine if there is another client ID within a wireless proximity. *Id.* ¶ 85. Mobile device 12a then uses the matched data, which was previously downloaded, to determine if the user of the detected client ID is part of the match data 26a for mobile device 12a. *Id.* Once a match is detected, communications between mobile devices may ensue. *Id.* ¶ 87. For example, once mobile devices 12a and 12b are determined to be a match and a detection event occurs between them, the field ID may be displayed on mobile device 12b to indicate a matched value. *Id.* ¶ 47. The field ID may include a commonality between the two mobile users such as a university attended. *Id.*

2. Lorincz

Lorincz, titled "MoteTrack: A Robust, Decentralized Approach to RF-Based Location Tracking," was published in May 2005. Ex. 1006, 42. Lorincz discloses a tracking system called MoteTrack, in which the location of a mobile node is computed using radio signal strength signatures received from various beacon nodes. *Id.* at Abstract. This allows the location of the mobile node to be detected with "meter-level accuracy." *Id.* at 1. An illustration of Lorincz's MoteTrack system is depicted in Figure 1, reproduced below. *Id.* at 4.

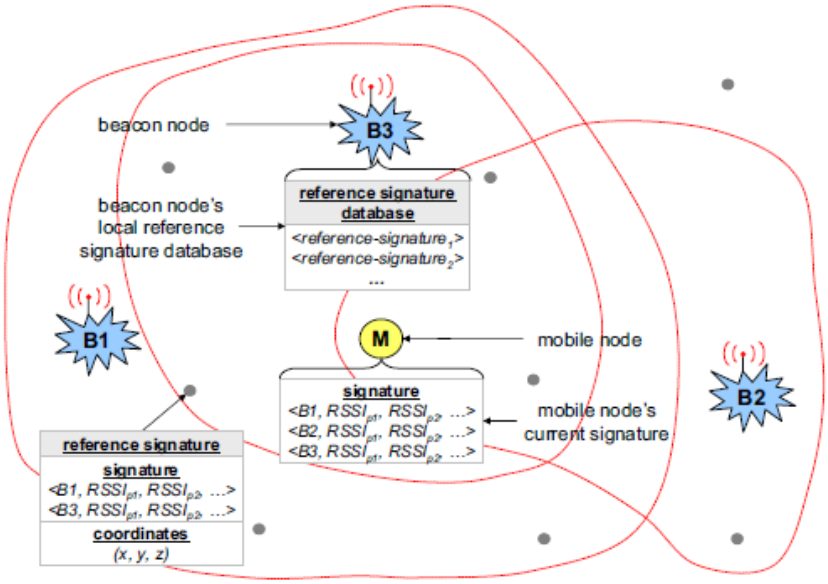


Figure 1 illustrates a method in which the position of mobile node M is estimated using signals broadcast from beacons B1–B3. *Id.* at 4. In the MoteTrack system, beacon nodes B1–B3 are distributed throughout an area such as a building. *Id.* These beacon nodes broadcast periodic messages comprising *sourceID* and *powerLevel*, wherein *sourceID* represents the identification of the beacon, while *powerLevel* represents the power level used to transmit the message. *Id.* at 4–5. Mobile node M wishing to determine its location "listens" to the beacon messages and acquires a "*reference signature*" comprising the combined beacon messages received over a period of time. *Id.* at 5. These beacon messages broadcasting at a range of transmission power levels exhibit different characteristics at the receiver, which allow the location of the mobile device to be estimated. *Id.* The beacon nodes may vary the transmission power, which increases the accuracy of the receiving mobile node's tracking by "several meters." *Id.*

Lorincz provides a real-world example of how the MoteTrack system can be implemented. If a fire occurs in a large building, firefighters who cannot see because of heavy smoke may be able to determine their location using MoteTrack. *Id*. at 1. The beacon nodes, which have been previously installed in the building, can transmit messages to the firefighters who are wearing a heads-up display. *Id*. Using these messages, the location of the firefighters may be determined, allowing the firefighters to search for safe exit routes. *Id*.

3. Analysis

a. Independent Claims 1, 11, and 20

i. Preamble: a "system" including "one or more sending data processing systems," wherein each sending processing system" comprise "one or more processor" and "memory" (claim 1); a "method" (claim 11); a "non-transitory computer readable medium" (claim 20)

Petitioner presents evidence that Ribaudo discloses a system for providing communication services to users of multiple mobile devices 12. Pet. 25–26 (citing Ex. 1005 ¶ 15, Fig. 1). According to Petitioner, Ribaudo teaches that "[i]n these systems, each mobile device may include processors, memory, and any suitable combination of hardware, software, and firmware." *Id.* at 26 (citing Ex. 1005 ¶¶ 19, 32–33; Ex. 1004 ¶ 72). Additionally, according to Petitioner, "[e]ach mobile device 12 in Ribaudo 'may include any suitable types of devices capable of communicating with other devices' and, therefore, corresponds to the claimed 'sending data processing system.'" *Id.* (citing Ex. 1005 ¶ 18; Ex. 1004 ¶ 73). Further, "within each of these mobile devices, the memory module 22 corresponds to

the 'memory coupled to the one or more processors and storing instructions.'" *Id*. (citing Ex. 1005 ¶¶ 32–33).

Petitioner also presents evidence that "Ribaudo describes a 'method for proximity determination.'" Pet. 25 (citing Ex. 1005, Abstract; Ex. 1004 ¶ 72). Citing to Dr. Michalson's supporting testimony, Petitioner contends a POSITA would have understood that "the methods disclosed by Ribaudo would be performed in a location network expanse," which a POSITA would have understood to mean "within the coverage area of a network used by Ribaudo's mobile device." *Id.* at 26 (citing Ex. 1005 ¶¶ 20–21, 24–27; Ex. 1004 ¶ 72). Additionally, Petitioner presents evidence that "Ribaudo discloses 'software . . . to provide the functionality described herein,'" wherein this software, when executed, "is operable to perform proximity determination techniques," and therefore "corresponds to the claimed 'non-transitory computer readable medium.'" *Id.* at 27 (citing Ex. 1005 ¶ 19; Ex. 1004 ¶ 74).

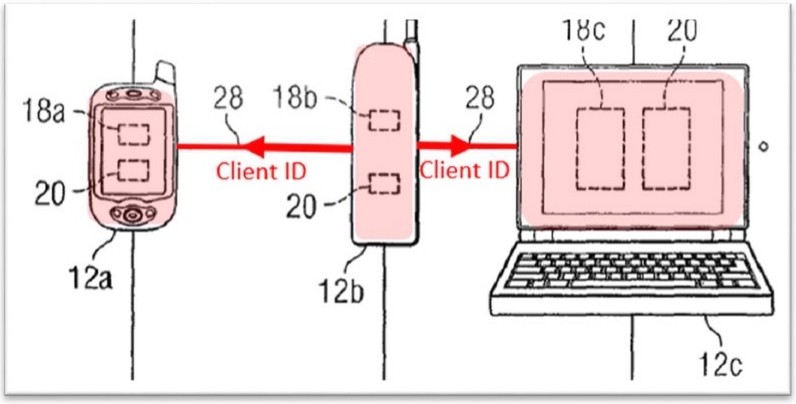
Although Patent Owner does not present arguments addressing the specific merits of Petitioner's contentions with respect to the preambles (*see generally* PO Resp.; PO Sur-Reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Having reviewed all of Petitioner's assertions regarding the recitations in the preambles, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches a "system" including "one or more sending data processing systems," wherein each sending processing system" comprise "one or more processor" and "memory," as recited in claim 1, a "method" as recited in

claim 11, and a "non-transitory computer readable medium" as recited in claim 20.[7]

ii. "*periodically beaconing outbound a broadcast unidirectional wireless data record [] for physically locating in a region of the sending data processing system one or more receiving user carried mobile data processing systems" (claims 1, 11, 20)*

Citing to the testimony of Dr. Michalson for evidentiary support, Petitioner contends that the above claim limitation relates to "the sending data processing system periodically sending (or 'beaconing') an outbound signal (referred to as a 'broadcast unidirectional wireless data record') to physically locate one or more nearby devices." Pet. 27 (citing Ex. 1001, 448:19–23, 449:35–40, 450:42–47; Ex, 1004 ¶¶ 76–81). Petitioner then presents evidence that, in Ribaudo, "in certain examples, each mobile device beacons outbound a signal that includes a 'client ID' to alert other devices of its presence." *Id.* at 28 (citing Ex. 1005 ¶¶ 46, 57, 65; Ex. 1004 ¶ 76). Petitioner contends that the "beaconed signal in Ribaudo, including the client ID and availability level of the user, corresponds to the claimed broadcast unidirectional wireless data record, and the mobile device 12 beaconing that signal corresponds to the claimed sending data processing system." *Id.* (citing Ex. 1004 ¶ 76). To support its contentions, Petitioner provides an annotated Figure 1 of Ribaudo, as seen below.

[7] The issue of whether the preambles are limiting need not be resolved because, regardless of whether the preambles are limiting, Petitioner has sufficiently shown that the recitations in the preambles are satisfied by the combination of Ribaudo and Lorincz. *See Realtime Data*, 912 F.3d at 1375.



Annotated Excerpt of Figure 1 of Ribaudo

Annotated Figure 1 of Ribaudo in the Petition shows a communications services system for mobile device users. *Id.* at 28. Petitioner contends that Figure 1 of Ribaudo illustrates that "the beaconing of the signal by mobile device 12b to nearby mobile devices 12a and 12c is unidirectional." *Id.* at 28–29 (citing Ex. 1005, Fig. 1; Ex. 1004 ¶ 76).

According to Petitioner, "[t]he beaconed signal is received by nearby mobile devices, such as cellular telephones or any other type of portable devices . . . each of which functions as a 'receiving user carried mobile data processing system.'" Pet. 29 (citing Ex. 1005 ¶¶ 12, 18; Ex. 1004 ¶ 77)). Thus, according to Petitioner, the receiving mobile device "can use the received client ID to determine that the receiving mobile device is in physical proximity to the sending mobile device." *Id.* (citing Ex. 1005 ¶¶ 46, 57, 59, 65, 70; Ex. 1004 ¶ 77). Citing to Dr. Michalson's supporting testimony, Petitioner then contends that a POSITA "would have understood from Ribaudo that the beaconed signal containing the client ID and availability level of the user could have been periodically beaconed because the periodic beaconing of a signal uses the least amount of power from the mobile device." *Id.* (citing Ex. 1004 ¶ 77).

Petitioner further presents evidence that "Lorincz also discloses periodically beaconing outbound a signal used for tracking a location of a mobile device." Pet. 29–30 (citing Ex. 1006, 4–5; Ex. 1004 ¶¶ 78–79). In particular, Petitioner contends that "Lorincz describes a system in which 'beacon nodes broadcast periodic *beacon messages'* detectable by a mobile node," wherein "[t]hese signals are used to locate the mobile node within the network of beacon nodes." *Id.* at 30 (citing Ex. 1006, 4–5; Ex. 1004 ¶ 78). According to Petitioner, "Lorincz describes how the system makes location determinations: 'Beacon nodes ***broadcast periodic beacon messages***, which consist of a tuple of the format {*sourceID*, *powerLevel*},'" wherein each mobile node that wishes to use MoteTrack to determine its location "listens for some time period to acquire . . . the set of beacon messages received over some time interval." *Id.* at 31 (citing Ex. 1006, 4–5; Ex. 1004 ¶ 79).

Relying on Dr. Michalson's supporting testimony, Petitioner then contends that a POSITA would have been motivated to combine Ribaudo and Lorincz because "the techniques of Lorincz, which are meant to improve accuracy and efficiency of location determinations, would naturally complement the techniques of Ribaudo for determining the proximity of mobile devices." Pet. 22 (citing Ex. 1004 ¶¶ 65–70). According to Petitioner, both Ribaudo and Lorincz "are directed to determining a location of one or more mobile devices," with Lorincz disclosing "techniques for more accurately estimating the location of mobile devices within a given area," wherein a POSITA "would have been motivated by the desire for increased location accuracy to implement aspects of the MoteTrack system described in Lorincz" in the systems described in Ribaudo. *Id.* at 22–23 (citing Ex. 1005 ¶¶ 6, 223; Ex. 1006, 1–5; Ex. 1004 ¶¶ 65–69).

Patent Owner replies that the challenged claims of the '011 patent are not obvious over Ribaudo in view of Lorincz. PO Resp. 16. In particular, Patent Owner contends that it would not have been obvious to a POSITA to "combine the periodic beaconing feature in Lorincz with the system disclosed in Ribaudo." *Id.*; *see also* PO Sur-reply 5–7.

Patent Owner contends that "Ribaudo does not disclose outbound *periodic* broadcast of a wireless data record." PO Resp. 17. According to Patent Owner, "the '011 patent recites '*periodically* beaconing outbound a broadcast unidirectional wireless data record,'" wherein "[a] POSITA would have understood the 'periodic beaconing' required . . . beaconing occurring or reoccurring at regular intervals." *Id.* (citing Ex. 2025 ¶¶ 50, 49, 51, 52). According to Patent Owner, even Dr. Michalson testified that "Ribaudo does not explicitly disclose periodic beaconing." *Id.* at 16–17 (citing Ex. 2026, 39:9–42:2).

Patent Owner acknowledges that "Lorincz describes a RF-based location tracking system (called MoteTrack) where the location of each mobile node is computed" (PO Resp. 19), and that the Petition's obviousness argument concerning the "periodic beaconing" requirement is directed to "Lorincz's disclosure of periodic beaconing combined with Ribaudo's beaconing system." *Id.* at 20 (citing Pet. 30–31). However, relying on Dr. Sharony's testimony for support, Patent Owner contends that "Ribaudo and Lorincz teach fundamentally different methods of proximity determination." *Id.* at 19 (citing Ex. 2025 ¶ 55); *see also* PO Sur-reply 5–7.

According to Patent Owner, in Lorincz's MoteTrack, each mobile node that wishes to determine its location searches for a reference location in the database, and thus, for MoteTrack to work properly, "several beacon

nodes are required." PO Resp. 19 (citing Ex. 1006, 5; Ex. 2025 ¶¶ 55–56)). Patent Owner contends that "[t]his is in stark contrast to Ribaudo where a single beacon node is used to determine proximity, and to the '011 Patent where a single beacon node is used to determine location." *Id.* That is, "Ribaudo's single-node system for determining proximity is inappropriate for use in conjunction with Lorincz's multi-node MoteTrack that requires substantial offline calibration." *Id.* at 20 (citing Ex. 2026, 46:2–10; 44:5–46:9).

We disagree with Patent Owner's arguments. First, we agree with Petitioner that a POSITA would have understood the advantages of using a beaconed signal that is "periodically beaconed" in a system such as that of Ribaudo because the periodic beaconing of a signal is well-known to use "the least amount of power from the mobile device." Pet. Reply 2 (citing Pet. 29). We credit Dr. Michalson's testimony, which is consistent with Ribaudo's teachings, that periodic beaconing was a well-known concept for saving power. *See*. Ex. 2026, 21:2–22:12 ("by periodically transmitting the data, you can [] save an amount of power"). Further, we are persuaded that Ribaudo "has to be capable of periodic transmissions," wherein "the device will periodically beacon the cell towers so that it knows where they are or that they're [] connected to the network." *Id.* at 39:13–42:2.

Nevertheless, as Patent Owner acknowledges, Petitioner relies on the combined teachings of Ribaudo and Lorincz, wherein Lorincz describes location tracking where the location of each mobile node is computed using a received radio signal strength signature from numerous beacon nodes. PO Resp. 19. In particular, Petitioner relies on Lorincz for describing "a system in which 'beacon nodes broadcast periodic beacon messages' detectable by a

mobile node," wherein "[t]hese signals are used to locate the mobile node within the network of beacon nodes." Pet. 30 (citing Ex. 1006, 4–5; Ex. 1004 ¶ 78) (emphasis omitted).

We are persuaded by Petitioner's contention, which is supported by Dr. Michalson's testimony, that a POSITA would have been motivated to combine Ribaudo and Lorincz because "the techniques of Lorincz, which are meant to improve accuracy and efficiency of location determinations, would naturally complement the techniques of Ribaudo for determining the proximity of mobile devices." Pet. 22 (citing Ex. 1004 ¶¶ 65–70).

We are unpersuaded by Patent Owner's contention that Ribaudo and Lorincz teach fundamentally different methods of determining a position of a mobile device. PO Resp. 19; *see also* PO Sur-reply 5–7. Instead, we agree with Petitioner that Ribaudo, although directed to "proximity determination," also "clearly analyzes the location of devices." Pet. Reply 5 (citing Ex. 1005, Abstract). As Petitioner points out, "Ribaudo allows devices to share 'more information from . . . the user's . . . profiles based on the location of a detected match.'" *Id.* (quoting Ex. 1005 ¶ 78) (emphasis omitted). Similarly, we agree that while "Lorincz teaches a system of location tracking," Lorincz also "determines the distance (i.e., the proximity) between the mobile node and the various beacon nodes." *Id.* (citing Ex. 1006, 5 (emphasis omitted).

Accordingly, we agree with Petitioner that Ribaudo and Lorincz "utilize many overlapping concepts." Pet. Reply 5. As Petitioner points out, Ribaudo and Lorincz "each use aspects of both locations and proximity" (*id.*), with Lorincz disclosing "techniques for more accurately estimating the

location of mobile devices within a given area." Pet. 22–23 (citing Ex. 1005 ¶¶ 6, 223; Ex. 1006, 1–5; Ex. 1004 ¶¶ 65–69).

Although Patent Owner contends that "Ribaudo's single-node system for determining proximity is inappropriate for use in conjunction with Lorincz's multi-node MoteTrack that requires substantial offline calibration" wherein Lorincz "needs to be installed and calibrated before it can be used" (PO Resp. 20; *see also* PO Sur-reply 5–7), Patent Owner appears to be arguing against the bodily incorporation of the system of Lorincz into the system of Ribaudo. *Id.* However, "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

Here, as Petitioner points out, Petitioner is relying on Lorincz only to the extent that Lorincz teaches "the timing and configuration of how signals are beaconed (i.e., beaconing *periodically*)," wherein, each of Ribaudo and Lorincz "involves beaconed signals for locating devices and presenting related content thereon." Pet. Reply 5–6. We credit Dr. Michalson's testimony that a POSITA "would have understood that the teachings of Lorincz would have improved the accuracy of the location determination made by the system disclosed in Ribaudo." Ex. 1004 ¶¶ 65–69. As Dr. Michalson testified, a POSITA would have understood "Lorincz teaches that the MoteTrack system operates on low power levels," wherein "the limited use of power" in Lorincz provides a reason for a POSITA to incorporate the teachings of Lorincz into the system of Ribaudo. *Id.* ¶ 70.

Given Petitioner's analysis, Petitioner has articulated sufficient reasoning with rational underpinning to support its assertion that it would have been obvious to combine Lorincz's teaching of beaconing periodic broadcast signals with Ribaudo's beaconed signal (the claimed "broadcast unidirectional wireless data record"). *See KSR*, 550 U.S. at 418. In that combination, the broadcast unidirectional wireless data record would be transmitted periodically.

Having reviewed all of Petitioner's assertions regarding these limitations, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches "periodically beaconing a broadcast unidirectional wireless data record for physically locating . . . one or more receiving user carried mobile data processing systems," as recited in claims 1, 11, and 20.

iii. "the broadcast unidirectional wireless data record received directly from the sending data processing system in each receiving user carried mobile data processing system" (claims 1, 11, 20)

Petitioner presents evidence that, in Ribaudo, "in certain embodiments, [the] detection of another user in proximity and determination of whether another detected user is a match is performed locally on the user's mobile device, without consulting the data center or other centralized location remote from the mobile device users." Pet. 32 (citing Ex. 1005 ¶ 6). Petitioner contends "Ribaudo states that the beaconed signal may be 'broadcast within an approximately 300-foot range' and the 'mobile device 12a may also listen for data being beaconed by other mobile devices 12.'"

Id. at 32–33 (citing Ex. 1005 ¶ 84). Relying on the testimony of Dr. Michalson for support, Petitioner contends that a POSITA "would have understood from these statements that the beaconed signal received at the receiving mobile device in Ribaudo comes directly from the sending mobile device." *Id.* at 33 (citing Ex. 1005 ¶ 84).

Although Patent Owner does not present arguments in its Response or Sur-reply addressing the merits of Petitioner's contentions with respect to this claim limitation (*see generally* PO Resp.; PO Sur-reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Having reviewed all of Petitioner's assertions regarding this limitation, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches "broadcast unidirectional wireless data record received directly from the sending data processing system in each receiving user carried mobile data processing system," as recited in claims 1, 11, and 20.

iv. "no physical location coordinates of the sending data processing system," "a data field containing a signal strength of the sending data processing system" (claims 1, 11, 20)

Petitioner presents evidence that "Ribaudo teaches a beaconed signal (e.g., a unidirectional wireless data record) that does not include location coordinates of the sending mobile device 12." Pet. 33–34 (citing Ex. 1005 ¶¶ 46, 57, 65; Ex. 1004 ¶¶ 85–86). In particular, Petitioner contends that "Ribaudo's proximity detection techniques operate based on a determination of relative proximity" in which "[t]he receiving devices determine whether

the sending device is associated with a match ID," wherein "[t]his type of determination (i.e., that a potential match is nearby) is made without any information about the sender's physical location." *Id.* at 34 (citing Ex. 1005 ¶¶ 185, 59, 70; 1004 ¶¶ 85–86).

Petitioner further presents evidence that "Ribaudo discloses using a signal strength to determine the location of a mobile device." Pet. 36 (citing Ex. 1004 ¶¶ 89–90). Petitioner contends "Ribaudo explains that 'signal strength may be used to narrow the range of other users in proximity, filtering out matches that are further away.'" *Id.* at 36–37 (citing Ex. 1005 ¶ 76). Relying on Dr. Michalson's testimony for support, Petitioner contends that it would have been obvious to a POSITA "to implement Ribaudo's teachings by using a 'data field' to communicate signal strength," wherein "Lorincz expressly teaches that the beaconing mobile device includes a 'data field' containing the signal strength of the beaconing mobile device." *Id.* at 37 (citing Ex. 1006, 4–5; Ex. 1004 ¶ 91).

Although Patent Owner does not present arguments in its Response or Sur-reply addressing the merits of Petitioner's contentions with respect to these claim limitations (*see generally* PO Resp.; PO Sur-reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Having reviewed all of Petitioner's assertions regarding these limitations, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches a unidirectional wireless data record that includes "no physical location coordinates of the sending data processing system," and "a data field containing a signal strength of the sending data processing system," as recited in claims 1, 11, and 20.

v. "application context identifier data identifying location based content for presenting by a location based application of the receiving user carried mobile data processing system to a user interface of the receiving user carried mobile data processing system" (claims 1, 11, 20)

Petitioner presents evidence that Ribaudo teaches "a sending mobile device [that] beacons a signal that includes an availability of a user associated with a client ID," and contends that "[t]he portion of the beaconed signal that provides the availability of the user corresponds to the claimed application context identifier data." Pet. 39 (citing Ex. 1005 ¶¶ 70, 84; Ex. 1004 ¶ 96). According to Petitioner, in Ribaudo, the user may specify that information from a user's business profile should be shared if a match is detected at a location, such as at a business conference, wherein such information shared is thus "location based." *Id.* at 41 (citing Ex. 1005 ¶ 78; Ex. 1004 ¶ 98). Citing to Dr. Michalson's supporting testimony, Petitioner contends that, in Ribaudo, "the availability of the user, along with the client ID, identifies location based content for presentation by a location based application of the receiving mobile device." *Id.* (citing Ex. 1005 ¶¶ 46–52, 70, 84; Ex. 1004 ¶ 96). Thus, according to Petitioner, in Ribaudo, "a location based application presents the location based content from the match ID to a receiving user through a user interface on the receiving mobile device." *Id.* (citing Ex. 1005 ¶¶ 47, 49; Ex. 1004 ¶ 99).

Patent Owner replies that "[u]ser availability and client ID do not provide data 'identifying location based content' for present[ation] to a receiving user," but rather "constitutes information about the sender (who) but not location (where)." PO Resp. 21 (citing Ex. 2025 ¶ 61). According

to Patent Owner, "Ribaudo's client ID is used for proximity determination and not location determination," and thus, "[t]here is no indication about the location (of two matched people) and no content that is association with that location." *Id.*; *see also* PO Sur-reply 7–8.

We do not agree with Patent Owner's arguments. First, we agree with Petitioner's contention that in Ribaudo, the user may specify that information from a user's business profile should be shared if a match is detected at a location, such as a business conference. Pet. 41 (citing Ex. 1005 ¶ 78; Ex. 1004 ¶ 98). Petitioner's contention is supported by Dr. Michalson's testimony and is consistent with the teachings of Ribaudo. *Id.* Even Patent Owner acknowledges that Ribaudo provides such teaching. PO Sur-reply 8.

We do not agree with Patent Owner's contention that a user's availability and client ID constitute information about the sender and thus cannot be about a location. PO Resp. 21; PO Sur-reply 8. That is, we are unpersuaded by Patent Owner's contention that Ribaudo's shared information is not "location based content" because it is information "about the sender's *proximity* to the receiver user, regardless of the sender's actual specific location." PO Sur-reply 8 (citing Ex. 2025 ¶ 61). As Petitioner points out, the claims require that the application context identifier data must merely identify "content" that is "location based." Pet. Reply 7.

Although Patent Owner contends that Ribaudo's client ID is not used for "location determination," "cannot be about a location" (PO Resp. 21), and is "about the sender's proximity . . . regardless of the sender's actual specific location" (PO Sur-reply 8), the claims specifically require identifying "content" for presenting that is "location based," rather than

determining the "location" itself, or be "about" the sender's actual specific location *See* Ex. 1001, 448:33–50.

As Petitioner points out, in Ribaudo, the user may specify that information from a user's business profile should be shared if a match is detected in proximity at a location, such as at a business conference. Pet. 41. We agree with Petitioner that such information to be shared based on whether the user's location is in proximity to a sender's location, even if the sender's actual specific location is not known, is still "location based content." *Id.*

Having reviewed all of Petitioner's assertions regarding this limitation, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches an "application context identifier data identifying location based content for presenting. . . to a user interface of the receiving user carried mobile data processing system," as recited in claims 1, 11 and 20.

vi. *"upon the receiving user carried mobile data processing system determining [with] a local memory maintained location based configuration monitored with background processing of the receiving user carried mobile data processing system during mobility of the receiving user carried mobile data processing system" (claims 1, 11, 20)*

Petitioner presents evidence that "[t]he match ID information stored on the receiving mobile device of Ribaudo corresponds to the claimed 'local memory maintained location based configuration.'" Pet. 43 (citing Ex. 1005 ¶¶ 32–33, 37, 83, 131, 204; Ex. 1004 ¶ 102). Relying on Dr. Michalson's

testimony, Petitioner contends that, in Ribaudo, the "match ID information is 'monitored with background processing' of the receiving mobile device while that device is mobile to determine if a received signal contains a matching client ID and other appropriate criteria are met for presenting the location based content on the user interface.'" *Id.* (citing Ex. 1004 ¶ 103). According to Petitioner, as an example, "Ribaudo discloses that location based content, such as whether a user in proximity went to the same university, can be presented on a user interface if the background processing on the receiving user mobile device identifies a matching client ID and availability level." *Id.* at 44 (citing Ex. 1005 ¶¶ 46–52; Ex. 1004 ¶ 104).

Although Patent Owner does not present arguments in its Response or Sur-reply addressing the merits of Petitioner's contentions with respect to these claim limitations (*see generally* PO Resp.; PO Sur-reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Having reviewed all of Petitioner's assertions regarding these limitations, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches "upon the receiving user carried mobile data processing system determining with a local memory maintained location based configuration monitored with background processing of the receiving user carried mobile data processing system during mobility of the receiving user carried mobile data processing system," as recited in claims 1, 11, and 20.

vii. *"anticipating receipt of the broadcast unidirectional wireless data record having the application context identifier data in response to a user activating the location based application with the user interface," the location based application "invokes a location based API of the receiving user carried mobile data processing system for the location based configuration," "is notified upon receipt of the broadcast unidirectional wireless data record" (claims 1, 11, 20)*

Petitioner presents evidence that, in Ribaudo, "the user of a receiving mobile device may activate an application to look for matches that are in the same proximity," wherein "the application would anticipate receipt of a wireless data record beaconed from a sending mobile device that contains a matching client ID and an appropriate availability level (i.e., application context identifier data) for the user of the sending mobile device." Pet. 46 (citing Ex. 1005 ¶¶ 46–52, 57, 70, 84; Ex. 1004 ¶ 106). Petitioner contends that Ribaudo's "adaptor 18 of mobile device 12a" determines relevance "by examining the client ID associated with mobile device 12b and the availability levels of both users." *Id.* at 47 (citing Ex. 1005 ¶ 70). According to Petitioner, "[t]he location based application on the receiving mobile device would invoke adaptor 18 so as to receive the wireless data record and compare it to the match ID stored on the receiving mobile device." *Id.* at 48 (citing Ex. 1005 ¶¶ 57, 58–63, 67–70; Ex. 1004 ¶ 108).

Petitioner then presents evidence that Ribaudo's receiving mobile device "identifies a match ID[,] notifies the receiving user of the match and presents certain information about the identified match (e.g., location based content)." Pet. 49 (citing Ex. 1005 ¶¶ 58–59, 87; Ex. 1004 ¶ 110).

According to Petitioner, "[i]n some examples [of Ribaudo], the user may only be notified of the match and presented with the associated match data if certain preconfigured criteria are met," such as "when a user's configured availability may 'instruct the adaptor 18 of the other mobile devices 12 in proximity to only notify their respective users of a match with the first user if it is work-related.'" *Id.* (citing Ex. 1005 ¶ 61; Ex. 1004 ¶ 110).

Although Patent Owner does not present arguments in its Response or Sur-reply addressing the merits of Petitioner's contentions with respect to these claim limitations (*see generally* PO Resp.; PO Sur-reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Having reviewed all of Petitioner's assertions regarding these limitations, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches "anticipating receipt of the broadcast unidirectional wireless data record having the application context identifier data in response to a user activating the location based application with the user interface," wherein the location based application "invokes a location based API of the receiving user carried mobile data processing system for the location based configuration," and "is notified upon receipt of the broadcast unidirectional wireless data record," as recited in claims 1, 11, and 20.

viii. "presents the location based content to the user interface of the receiving user carried mobile data processing system," the location based content "originating from another data processing system that is remote to both the sending data processing system and the receiving user carried mobile data processing system" (claims 1, 11, 20)

Petitioner presents evidence that, in Ribaudo, when the receiving user of the match is notified, the device displays location based content to the user, such as whether the matched users went to the same university, wherein the location based content "originates from a data system that is remote to both the sending mobile device and the receiving mobile device." Pet. 50–51 (citing Ex. 1005 ¶¶ 46–51, 59; Ex. 1004 ¶ 112). For example, Petitioner contends that "the content in a match ID can originate from data center 14 and be downloaded to the receiving mobile device." *Id.* (citing Ex. 1005 ¶¶ 6, 33, 41–42, 52–57, 80, 83–84). Relying on Dr. Michalson's supporting testimony, Petitioner contends that "the match identifiers and other commonality information constitutes location based content presented to a user based on a determination that the user's mobile device is in proximity to an identified match." *Id.* (citing Ex. 1005 ¶ 83; Ex. 1004 ¶ 112).

Patent Owner responds that "broadcast network identifier (or client ID) in Ribaudo is used for proximity determination and not for physically locating another user in a region of the sending user." PO Resp. 23 (citing Ex. 2025 ¶ 68). According Patent Owner, although Dr. Michalson cites to "Ribaudo's disclosure of sending notice to a receiving user of a match and including additional, matched-based information (e.g., identified

university)" (*id.* (citing Ex. 1004 ¶ 112)), "the identified university is tied to a specific user and not to a location," and thus, "the information identified (e.g., university) is not location based but rather user based." *Id.*

We disagree with Patent Owner's arguments. As discussed above in Section II(D)(3)(a)(v), we agree with Petitioner that information shared based on whether the receiving user's location in the proximity to a sender's location is "location based." Pet. 41; *see* Ex. 1005 ¶ 78; Ex. 1004 ¶ 98. Here, as Petitioner explains, in Ribaudo, "the match identifiers and other commonality information constitutes location based content presented to a user based on a determination that the user's mobile device is in proximity to an identified match," wherein the device displays to the user location based content, such as whether another user located in proximity went to the same university. *Id.* at 50–51 (citing Ex. 1005 ¶¶ 46–51, 59, 8; Ex. 1004 ¶ 112).

We are also persuaded by Petitioner's showing that Ribaudo's content in a match ID "can originate from data center 14 and be downloaded to the receiving mobile device." Pet. 51 (citing Ex. 1005 ¶¶ 6, 33, 41–42, 52–57, 80, 83–84).

Having reviewed all of Petitioner's assertions regarding these limitations, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches the limitation "presents the location based content to the user interface of the receiving user carried mobile data processing system," the location based content "originating from another data processing system that is remote to both the sending data processing system and the receiving user carried mobile data processing system," as recited in claims 1, 11 and 20.

b. Dependent Claims 2 and 12

Petitioner presents evidence that, in certain cases, Ribaudo's receiving mobile device determines whether to notify the user of a match based on determining that a prospective match has arrived or departed from a certain location (e.g., based on satisfaction of an arrival or departure condition). Pet. 52 (citing Ex. 1004 ¶ 114). For example, Petitioner contends that "Ribaudo teaches that 'matches may be filtered by time of the detected match in proximity,'" wherein a user "may wish to also be notified of all matches that were at the same hotspot but at different points in time (e.g., an hour before the user, a day before the user, or at any other suitable length of time)." *Id*. (citing Ex. 1005 ¶ 64). According to Petitioner, "[t]o determine whether prospective matches have been at the same hotspot at different points in time, the systems and methods in Ribaudo must monitor the arrival and departure of those devices in the area in question (e.g., in 'the same hotspot')." *Id.* (citing Ex. 1004 ¶ 114).

Although Patent Owner does not present arguments in its Response and Sur-reply addressing the merits of Petitioner's contentions with respect to claims 2 and 12 (*see generally* PO Resp.; PO Sur-reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Having reviewed all of Petitioner's assertions regarding claims 2 and 12, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches "wherein the location based configuration includes determining an arrival or departure condition," as recited in claims 2 and 12.

c. Dependent Claims 3 and 13

Petitioner presents evidence that Ribaudo's receiving mobile device "determines whether to notify the user of a match based on determining that the distance between the user and the prospective match satisfies a distance condition specified by the receiving user." Pet. 53 (citing Ex. 1004 ¶ 116). According to Petitioner, Ribaudo teaches that, "while mobile devices may beacon a signal to nearby devices within a range of 300 feet, users may choose to filter matches to only include matches within a predefined distance that is 'less than the capable range of detection of the user's mobile device.'" *Id*. (citing Ex. 1005 ¶ 57).

Although Patent Owner does not present arguments in its Response and Sur-reply addressing the merits of Petitioner's contentions with respect to claims 3 and 13 (*see generally* PO Resp.; PO Sur-reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Having reviewed all of Petitioner's assertions regarding claims 3 and 13, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches "wherein the location based configuration includes determining a distance condition," as recited in claims 3 and 13.

d. Dependent Claims 9 and 19

Petitioner presents evidence that Ribaudo's proximity detection system "'includes one or more mobile devices 12' corresponding to a 'sending data processing system,'" wherein "the mobile devices 'may include any suitable types of devices capable of communicating with other

devices' and 'may include, for example, . . . any [] suitable types of portable devices." Pet. 54 (citing Ex. 1005 ¶ 17–18).

Although Patent Owner does not present arguments in its Response and Sur-reply addressing the merits of Petitioner's contentions with respect to claims 9 and 19 (*see generally* PO Resp.; PO Sur-reply), the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Having reviewed all of Petitioner's assertions regarding claims 9 and 19, as well as all supporting evidence, we determine on this complete record presented that Petitioner has persuasively shown that the combination of Ribaudo and Lorincz teaches "wherein the sending data processing system is a mobile data processing system," as recited in claims 9 and 19.

e. Ground 1 Conclusion

For the foregoing reasons, Petitioner has persuasively demonstrated that the combination of Ribaudo and Lorincz teaches the subject matter of claims 1–3, 9, 11–13, and 19–20.

E. Objective Indicia of Nonobviousness

Patent Owner asserts that "the substantial and compelling objective evidence of non-obviousness, . . . more than outweighs any prima facie case of obviousness. *See* PO Resp. 24–33. We have considered Patent Owner's evidence concerning objective indicia of non-obviousness as a part of this decision. *See Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1047–48 (Fed. Cir. 2016) (en banc). Objective evidence of non-obviousness "may often be the most probative and cogent evidence in the record" and "may often establish that an invention appearing to have been obvious in light of the prior art was not." *Transocean Offshore Deepwater Drilling, Inc. v.*

Maersk Drilling USA, Inc., 699 F.3d 1340, 1349 (Fed. Cir. 2012) (citation omitted). For such evidence to have substantial weight, however, "its proponent must establish a nexus between the evidence and the merits of the claimed invention." *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016). "[T]here is no nexus unless the evidence presented is 'reasonably commensurate with the scope of the claims.'" *Id.* (quoting *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013)). The patentee "bears the burden of showing that a nexus exists." *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1359 (Fed. Cir. 1999). We address Patent Owner's arguments below.

1. Copying

Patent Owner suggests that evidence of copying supports that the challenged claims are not obvious. PO Resp. 25–30; PO Sur-reply 9–11. According to Patent Owner, copying "can be shown inferentially based on evidence of access to information about the patented invention," wherein, we should infer copying based on "Petitioner's access to the '011 patent and its subsequent development of infringing devices." PO Resp. 25 (citing *Liqwd, Inc. v. L'Oreal USA, Inc.*, 941 F.3d 1133, 1138 (Fed. Cir. 2019)).

As the court in *Liqwd* recognized, access to a patent coupled with circumstantial evidence showing changes to a competitor's design can be sufficient to support copying. *Liqwd, Inc..*, 941 F.3d at 1138. This may happen when, for example, "the defendant's engineering design team had settled on one design and 'suddenly changed direction' to adopt a feature disclosed in the patent as soon as it issued." *Id.* (quoting *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1328 (Fed. Cir. 2009)).

Here, we find the circumstantial evidence is not sufficient to suggest that Petitioner copied the patented technology. As Petitioner notes, the only alleged access involves unsolicited communications between 2009 and 2014 inventor William Johnson sent to Petitioner's agent seeking to monetize Patent Owner's then-pending patent applications. *See* Pet. Reply 10–11; PO Resp. 25–27.

Patent Owner merely alleges that "[i]n or around June 2013," Petitioner "publicly announced its rollout of iOS7 and its BLE iBeacon initiative," which included "Petitioner's iBeacon protocol, a technology standard for enabling location awareness for interaction of devices" (PO Resp. 27); and that at least claims 1, 11 and 20 of the '011 patent "cover Petitioner devices." PO Resp. 27–29. These general allegations are not sufficient to infer that Petitioner changed its design to incorporate the patented features based on its access to Patent Owner's technology. *See Liqwd*, 941 F.3d at 1138 (noting the "primary concern . . . to avoid treating mere infringement as copying simply because the claims of a patent arguably read on a competitor product").

Thus, we find this evidence would be entitled to little weight in our obviousness analysis.

2. Commercial Success

Patent Owner suggests that evidence of commercial success further supports that the challenged claims are not obvious. PO Resp. 30–31; PO Sur-reply 11–12. Specifically, according to Patent Owner, the claimed features were commercially successful because "Petitioner touted the claimed features of the invention in connection with products using the iBeacon technology covered by the '011 patent," wherein the "location

based services" touted by Petitioner is "a key factor of the '011 patent claims." PO Resp. 30. Patent Owner contends that Petitioner's commercial success is "directly attributable" to the combination of features and the benefits of the iBeacon technology covered by the challenged claims of the '011 patent. *Id.* at 31.

We find Patent Owner's evidence unconvincing. In particular, the alleged touting relates to the products' functionality, not their commercial success. *See* PO Resp. 30–31. We find no evidence in the record that the subject matter recited by the challenged claims of the '011 patent, itself, was the object of commercial success. *Id.* In fact, as Patent Owner points out, the alleged touting refers only broadly to "location based services." *Id.*

We agree with Petitioner that Patent Owner's "only evidence to support its position is an excerpt from [Petitioner's] announcement at WWDC 21013 of the iBeacon protocol," which "makes no mention of [Petitioner's] commercial success of any product, let alone iBeacon." Pet. Reply. 13. That is, Patent Owner has not provided any evidence of commercial success, such as "economic data or sales figures directed to commercial success." *Id.* at 12 (citing *Chemours Company FC, LLC v. Daikin Industries, Ltd.*, 4 F.4th 1370, 1378 (Fed. Circ. 2021)).

Thus, we find this evidence would be entitled to little weight in our obviousness analysis.

3. Licensing

Patent Owner suggests that evidence that competitors or customers have licensed a patent may provide probative and cogent evidence that claims at issue are not obvious. PO Resp. 31–32; PO Sur-reply 11–12 (citing *Institut Pasteur & Universite Pierre Et Marie Curie v. Focarino*, 738

F.3d 1337, 1347 (Fed. Cir. 2013)). Patent Owner asserts that several "well-known" companies "have entered into licensing agreement pertaining to the patented technology covered by the '011 patent." PO Resp. 31.

We have considered Patent Owner's provided licenses as evidence concerning objective indicia of non-obviousness. *See* Exs. 2028–2030. However, although Patent Owner relies on these licenses as evidence, Patent Owner does not demonstrate a sufficient nexus between the challenged claims and the evidence offered. *See* PO Resp. 31–32; PO Sur-Reply 12–13. In particular, although Patent Owner contends that "the,location based services, which is a key feature of the '011 patent claims, is touted as an advantage of Petitioner's products" (PO Resp. 33), Patent Owner does not establish whether these licenses resulted directly from the unique characteristics of the claimed subject matter of the '011 patent.
As Petitioner notes, the asserted licenses address some 30+ patents, only one of which is the '011 patent, wherein Patent Owner "failed to provide any evidence regarding the weight or importance of the '011 Patent to these agreements," and thus "failed to show a nexus between the claimed invention and the license agreements." Pet. Reply 14; *see also Teva Pharm. Int'l GMBH v. Eli Lily & Co.*, 8 F.4th 1349, 1363–64 (Fed. Cir. 2021) ("Here, given that 188 patents were licensed, the nexus between the license and the validity of any particular claim is rather tenuous to say the least. Thus, the Board was correct to require that Teva show something more than the mere existence of the license.").

The Federal Circuit has long recognized that licensing programs "are not infallible guides to patentability," and that they "sometimes succeed because they are mutually beneficial to the licensed group or because of

business judgments that it is cheaper to take licenses than to defend infringement suits," or "for other reasons unrelated to the unobviousness of the licensed subject matter." *EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907–08 (Fed. Cir. 1985). The Federal Circuit continues to "specifically require affirmative evidence of nexus where the evidence of commercial success presented is a license.'" *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1324 (Fed. Cir. 2004); *see also ABT Systems, LLC v. Emerson Elec. Co.*, 797 F.3d 1350, 1361–62 (Fed. Cir. 2015) ("While licenses can sometimes tilt in favor of validity in close cases, they cannot by themselves overcome a convincing case of invalidity without showing a clear nexus to the claimed invention.").

In this case, Patent Owner merely contends that "location based services" is touted as an advantage of Petitioner's products, and relies merely on the existence of the licenses to show a nexus. We do not find such evidence to be sufficient. We are left to speculate as to whether the license agreements were entered "for other reasons unrelated to the unobviousness of the licensed subject matter." *See EWP*, 755 F.2d at 907–08. The mere existence of the licenses themselves cannot overcome a convincing case of obviousness without showing a clear nexus to the claimed invention. *See ABT*, 797 F.3d at 1361–62.

Thus, we find that Patent Owner has failed to show a sufficient nexus to challenged claims of the '868 patent and the license agreements.

4. Conclusion as to Obviousness

In sum, we have reviewed Patent Owner's arguments and evidence regarding objective evidence of non-obviousness and, for the reasons outlined above, do not find them persuasive enough to outweigh Petitioner's

evidence that claims 1–3, 9, 11–13, and 19–20 would have been obvious under 35 U.S.C. § 103.

F. Obviousness of Claims 1–3, 9, 11–13, and 19–20 over Ribaudo and Wrappe (Ground 2)

Petitioner argues that claims 1–3, 9, 11–13, and 19–20 would also have been obvious over Ribaudo and Wrappe. Pet. 55–58. Because the Ribaudo-Lorincz obviousness ground (ground 1) is dispositive as to all challenged claims (*see supra* § II(D)), we do not reach Petitioner's challenge based on obviousness over Ribaudo and Wrappe. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner "is entitled to a final written decision addressing all of the claims it has challenged"); *Bos. Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that "[t]he Board has the discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims").

F. Obviousness of Claims 1–3, 9, 11–13, and 19–20 over Ribaudo, Lorincz, and Evans (Ground 3); and over Ribaudo, Wrappe and Evans (Ground 4)

Petitioner contends that claims 1–3, 9, 11–13, and 19–20 of the '011 patent also are obvious over Ribaudo, Lorincz and Evans (Ground 3), and over Ribaudo, Wrap and Evans (Ground 4). See Pet. 58–63. Because the Ribaudo-Lorincz obviousness ground (Ground 1) is dispositive as to all challenged claims (*see supra* § II(D)), we do not reach Petitioner's challenges based on obviousness over Ribaudo, Lorincz and Evans, or over Ribaudo, Wrappe and Evans. *See SAS*, 138 S. Ct. at 1359.

III. CONCLUSION[8]

For the foregoing reasons, we determine on the record at hand that Petitioner has demonstrated by a preponderance of the evidence that the challenged claims of the '011 patent are unpatentable.

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–3, 9, 11–13, and 19–20	103	Ribaudo, Lorincz	1–3, 9, 11–13, and 19–20	
1–3, 9, 11–13, and 19–20	103	Ribaudo, Wrappe[9]		
1–3, 9, 11–13, and 19–20	103	Ribaudo, Lorincz, Evans[10]		
1–3, 9, 11–13, and 19–20	103	Ribaudo, Wrappe, Evans[11]		

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

[9] We do not reach this ground because we have determined the challenged claims to be unpatentable under another ground. See supra § II(E).

[10] We do not reach this ground because we have determined the challenged claims to be unpatentable under another ground. See supra § II(E).

[11] We do not reach this ground because we have determined the challenged claims to be unpatentable under another ground. See supra § II(E).

Overall Outcome			1–3, 9, 11–13, and 19–20	

IV. ORDER

For the reasons given, it is

ORDERED that, based on the preponderance of the evidence, claims 1–3, 9, 11–13 and 19–20 of the '011 patent have been shown to be unpatentable; and

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

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