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Paper 29
Entered: December 6, 2023

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UBER TECHNOLOGIES, INC.,
Petitioner,

v.

LBT IP II LLC,
Patent Owner.

IPR2022-00880
Patent 7,598,855 B2

Before CHARLES J. BOUDREAU, JOHN A. HUDALLA, and STEPHEN E. BELISLE, *Administrative Patent Judges*.

BELISLE, *Administrative Patent Judge*.

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

I. INTRODUCTION

Uber Technologies, Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting an *inter partes* review of claims 11–16 ("Challenged Claims") of U.S. Patent No. 7,598,855 B2 (Ex. 1001, "the '855 patent"). LBT IP II LLC ("Patent Owner") filed a Preliminary Response to the Petition (Paper 7, "Prelim. Resp."; *see* Paper 3, 1). We instituted an *inter partes* review of claims 11–16 of the '855 patent on all grounds of unpatentability alleged in the Petition. Paper 8 ("Institution Decision" or "Dec.").

After institution, Patent Owner filed a Response. Paper 12 ("PO Resp."). Petitioner filed a Reply. Paper 16 ("Pet. Reply"). Patent Owner filed a Sur-reply. Paper 23 ("PO Sur-reply"). We held a consolidated oral hearing with IPR2022-00926 on September 14, 2023, and a transcript of the hearing is included in the record. Paper 28 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6 (2018). Under the applicable evidentiary standard, Petitioner has the burden to prove unpatentability by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d) (2022). "Preponderance of the evidence means the greater weight of evidence, evidence which is more convincing than the evidence which is offered in opposition to it." *United States v. C.H. Robinson Co.*, 760 F.3d 1376, 1383 (Fed. Cir. 2014) (internal quotations omitted). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons discussed below, we determine Petitioner has established by a preponderance of the evidence that claims 11–16 of the '855 patent are unpatentable.

II. BACKGROUND

A. Related Matters

The parties indicate that Patent Owner asserted the '855 patent, along with three other U.S. patents (Nos. 7,728,724; 8,531,289; and 8,224,355), against Petitioner in a U.S. district court action, namely, *LBT IP II LLC v. Uber Technologies, Inc.*, No. 6:21-cv-01210-ADA (W.D. Tex.), which was transferred to the Northern District of California as *LBT IP II LLC v. Uber Technologies, Inc.*, No. 3:22-cv-03985-WHO (N.D. Cal.) ("District Court Case"). Pet. 2; Paper 3, 1; Paper 6, 1.

The parties also indicate that Petitioner filed petitions requesting *inter partes* review of U.S. Patent Nos. 7,728,724 (IPR2022-00879); 8,531,289 (IPR2022-00926); and 8,224,355 (IPR2022-00927), owned by Patent Owner. Paper 3, 1; Paper 6, 1. Petitioner further indicates that "Unified Patents filed an IPR Petition against U.S. Patent No. 8,531,289, IPR2022-00806." Paper 6, 1.

Petitioner also submits:

> A related entity, LBT IP I LLC, asserted 5 somewhat similar patents against Apple in *LBT IP I LLC v. Apple Inc.*, No. 1-19-cv-01245 (DDE). The USPTO instituted 5 IPR proceedings, each of which resulted in a final written decision canceling all challenged claims: IPR2020-01189, IPR2020-01190, IPR2020-01191, IPR2020-01192, and IPR2020-01193.

Pet. 2; *see* Paper 6, 1.

B. The '855 Patent

The '855 patent, which is titled "Apparatus and Method for Locating Individuals and Objects Using Tracking Devices," issued on October 6, 2009, from U.S. Patent Application No. 11/491,370, filed July 21, 2006, and

claims priority to U.S. Patent Application No. 11/048,395, filed February 1, 2005. Ex. 1001, codes (21), (22), (45), (54), (63).

The '855 patent generally relates to "a system for monitoring location information of a tracking unit associated with an individual or object that uses wireless data transfer and/or wireless location and tracking systems and wireless communication system (WCS)," such as the system depicted in Figure 1B, reproduced below. *Id.* at 1:16–22, Fig. 1B.

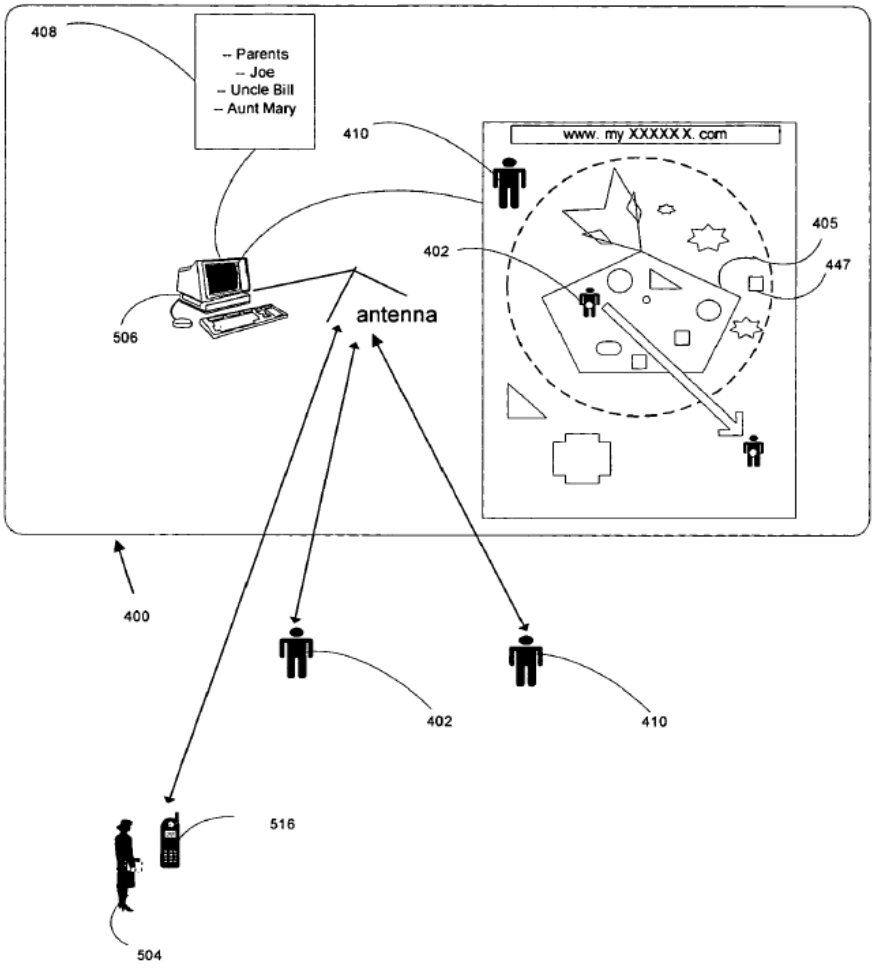

Figure 1B

Figure 1B depicts a graphical representation of a positioning and tracking system for defining an area (e.g., arbitrary shaped safe zone).

Ex. 1001, 4:6–9, Fig. 1B. In positioning and tracking system 400, an individual, such as a child associated with tracking device 402, is monitored by monitoring station 506. A list of individuals interested in the position of the child, such as parents, uncles, and aunts, is maintained in list 408. User 504 may be one of these individuals, such as the child's parent, and carries mobile device 516. User 504 may use mobile device 516 to track the location of the child, including displaying that child's position on a map. *See id.* at 6:44–7:28, 8:4–22.

C. Illustrative Claim

The '855 patent includes seventeen claims, of which claims 11–16 are challenged. Independent claim 11, from which all the other challenged claims depend, is reproduced below with bracketed numbering added to match the parties' designation of limitations and subparts.

11. [Pre] A method of determining location via a tracking device associated with an individual or an object to be located, the method comprising:
[A] receiving a location request from a user;
[B] activating a positioning apparatus associated with the tracking device;
[C] transmitting to the tracking device:
[C(i)] (i) a first signal from a monitoring station;
[C(ii)] (ii) a second signal from a wireless location and tracking system;
[C(iii)] (iii) a third signal from a mobile transceiver; and
[C(iv)] (iv) a fourth signal from an adjacent tracking device;
[D] determining which of the first signal, the second signal, the third signal, and the fourth signal match defined selection criteria stored in the tracking device;
[E] determining location data in part based on a signal selected utilizing the defined selection criteria;

[F] transmitting the location data to the monitoring station for analysis to determine a location of the tracking device; and
[G] informing the user of the location of the tracking device on a map.

Ex. 1001, 17:37–59.

D. Evidence of Record

Petitioner relies on the following patent and published patent application evidence.

Name	Patent Document	Exhibit
Hashimoto	US 6,999,779 B1	1005
Hockley	US 2004/0008138 A1	1006
Luccketti	US 2003/0151506 A1	1007
Mohi	US 2003/0195008 A1	1008

Pet. 3–4.

Petitioner also relies upon two Declarations of Scott Andrews (Exs. 1002, 1043).

Patent Owner relies upon the Declaration of Dr. Eric Koskinen (Ex. 2010).

E. Asserted Challenges to Patentability

We instituted *inter partes* review of claims 11–16 of the '855 patent on the following grounds asserted by Petitioner. Dec. 2–3, 45; Pet. 3–4.

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
11	103[1]	Hashimoto, Hockley
12–14	103	Hashimoto, Hockley, Luccketti
15, 16	103	Hashimoto, Hockley, Mohi

[1] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103. Because the

Pet. 3–4.

III. PATENTABILITY

A. Applicable Law

Petitioner challenges the patentability of claims 11–16 of the '855 patent on grounds that the claims would have been obvious under 35 U.S.C. § 103 in light of various references, namely Hashimoto, Hockley, Luccketti, and Mohi. "In an [*inter partes* review], the petitioner has the burden from the onset to show *with particularity* why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")) (emphasis added). This burden never shifts to Patent Owner except in limited circumstances not present here. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (citing *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1326–27 (Fed. Cir. 2008)) (discussing the burden of proof in *inter partes* review).

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

'855 patent was effectively filed before March 16, 2013, the effective date of the relevant amendment, the pre-AIA version of § 103 applies.

factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) when of record, objective evidence of obviousness or non-obviousness, i.e., secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Secondary considerations may include the following: "commercial success, long felt but unsolved needs, failure of others, etc."[2] *Id.* The totality of the evidence submitted may show that the challenged claims would not have been obvious to one of ordinary skill in the art. *In re Piasecki*, 745 F.2d 1468, 1471–72 (Fed. Cir. 1984). When evaluating a combination of teachings, we must also "determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

The Supreme Court has made clear that we apply "an expansive and flexible approach" to the question of obviousness. *Id.* at 415. Whether a patent claiming a combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To reach this conclusion, however, requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination. *Unigene Lab'ys, Inc. v. Apotex, Inc*., 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined those prior art elements in

[2] Patent Owner does not present objective evidence of non-obviousness.

the normal course of research and development to yield the claimed invention. *Id.* "To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art at the time of the invention of the '855 patent

> would have had a bachelor's degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience in the research, design, development, and/or testing of GPS and related positioning techniques, or the equivalent, with additional education substituting for experience and vice versa.

Pet. 7–8 (citing Ex. 1002 ¶¶ 27, 32–71).

Patent Owner argues, "[t]o the extent implied by Petitioner, Patent Owner does not agree that two years of that specific work experience is a necessary requirement for [the skilled artisan]—and instead that more general work experience is sufficient, and may be substituted with education." PO Resp. 4. Patent Owner submits "[t]hat distinction, however, is not meaningful or determinative with respect to the issues raised in the petition, and thus is not addressed in [Patent Owner's analysis]." *Id.*

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

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) (citation omitted). The level of ordinary skill in the art also may be reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Considering the subject matter of the '855 patent, the background technical field, the prior art, and Petitioner's generally unopposed proposed definition of the skilled artisan, we apply the level of skill set forth above, which also is consistent with the testimony of Mr. Andrews (Ex. 1002 ¶¶ 27, 32–71). Regardless, neither party argues that the outcome of this case would differ based on our adoption of any particular definition of the level of ordinary skill in the art.

C. Claim Construction

We construe claims "using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the 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); *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

In this context, claim terms "are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *see CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (explaining that there is "a 'heavy presumption' that a claim term carries its ordinary and customary meaning"). "In determining the meaning

of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). Extrinsic evidence is "less significant than the intrinsic record in determining 'the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317.

Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (stating that "we need only construe 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))).

"Petitioner does not believe that any term requires explicit construction to resolve the grounds presented." Pet. 8. "Patent Owner agrees that none of the terms in the patent require an explicit construction to resolve the dispute between the parties," and submits that "all of the terms should be given their plain and ordinary meaning in light of the surrounding claim language." PO Resp. 5. Based upon the parties' positions here and our consideration of the complete record before us, we conclude that it is unnecessary to interpret expressly any limitations for purposes of rendering our final decision in this case. *See Nidec*, 868 F.3d at 1017. That said, we note that the parties present various patentability arguments in this case that depend at least in part on attributing a particular interpretation to certain

claim limitations. We discuss these interpretations in the context of the relevant limitations in our patentability analysis below in Section III.D.

D. Obviousness of Claim 11 over the Combination of Hashimoto and Hockley

Petitioner contends independent claim 11 is unpatentable under 35 U.S.C. § 103 as obvious over the combination of Hashimoto (Ex. 1005) and Hockley (Ex. 1006). Pet. 16–47; Pet. Reply 1–24. Patent Owner opposes Petitioner's contentions. PO Resp. 5–52; PO Sur-reply 1–27. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of the evidence that claim 11 is unpatentable as obvious over the combination of Hashimoto and Hockley. We turn first to overviews of Hashimoto and Hockley.

1. Overview of Hashimoto (Ex. 1005)

Hashimoto generally relates to "a position information management system," specifically, "a portable remote terminal," such that a user "can supervise, for example, the action of an old person, a child, or a skier in a skiing area" who is also using such a remote portable terminal, as shown, for example, in Figure 1, reproduced below. Ex. 1005, 1:50-51, code (57).

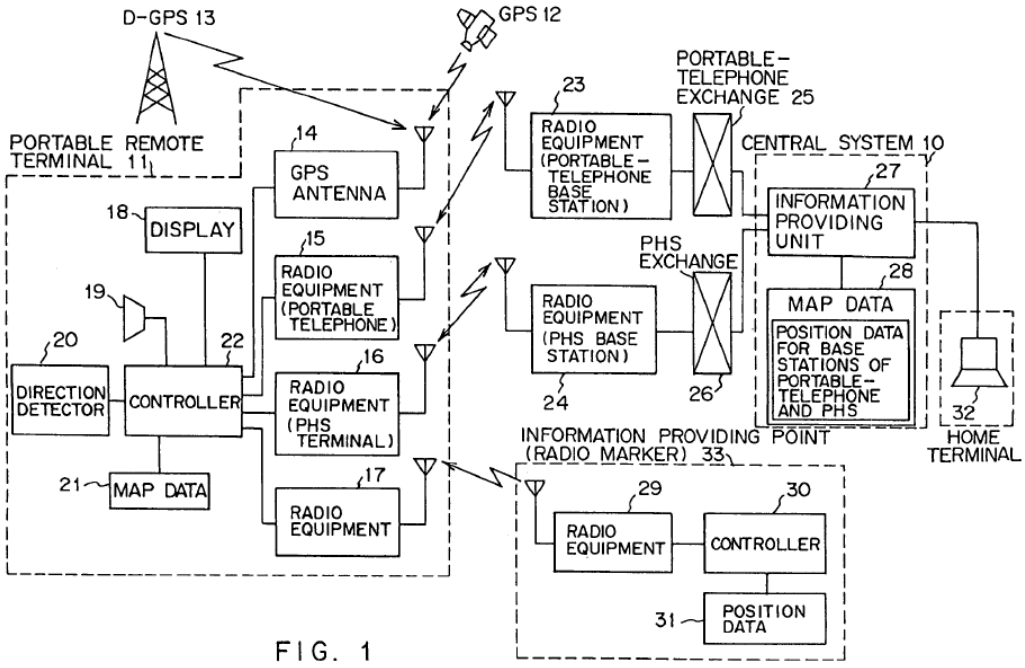

Figure 1 depicts a block diagram showing the system architecture of a position information management system.

Id. at 2:53–55, Fig. 1.

As shown above in Figure 1, an exemplary position information management system includes central system 10, which "manages information in a unified fashion"; portable remote terminal 11, which is carried by a person; satellite 12, which serves for a GPS; radio wave transmission tower 13, which serves for a D-GPS[3] (Differential GPS); and information providing point (radio marker) 33, which "determines the position of the portable terminal 11 by radio waves." Ex. 1005, 3:21–28.

[3] According to Mr. Andrews, "Differential GPS (DGPS) is a similar concept to Assisted GPS (AGPS), whereby GPS signals are obtained at stationary reference points, such as the mobile tower in Hashimoto, Figure 1, and corrected DGPS signals are sent to the portable receiver," but for purposes of the '855 patent, "the details of DGPS are not especially important." Ex. 1002 ¶ 81 n.6; *see* Pet. 9.

Hashimoto describes the role of information providing point (radio marker) 33 as follows:

> The information providing point (radio marker) 33 is used in order that the portable terminal 11 may acquire the current position in the case where signals from the GPS 12, D-GPS 13, portable-telephone base station 23 and PHS[4] base station 24 are not available. The information providing point 33 includes radio equipment 29, a controller 30 and position data 31. The position data 31 is the stored data of a latitude and a longitude where the information offer point 33 is disposed, and it is transmitted from the radio equipment 29 to the portable terminal 11 through the controller 30. On the side of the portable terminal 11, the current position thereof is acquired on the basis of the latitude and longitude information transmitted from the information offer point 33.

Ex. 1005, 4:36–48.

Hashimoto's system changeover control process for the acquisition of position information as performed by controller 22 in portable remote terminal 11 is shown, for example, in Figure 2, reproduced below. Ex. 1005, 4:49–51, Fig. 2.

[4] "'PHS' stand[s] for 'Personal Handy-phone System' which is a digital type of mobile terminal communications system standardized in Japan and some other countries." Ex. 1005, 3:35–38.

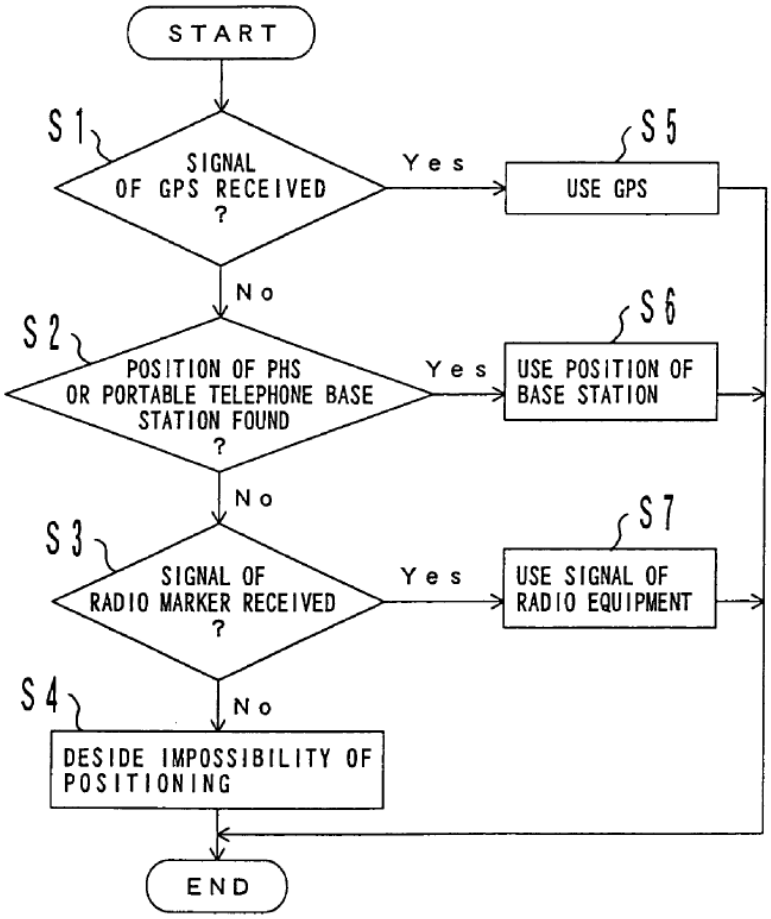

FIG. 2

Figure 2 depicts a flowchart of a system changeover control process for acquiring position information, the control being performed by controller 22 shown in Figure 1.

Id. at 2:56–58, Fig. 2. Hashimoto generally describes the acquisition of position information as shown in Figure 2 as follows:

> The portable terminal 11 can acquire the position information by using any of the GPS, portable telephone, PHS and radio marker systems. The precision of the position information decreases in the order of the position information from the GPS 12, those from the portable-telephone base station 23 and the PHS base station 24, and that from the radio marker 33. Therefore, the

> positioning systems or devices are automatically changed over successively toward those of lower precisions in such a manner that the GPS is used first for the acquisition of the current position, and then the second highest precision system is used if the GPS is unavailable.

Id. at 4:52–63; *see also id.* at 4:64–5:51 (providing a more detailed explanation of the steps depicted in Figure 2).

Petitioner contends Hashimoto qualifies as prior art under 35 U.S.C. § 102(e) based on its filing date. Pet. 9. Patent Owner does not contest the prior art status of Hashimoto. Also, on this record, we have no evidence of an invention date other than the earliest possible effective filing date of the challenged claims. Thus, for purposes of this Decision, we determine that Hashimoto qualifies as prior art under 35 U.S.C. § 102(e) because Hashimoto's filing date of July 29, 1997, is before the earliest possible effective filing date of the challenged claims, which is February 1, 2005. Ex. 1001, codes (22), (63); Ex. 1005, code (22).

We further discuss below the disclosure of Hashimoto in connection with the parties' arguments.

2. Overview of Hockley (Ex. 1006)

Hockley generally relates "to the field of position determination," and more particularly, "to position determination using information received from multiple sources," including "accurately determining the geographic position of a mobile device, such as a cellular telephone." Ex. 1006 ¶¶ 3, 32.

Hockley discloses an exemplary "hybrid position determination system":

> [A] cellular telephone is equipped with a position determination module that utilizes positional information gathered from GPS satellites *and other cellular telephones* to accurately determine

> its geographic position. The system described herein is useful in circumstances wherein a user of a cellular telephone might only be in a position to receive partial positional information, such as when the telephone can only receive ranging signals from three or less GPS satellites. In this circumstance, only an approximate geographic position can be determined. In order to overcome the positional inaccuracy when signals from only three or fewer GPS satellites can be received, embodiments of the system utilize positional information *received from other mobile devices* to determine an accurate geographic position for a cellular telephone.

Ex. 1006 ¶ 32 (emphases added).

Hockley's hybrid position determination system is shown, for example, in Figure 1, reproduced below.

FIG. 1

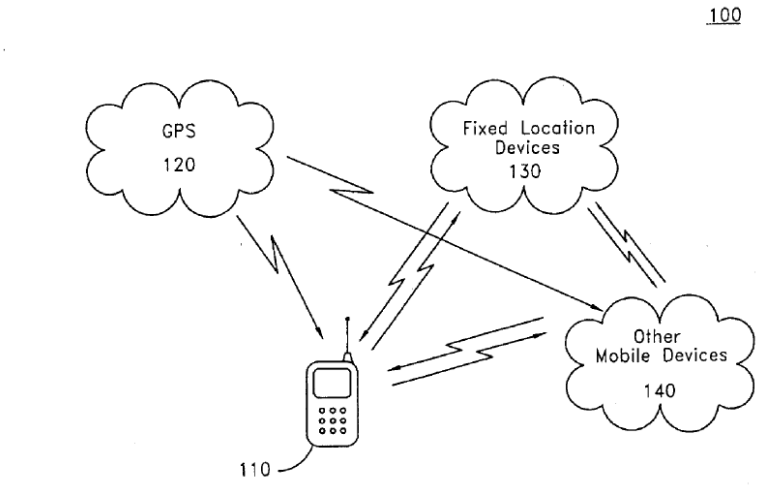

Figure 1 depicts a functional diagram of a hybrid position determination system.

Id. ¶ 23, Fig. 1. As shown above in Figure 1, hybrid position determination system 100 includes mobile device 110, which is in communication with a number of other devices. *Id.* ¶ 39. Mobile device 110 receives signals from GPS 120, and is in communication with fixed location devices 130. *Id.*

Mobile device 110 receives signals from fixed location devices 130 and transmits signals to fixed location devices 130, such as, for example, a base station in a wireless communication system. *Id*. Mobile device 110 also is in communication with other mobile devices 140, and "typically can transmit signals to, and receive signals from, the other mobile devices 140." *Id*. Mobile devices 140 "typically also receive signals from the GPS 120 satellites," and "may be in communication with the fixed location devices 130." *Id*.

Petitioner contends Hockley qualifies as prior art under 35 U.S.C. § 102(b) based on its publication date. Pet. 11. Patent Owner does not contest the prior art status of Hockley. We determine that Hockley qualifies as prior art under 35 U.S.C. § 102(b) because Hockley's publication date of January 15, 2004, is more than one year before the earliest possible effective filing date of the challenged claims, which is February 1, 2005. Ex. 1001, codes (22), (63); Ex. 1006, code (43).

We further discuss below the disclosure of Hockley in connection with the parties' arguments.

3. Analysis

a) Independent Claim 11

Petitioner provides an element-by-element analysis of independent claim 11 in relation to the combination of Hashimoto and Hockley. Pet. 16–47; Pet. Reply 1–24. Petitioner's analysis relies on testimony from its declarant, Mr. Andrews. *See, e.g.,* Ex. 1002 ¶¶ 96–148; Ex. 1043 ¶¶ 6–27. Patent Owner opposes. PO Resp. 5–52; PO Sur-reply 1–27. Patent Owner relies on testimony from its declarant, Dr. Koskinen. *See, e.g.*, Ex. 2010 ¶¶ 41–115.

(1) [11[Pre]] "A method of determining location via a tracking device associated with an individual or an object to be located, the method comprising:"

Petitioner contends Hashimoto meets the preamble of claim 11 by disclosing, *inter alia*:

> A position information management system in which a portable remote terminal includes a plurality of kinds of positioning means for positioning based on a GPS, positioning based on a portable-telephone or PHS base station, positioning based on a radio marker, and independent positioning based on a direction detector, so that the holder of the portable remote terminal can be navigated anywhere.

Pet. 17–18 (quoting Ex. 1005, code (57)); *see* Pet. 17–19 (citing Ex. 1005, 4:31–35, 7:43–47, Figs. 1, 10A; Ex. 1002 ¶¶ 103–105).

Neither Petitioner nor Patent Owner takes a position as to whether the preamble is limiting, nor does Patent Owner dispute that Hashimoto discloses such a "method," generally. *See* Pet. 18–19; *see generally* PO Resp.; PO Sur-reply. Because we find that Petitioner's cited disclosure from Hashimoto discloses a "method of determining location via a tracking device associated with an individual or an object to be located," we need not determine whether the preamble is limiting. *See Nidec*, 868 F.3d at 1017.

(2) [11[A]] "receiving a location request from a user"

Petitioner contends Hashimoto teaches limitation 11[A] by disclosing "home terminal 32," and that "[t]he user of home terminal 32 submits a location request to central system 10, requesting the current position of portable remote terminal 11 (*i.e.* the claimed tracking device)." Pet. 19–20

(citing Ex. 1005, 9:27–36, Figs. 1, 6 (elements S33 and S34); Ex. 1002 ¶¶ 106–108).

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches "receiving a location request from a user," as recited in claim 11. Patent Owner does not contest that this limitation is present in Hashimoto. *See generally* PO Resp.

(3) [11[B]] "activating a positioning apparatus associated with the tracking device"

Petitioner contends Hashimoto teaches limitation 11[B] by disclosing that "portable remote terminal 11 includes a positioning apparatus with a number of different components used to determine its position," "the power source of the portable remote terminal may be powered off and back on," and the "positioning apparatus is activated at least during power-up, before which the terminal's position is unknown." Pet. 21–23 (citing Ex. 1005, 3:29–33, 3:42–45, 6:19–26, 7:18–20, Fig. 1; Ex. 1002 ¶¶ 109–112). Petitioner argues, "when the device is powered on, the positioning apparatus in the device will also be activated as a part of that initial power-on so that it can provide location information upon request." Pet. 22 (citing Ex. 1002 ¶ 111). Petitioner argues, "[a]lternatively, it would have been obvious to activate the tracking device's positioning apparatus in response to a user location request." Pet. 23 (citing Ex. 1002 ¶ 112). According to Petitioner's expert, Mr. Andrews, the skilled artisan "would have been motivated to use such a configuration to conserve power, because there is no need to be processing GPS signals all the time, and doing so would burn through battery power for no reason," "[s]o [the skilled artisan] would have been

motivated to activate the GPS receiver only when it was needed." Ex. 1002 ¶ 112; *see* Pet. 23 (citing same).

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches or at least fairly suggests "activating a positioning apparatus associated with the tracking device," as recited in claim 11. Patent Owner does not contest that this limitation is present in Hashimoto. *See generally* PO Resp.

(4) [11[C]] "transmitting to the tracking device: [11[C](i)] (i) a first signal from a monitoring station; [11[C](ii)] (ii) a second signal from a wireless location and tracking system; [11[C](iii)] (iii) a third signal from a mobile transceiver; and [11[C](iv)] (iv) a fourth signal from an adjacent tracking device"

Petitioner contends Hashimoto teaches limitation 11[C] by disclosing that "portable terminal 11 is continually acquiring its current position via signals transmitted and received by it, using GPS, D-GPS, PHS, portable telephone system and/or radio markers." Pet. 23–24 (citing Ex. 1005, 9:5–8; Ex. 1002 ¶¶ 113–114). Petitioner also contends Hashimoto's "central system also checks if portable terminal 11 can receive call signals," and points to Figure 1 to show "various signals transmitted to the portable terminal." Pet. 23–24 (citing Ex. 1005, 9:35–43, Fig. 1). Petitioner individually addresses each of the four transmitted signals recited in limitations 11[C](i)–(iv), as we discuss below seriatim.

(a) [11[C](i)] "(i) a first signal from a monitoring station"

Petitioner contends Hashimoto teaches the "first signal" limitation of claim 11 by disclosing that "central system 10 (i.e., the claimed 'monitoring

station') is one of the systems that transmits signals to the portable terminal through the portable telephone exchange 25 and/or PHS exchange 26." Pet. 24 (citing Ex. 1005, 4:13–18, Fig. 1; Ex. 1002 ¶¶ 115–116).

In particular, Petitioner contends Hashimoto teaches:

> [U]pon receiving a request from home terminal 32 for the current position of portable remote terminal 11, the central system/monitoring station transmits a "call signal" (the claimed first signal) to the portable terminal to determine if the portable terminal/tracking device can respond and receive a command for a position update. When it has been determined that the remote terminal can receive the call, at element S35 . . . [in Figure 6], the central system commands the portable terminal to obtain its current position. When the portable terminal receives that command (element S36), it "obtain[s] current position" (element S37), and "transmit[s] current position" to the home terminal through the central system (element S38 to element S40).

Pet. 25–26 (citing Ex. 1005, 9:35–43, 8:20–26, Fig. 6) (internal citations omitted).

Patent Owner responds, in sum, "Hashimoto and Hockley do not render obvious *all of the necessary signals* required by independent Claim 11," and submits three categories of arguments in this regard, discussed below. PO Resp. 17 (emphasis added); *see id.* at 17–38.

(i) "Transmitting" Versus "Receiving" Four Signals

First, Patent Owner argues (1) *the Petition* construes claim 11 as requiring the tracking device to "*receive*" four different signals, *and then choose*, based on selection criteria, which of the four signals to use for determining the position of the tracking device; and (2) because the combination of Hashimoto and Hockley does not teach this feature, the

Petition is "fatal[ly] flaw[ed]." PO Resp. 17–21. We find Patent Owner's argument unavailing.

In making its foregoing argument, Patent Owner relies on a generalized statement about claim 11 in the Petition (Pet. 6 ("[t]he claim describes, *in essence* . . ." (emphasis added))), but ignores the Petition's limitation-by-limitation analysis of claim 11, particularly of limitation 11[C] and the "transmitting" (not "receiving") of first, second, third, and fourth signals (Pet. 23–35). *See* PO Resp. 17; *see also* Pet. Reply 7–9 ("PO's attempt to hold Petitioner to a theory that PO made up, and which is not Petitioner's actual theory, should be rejected."). After considering the entirety of the record, we do not agree that Petitioner ever advanced a construction of claim 11 requiring the tracking device to *receive* four different signals.

Patent Owner also appears to discount the Board's Institution Decision in which we analyzed limitation 11[C] as follows:

> [C]laim 11 recites that four signals are "transmitted to" the tracking device, not that four signals necessarily are "received" by the tracking device. Indeed, one of the "defined selection criteria" for selecting a signal is "availability of signal" (Ex. 1001, 15:6–9), which at least suggests (if not means) that one or more of the four signals recited in claim 11, although transmitted to the tracking device, may not be *received* by the tracking device.

Dec. 31–32; PO Resp. 18–19. Indeed, Patent Owner argues, with no citation to any legal authority, that the Board's interpretation here simply "is of no moment" where Petitioner allegedly puts forth a contrary interpretation in the Petition. PO Resp. 18. We disagree—the parties had notice of the Board's preliminary interpretation of the subject limitation, and our rules authorize *both* parties to address such constructions in their subsequent

briefing. *See, e.g.*, CTPG 44–45 ("If the Board raises a claim construction issue on its own, both parties will be afforded an opportunity to respond before a final written decision is issued."), 73. Further, as stated above, we disagree that Petitioner ever advanced a contrary claim construction theory.

Despite attempting to hold Petitioner to such a theory, Patent Owner itself does not contend that claim 11, and limitation 11[C] in particular, requires "receiving" all four signals, but rather that such signals only need to be "transmitted" (and may not be received). *See* Tr. 80 ("[Judge:] Is Patent Owner's position that each signal must be received? [Patent Owner's Counsel:] It is our position -- no, Your Honor, it's not our position that a signal has to be received[, it] is our position that every signal has to be evaluated against the selection criteria. [Judge:] Thank you. And so, on that point, how do I evaluate a signal that I don't have? [Patent Owner's Counsel:] I look for that signal, Your Honor, and determine that it's unavailable."); Ex. 1041, 19:23–20:11 (Patent Owner's expert has no opinion that each signal must be received.).

Accordingly, contrary to Patent Owner's protestations, even if Hashimoto (or the combination of Hashimoto and Hockley) does not teach a tracking device "receiving" four different signals, and then choosing, based on selection criteria, which of the four signals to use for determining the position of the tracking device, such a feature is not required by claim 11 and any lack of disclosure thereof is not fatal to the Petition.

(ii) Whether "Location Data" Must Be Determinable From the "First Signal" Alone

Second, Patent Owner argues that "a first signal from a monitoring station" "must be usable to determine location signal." PO Resp. 22

("[W]hen Claim 11 is read as a whole, it is clear that . . . location data may be determined from each of the four signals."); *see id.* at 22–25; PO Sur-reply 2 ("Claim 11 requires that each of the four signals transmitted to the tracking device be selectable and thus usable to determine location."); *see id.* at 2–13. We find Patent Owner's argument unavailing.

Notably, Patent Owner's own prior explanation of the '855 patent and the "first signal" in its Preliminary Response contradicts its argument in the Patent Owner Response. For example, Patent Owner explained in the Preliminary Response that "the first signal originates when the monitoring station 506 [ ] *receives a location request* and thereafter *transmits a signal to the tracking device 402 that includes at least the user's identification code*" (Prelim. Resp. 6–7 (emphasis added)), and cited the disclosure of the '855 patent stating, "the monitoring station 506 transmits a signal that includes the user's identification code. The location request may be from the user 504 for location data associated with the first tracking device 402" (Ex. 1001, 8:4–9; *see* Prelim. Resp. 7). Patent Owner does not explain how this "first signal" as described in the '855 patent is meaningfully different than the "call signal" cited by Petitioner. *See* Pet. 25. Indeed, based on the complete record before us, both signals are signals from a monitoring station, and neither signal *itself* appears to provide location information (e.g., the geographic position of the tracking device). *See* Ex. 1043 ¶ 9.

In our Institution Decision, we stated, "Patent Owner does not direct us to any limitation in claim 11 that requires each and every one of the four recited signals to 'aid in location tracking' (or even explain what that means specifically)." Dec. 32. Patent Owner responds, "the claim itself demonstrates exactly what the signals must be able to provide and how they

are used in the claim to determine location data," and contends that "a signal that cannot be not [sic] used in the determination of location data cannot be used to render Claim 11 unpatentable." PO Resp. 23; *see id.* at 23–25. We disagree. Notably, Patent Owner still does not answer the question of what it means to "*aid in* location tracking" (Patent Owner's words) in the context of the limitation "*in part* based on a signal selected utilizing the defined selection criteria" (claim 11's words).[5] Contrary to Patent Owner's arguments here (PO Resp. 23–25), claim 11 recites merely that first, second, third, and fourth signals from broadly recited origins are transmitted to a tracking device and location data is determined "in part based on" a selected signal, but recites no limitation further defining the scope of what it means to determine location data "*in part* based on" such a signal. Regardless, claim 11 does not recite (or require) that *each* of the four recited signals must, *by itself*, provide location data of the tracking device (hence the "in part" modifier). *See* Pet. Reply 2 ("There is no basis to import such a requirement into the claim because location data can be determined '***in part based on***' a signal that does not itself include location information, as

[5] Patent Owner argues "Petitioner urges the Board to interpret the phrase 'in part based on' so broadly that virtually anything that directly or indirectly leads to an eventual location determination would satisfy this element (even if the signal is not 'selected,' such as signals that only activate or initiate tracking)." PO Sur-reply 2. But "*in part* based on" not only *is* broad, it is the patentees' chosen wording to define the *claimed* invention. Although Patent Owner argues this broad feature allegedly still requires each signal, like the "first signal," to itself include information from which location data may be determined, Patent Owner does not sufficiently explain "why," and still provides no explanation for what it means to determine "location data" "*in part* based on" a signal (versus to do so "based on" that signal), as discussed in Sections III.D.3.a.4, .a.5, and .a.6.

evidenced by the '855 Patent itself. *The first signal may simply be usable as part of a location determining process, which is 'in part based on' the signal*." (emphasis added)); Ex. 1043 ¶¶ 7–9.

Petitioner submits:

> [T]he "first signal" of the '855 Patent is never described as including any location information. Ex-1043 ¶¶6–9. When asked to identify any location information that the '855 Patent includes in the "first reply signal," PO's expert was unwilling and/or unable to do so. *See, e.g.*, Ex-1041, 85:1–85:14 ("I don't remember if I saw a specific example elsewhere in the patent."), 86:10–88:4, 88:19–89:21 ("I don't think that I went into detail in my report about specifically what kind of location data was in the first signal."). And this makes sense, because the '855 Patent does not describe any of its "first signal" examples as containing location information. As the patent explains, "the monitoring station 506 transmits a signal that includes the user's identification code." Ex-1001, 8:6–7. An "identification code" of one kind or another is the only thing the '855 Patent ever describes as being included in the first signal, and such an "identification code" is not "location information"—it is simply a code. . . . There is no meaningful difference between the "first signal" as described in the '855 Patent and Hashimoto's call signal. DI, 31.[6]

Pet. Reply 3 (footnote omitted). We agree with Petitioner.

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[6] Patent Owner argues "Petitioner also incorrectly states that the '855 Patent's first signal 'is simply a code,'" and "ignores Figure 7A." PO Sur-reply 12–13 (reproducing Fig. 7A). Patent Owner argues Figure 7A shows that "Claim 11 treats each of the signals, regardless of origin, as capable of providing location data as required in element 11[E]." *Id.* at 13. We disagree. Figure 7A is a cursory flow chart that merely depicts, in relevant part, "transmitting signals," "receiving signals based on signal selection criteria," and "determining location data." This disclosure says nothing about which, if any, such "signals" are used in "determining location data," let alone whether every transmitted signal must by itself provide for the determination of location data.

Accordingly, we determine that each of the four signals recited in claim 11, particularly the "first signal from a monitoring station," need not itself include information from which location data may be determined." *See* Ex. 1043 ¶ 9 ("[I]f the selected signal (e.g., the first signal) is used to initiate a location determination process, then that location determination is performed "***in part based on***" the selected signal."); *see id.* ¶¶ 6–11.

(iii) Hashimoto's "Call Signal" Versus the "First Signal"

Based on its premise that "location data" must be determinable from the "first signal" *alone*, with which we disagree (*see supra* § III.D.3.a.4.a.ii), Patent Owner argues "the 'call signal' has nothing to do with determining location data," and thus cannot teach a "first signal." PO Resp. 25 ("[E]ach signal of elements 11[C](i) through (iv) must include information from which location data may be determined in element 11[E]."); *see id.* at 25–38, 30 ("In either case (arrival is possible or impossible), the 'call signal' is not used for the purposes of 'determining location data.' . . . As such, the 'call signal' cannot be the claimed 'first signal from a monitoring station.'"); PO Sur-reply 5 ("Hashimoto never discloses using the 'call signal' in the location determination process . . . ."); *see id.* at 5–12.

Petitioner responds that "Hashimoto teaches the claimed first signal (Hashimoto's call signal) and determines location data '***in part based on'*** this call signal," because "Hashimoto's location determination process is initiated by, and thus explicitly uses, the call signal to begin the process." Pet. Reply 4 (citing Ex. 1043 ¶ 10). We find Petitioner's argument and reasoning persuasive.

Indeed, Patent Owner acknowledges that Petitioner's arguments and evidence concerning Hashimoto's "call signal," if accepted (as we do), do

show Hashimoto teaching limitation 11[C][i] ("a first signal") as well as the second, third, and fourth signals recited in claim 11 in certain situations (*see infra* §§ III.D.3.a.4.b–.4.d):

> Patent Owner concedes that, should the Board agree with each of Petitioner's arguments related to Hashimoto's "call signal" (*see* § II, above [arguments related to the "first signal"]), Hashimoto at most consumes four signals in only highly specific, non-analogous situations distinct from Claim 11. That is, if the Board credits Petitioner's arguments with respect to the call signal, Hashimoto still only consumes four signals in the specific, manufactured scenario in which the call signal is received, GPS is unavailable, and PHS is unavailable. Ex. 1005, Fig. 2, 5:1–43. Even under this scenario where the radio marker is available however, the call signal is still not used in the determination of location. *See* § III(B), above.

PO Sur-reply 21. In other words, these features in claim 11 read on Hashimoto. We note that Patent Owner does not explain why Hashimoto's use of the four signals would constitute "non-analogous situations distinct from Claim 11" or a "manufactured scenario," given that the scenario is explicitly contemplated in Hashimoto and claim 11 would read on such a scenario. We find Patent Owner's concession here more helpful to Petitioner's case than its own.

Because we determine that the "first signal from a monitoring station" recited in claim 11 need not *itself* include information from which location data may be determined, and because we agree with Petitioner that Hashimoto's location determination process is initiated by and uses the call signal to begin the process, we determine Hashimoto's "call signal" teaches a "first signal" as recited in claim 11. *See supra* § III.D.3.a.4.a.ii; *infra* §§ III.D.3.a.5, .a.6; Pet. Reply 4; Ex. 1043 ¶ 10.

(iv) Summary for Limitation 11[C](i) ("first signal")

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches or at least fairly suggests "transmitting to the tracking device . . . a first signal from a monitoring station," as recited in claim 11.

(b) [11[C](ii)] "(ii) a second signal from a wireless location and tracking system"

Petitioner contends Hashimoto teaches the "second signal" limitation of claim 11 by disclosing "a wireless location and tracking system consisting of GPS 12 and/or D-GPS 13," and "transmitting such GPS/D-GPS signals (the claimed second signal) to the portable remote terminal." Pet. 26–28 (citing Ex. 1005, 3:20–28, 4:64–67, Figs. 1, 2; Ex. 1002 ¶¶ 117–118).

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches "transmitting to the tracking device . . . a second signal from a wireless location and tracking system," as recited in claim 11. Patent Owner does not contest that this limitation is present in Hashimoto. *See generally* PO Resp.

(c) [11[C](iii)] "(iii) a third signal from a mobile transceiver"

Petitioner contends Hashimoto teaches the "third signal" limitation of claim 11 by disclosing:

> [C]entral system 10 is connected to radio equipment (a portable-telephone base station) 23 and also to radio equipment (a PHS base station) 24. Hashimoto specifically discloses that ***"[t]he position data of the portable-telephone or PHS base stations 23 or 24 respectively is used*** . . . when the portable terminal 11 has to find its position from the site of the nearest portable-telephone base station 23 or PHS base station 24 for the reason that the

> radio waves from the GPS 12 and the D-GPS 13 are not receivable."

Pet. 28–30 (citing, *inter alia*, Ex. 1005, 4:25–30, Fig. 2; Ex. 1002 ¶¶ 119–121). Petitioner argues that "[e]ach of these mobile transceiver terminals, radio equipment 23 and 24, may be used to provide 'position data' signals (the claimed third signal) to the portable terminal," and "[e]ither of these components provide the claimed 'third signal' to the portable terminal, depending on the connection type." Pet. 29–30 (citing Ex. 1005, 4:13–18, Fig. 1; Ex. 1002 ¶¶ 120–121). Petitioner argues that, "in addition to the 'call signal' (the claimed first signal) received from radio equipment 23 or 24, these transceivers also provide positioning signals (the third signal) from information providing unit 27 and map data 28 of central system 10 to the portable remote terminal over the call connection." Pet. 29–30 (citing Ex. 1002 ¶¶ 120–121).

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches "transmitting to the tracking device . . . a third signal from a mobile transceiver," as recited in claim 11. Patent Owner does not contest that this limitation is present in Hashimoto. *See generally* PO Resp.

(d) [11[C](iv)] "(iv) a fourth signal from an adjacent tracking device"

Petitioner contends "Hashimoto and Hockley both" teach the "fourth signal" limitation of claim 11. Pet. 30 (citing Ex. 1002 ¶¶ 122–127).

(i) Hashimoto's Teachings – "Fourth Signal"

Petitioner contends Hashimoto teaches (a) "a fourth signal transmitted to the tracking device from the information providing point or radio

marker 33"; (b) "[r]adio marker 33 is used 'in order that the portable terminal 11 may acquire the current position in the case where signals from the GPS 12, D-GPS 13, portable-telephone base station 23 and PHS base station 24 are not available'"; and (c) "location information is transmitted (the claimed fourth signal) from radio equipment 29 to portable terminal 11 through controller 30." Pet. 30–31 (citing Ex. 1005, 4:36–45, Fig. 1; Ex. 1002 ¶¶ 122–127).

As for the "adjacent" feature in "an *adjacent* tracking device," Petitioner contends:

> Hashimoto further discloses that radio marker 33 is adjacent to the portable remote terminal because "[r]adio markers are disposed at each of the main or important spots of a town, and generate radio signals indicative of the latitude and longitude of the corresponding spot while. . . . ***the current position of the portable terminal or the holder thereof is regarded as being substantially identical to the latitude and longitude of the nearest radio marker***." Ex-1005, 5:28–29, 35–37. [The skilled artisan] would have understood that Hashimoto's description of the portable terminal's and radio marker's position as "substantially identical" means that those components are adjacent to each other. Ex-1002 ¶123. As shown in Figure 2, at element S3 [ ], Hashimoto teaches to determine whether or not a signal from the radio marker has been received.

Pet. 32.

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches "transmitting to the tracking device . . . a fourth signal from an adjacent tracking device," as recited in claim 11. Patent Owner does not contest that this limitation is present in Hashimoto. *See generally* PO Resp; *see also* Pet. Reply 21 ("As explained in the petition, Hashimoto alone teaches the claimed fourth signal. [Patent Owner] presents no argument that it does not."). We additionally find Petitioner

persuasively establishes that the combination of Hashimoto and Hockley teaches this limitation, as discussed below.

(ii) Hockley's Teachings – "Fourth Signal"

Petitioner submits that, "[t]o the extent that the claimed 'adjacent tracking device' is understood as requiring the same type of tracking device as the one to be located (such as another nearby user's portable terminal) . . . , [the skilled artisan] would have been motivated to use location information from such a nearby tracking device, such as taught by Hockley." Pet. 33 (citing Ex. 1002 ¶ 124); *see* Pet. 33–35. Petitioner contends Hockley teaches "'mobile device 110 may also be in communication with other mobile devices 140'"; "'mobile device 110 typically can transmit signals to, and receive signals from, the other mobile devices 140'"; "'mobile device 110 may determine its position using information received from the fixed location devices 130 and the other mobile devices 140'"; and "signals from another user's nearby mobile device may be received and used, along with GPS and other location information, to locate mobile device 110." Pet. 34 (quoting Ex. 1006 ¶¶ 39, 43) (citing Ex. 1006, Fig. 1; Ex. 1002 ¶ 125).

(iii) Reason to Combine Teachings of Hashimoto and Hockley With a Reasonable Expectation of Success

To support the legal conclusion of obviousness, "there must be some articulated reasoning with some rational underpinning" for combining elements in the manner claimed. *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d at 988). The test for obviousness is not whether the claimed invention is expressly suggested in any one or all of the references, but whether the claimed subject matter would have been obvious to those of

ordinary skill in the art in light of the combined teachings of those references. *See In re Keller*, 642 F.2d 413, 425 (CCPA 1981); *In re Burckel*, 592 F.2d 1175, 1179 (CCPA 1979) ("[A] reference must be considered not only for what it expressly teaches, but also for what it fairly suggests.").

Petitioner contends the skilled artisan would have combined teachings of Hashimoto and Hockley "to improve the location determination ability of a GPS and fixed systems of terrestrial devices, such as taught by Hashimoto." Pet. 34; *see id.* at 34–35 (citing Ex. 1005, 4:25–30; Ex. 1006 ¶¶ 32, 36; Ex. 1002 ¶¶ 126–127), 16–17 (citing, *inter alia*, Ex. 1002 ¶¶ 96–102); Pet. Reply 22. Petitioner contends the skilled artisan would have had a reasonable expectation of success in doing so because "Hashimoto already describes receiving a number of signals at the portable terminal, and the nearby mobile device signal of Hockley would have been another routine signal to receive and process." Pet. 35 (citing Ex. 1002 ¶¶ 126–127); *see id.* at 16 (citing Ex. 1002 ¶ 96).

Patent Owner argues the skilled artisan "would not have been motivated to combine Hashimoto and Hockley" for four reasons (PO Resp. 5–17), all of which we find unavailing, as discussed below. Before turning to these arguments, however, we again note the context here for Petitioner's obviousness arguments: Petitioner contends Hashimoto *itself* teaches the fourth signal via radio marker 33 (*see supra* § III.D.3.a.4.d.i), but turns to Hockley's teachings of a mobile device 110 (i.e., a target tracking device) receiving signals from adjacent mobile devices 140 (i.e., an adjacent tracking device), only "[t]o the extent that the claimed 'adjacent tracking device' is understood as requiring the same type of tracking device as the one to be located (such as another nearby user's portable terminal)" (*see*

supra § III.D.3.a.4.d.ii). Thus, Petitioner turns to Hockley for its teachings of using signals from adjacent like devices to aid in locating a target device, rather than using signals from Hashimoto's radio markers, which are different devices than its target device. As discussed below, we find this short leap would have been an easy one for the ordinarily skilled artisan.

First, Patent Owner argues "Hashimoto is an independently viable process, leaving the [skilled artisan] with no reason to modify it." PO Resp. 7–10. Patent Owner argues "Hashimoto describes a process in which the location of a device is found using a changeover-approach to choose a single signal with the highest precision available," and "[b]ecause of this, only one signal is used at a time." *Id.* at 7–8. Patent Owner ultimately concludes that, "[i]n light of the fact that Hashimoto describes a complete invention with multiple avenues to obtain signals, [the skilled artisan] would not have wanted to complicate the functionality of Hashimoto, because for Hashimoto's purposes, the chosen signals and direction detector would have been viable." *Id.* at 10. Notably, Patent Owner cites no legal authority for its implied proposition that, where a reference discloses a "viable process" or "complete invention" (which of course patents are supposed to do), a skilled artisan would have had no reason to modify or otherwise attempt to improve upon that reference's disclosures. *See* Pet. Reply 22–23 ("[Patent Owner] fails to cite any legal authority to support its viable-system theory of nonobviousness, because it is not the law.") (citing cases). To the contrary, we find persuasive Petitioner's argument that, *because* Hashimoto teaches an "invention with multiple avenues to obtain signals" as noted by Patent Owner (PO Resp. 10), the skilled artisan would have looked to "the nearby mobile device signal of Hockley" as "another routine signal to receive and

process" to "improve [Hashimoto's] location determination ability." Pet. 16–17 (citing, *inter alia*, Ex. 1002 ¶¶ 96–102), 35 (citing, *inter alia*, Ex. 1002 ¶¶ 126–127). Thus, we find Patent Owner's arguments unavailing.

Second, Patent Owner argues "Hockley discloses a different technical strategy [versus Hashimoto] to compensate for apparent lack of GPS information," and submits "Hockley discloses a method to supplement (rather than substitute with an alternative to GPS) partial GPS information via other devices' shared location-tracking information." PO Resp. 10; *see id.* at 10–11. Patent Owner ultimately concludes that the skilled artisan, "starting with a system that uses wireless phone systems (Hashimoto), would therefore not look to improvements made by a system that is designed to be operable without a wireless phone system (Hockley) for improvements." *Id.* at 11. Petitioner responds:

> [Patent Owner] argues that [the skilled artisan] would not look to Hockley to improve Hashimoto because, according to [Patent Owner], Hockley describes "a system that is designed to be operable without a wireless phone system." This makes no sense. [Patent Owner] ignores that Hockley explicitly describes using its system ***with*** wireless phones and wireless communication systems throughout its specification. And to the extent that Hockley's system may be "operable" without a wireless phone system, that additional capability does not negate the fact that both Hashimoto and Hockley relate to the same well-known issues with GPS tracking and monitoring systems.

Pet. Reply 23–24 (citations omitted). We agree with Petitioner. Hockley plainly discloses operating its system in a mobile wireless environment. *See, e.g.*, Ex. 1006 ¶¶ 32 (describing locating a target mobile (cellular) device utilizing positional information from other mobile devices and GPS satellites), 39 ("The mobile device 110 may also be in communication with other mobile devices 140. The mobile device 110 typically can transmit

signals to, and receive signals from, the other mobile devices 140."). Similar to its first argument above, and to use patent law principles, it appears that Patent Owner contends that Hashimoto or Hockley "teach away" either from one another or from the invention recited in claim 11, but without doing so under the framework of or with citation to relevant case law. *See, e.g.*, PO Resp. 10–11; *see also id.* at 7–10.

"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." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (quoting *Ricoh Co. v. Quanta Comput. Inc.*, 550 F.3d 1325, 1332 (Fed. Cir. 2008)). Moreover, a reference "must [be] considered for all it taught, disclosures that diverged and taught away from the invention at hand as well as disclosures that pointed towards and taught the invention at hand." *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 296 (Fed. Cir. 1985) (citation omitted). A reference does not teach away "if it merely expresses a general preference for an alternative invention but does not 'criticize, discredit, or otherwise discourage' investigation into the invention claimed." *DePuy*, 567 F.3d at 1327 (quoting *In re Fulton*, 391 F.3d 1195, 1201–02 (Fed. Cir. 2004)). But even if a reference is not found to teach away, its statements regarding preferences are relevant to a finding regarding whether a skilled artisan would be motivated to combine that reference with another reference. *See Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1051 n.15 (Fed. Cir. 2016) (en banc) (noting that, even if a reference "does not teach away, its statements regarding users preferring other forms of switches are

relevant to a finding regarding whether a skilled artisan would be motivated to combine the slider toggle in" that reference with the invention of a second reference).

In this case, Patent Owner does not direct us to any evidence of record showing that *Hashimoto or Hockley* criticized, discredited, or otherwise discouraged investigation into the invention claimed, including, for example, criticizing or discrediting using Hockley's signals from nearby mobile devices (i.e., adjacent tracking devices) in Hashimoto to determine location data of a target tracking device. Moreover, Patent Owner argues against Hashimoto and Hockley individually, but does not address their combined teachings as argued and evidenced by Petitioner. The test for obviousness is not whether the claimed invention is expressly suggested in any one or all of the references, as argued by Patent Owner, but whether the claimed subject matter would have been obvious to those of ordinary skill in the art *in light of the combined teachings of those references*. *See Keller*, 642 F.2d at 425; *Burckel*, 592 F.2d at 1179 ("[A] reference must be considered not only for what it expressly teaches, but also for what it fairly suggests."). Thus, we find Patent Owner's arguments unavailing.

Third, Patent Owner argues "Hashimoto and Hockley rely on different underlying infrastructure, and therefore, [the skilled artisan] would not have been motivated to combine them." PO Resp. 11. Patent Owner argues "Hockley is not 'plug-and-play,'" and "involves a complicated membership system not required by Hashimoto." *Id.* at 11–12; *see* PO Sur-reply 23–25. Patent Owner (and its expert) appears to argue that the ordinarily skilled artisan would not have physically (bodily) incorporated Hockley's system

into Hashimoto's system (or would not have known how to do so), but that is not the test of obviousness.

To prove obviousness, Petitioner need not show that the skilled artisan somehow would have incorporated Hockley's entire method and structure within Hashimoto's methods and structure. "The 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 those references would have suggested to those of ordinary skill in the art." *Keller*, 642 F.2d at 425; *see In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012) ("It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements."); *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.").

In this context, Petitioner's expert, Mr. Andrews, testifies as to how the skilled artisan would have used Hockley's teachings of nearby mobile device signals in combination with Hashimoto's teachings of using other similar signals to arrive at the subject limitation:

> [Patent Owner's expert, Dr. Koskinen,] states that combining Hashimoto and Hockley would require Hashimoto to implement Hockley's "complicated membership system." Ex-2010 ¶55. I disagree with Dr. Koskinen because while Hockley does disclose operations that may be performed by "members" of a group, Hockley does not require its mobile devices to subscribe to such a "membership system." Also, Hockley's "membership" implementation is not required for its teachings to be applied to Hashimoto. Ex-1006 ¶36. For example, [the skilled artisan] may modify Hashimoto's step S3 . . . to receive position signals from

> nearby mobile devices in addition to (or instead of) signals from radio markers. Because Hashimoto already describes receiving a number of signals at the portable terminal, receiving the nearby mobile device signal as described in Hockley would have been just another routine signal to receive and process. *See, e.g.*, Ex-1048, Ex-1050, Ex-1051, Ex-1054, Ex-1056[.] And if the process proceeds to step S3 (e.g., if both GPS and PHS signals are unavailable), then Hashimoto's portable terminal may determine whether position signals from nearby mobile devices are received and use the received signals at step S7 to determine the location of the portable terminal. In this manner, the [skilled artisan] can use Hockley's solution—without implementing Hockley's "membership system"—to compensate for a lack of GPS information in Hashimoto, thus improving the location determination ability of Hashimoto.

Ex. 1043 ¶ 27 (cited at Pet. Reply 24). We find Mr. Andrews' explanation of Hashimoto and Hockley better aligns with principles of obviousness and persuasively shows that the combined teachings of Hashimoto and Hockley at least would have fairly suggested the broadly recited subject limitation of the "fourth signal."

We note that Patent Owner's allegation that introducing Hockley's signal from adjacent mobile devices into Hashimoto's system would "completely scrap Hashimoto's central system and the role it plays" (PO Sur-reply 25), and would be beyond the skill level of the ordinarily skilled artisan, is belied by the depth of disclosure (or lack thereof) in the '855 patent itself. Indeed, the invention of claim 11 broadly requires four signals be transmitted to a tracking device from multiple locations, including a "first signal" from a central "monitoring station" and a "fourth signal" from an "adjacent tracking device," but the Specification merely recites that such signals are transmitted (*see, e.g.*, Ex. 1001, 15:1–13) and *relies on the skilled artisan's own knowledge for execution* (i.e., the Specification appears

to presume that the skilled artisan would have known how to receive and process the four signals, including ones from adjacent tracking devices). Thus, we find Patent Owner's arguments unavailing.

Fourth, and finally, Patent Owner argues "Petitioner fails to meet its burden to show that Hashimoto and Hockley are compatible." PO Resp. 13. In particular, Patent Owner alleges "Petitioner does not, and cannot, explain how Hockley, a system which attempts to supplement GPS position data, can be used in conjunction with Hashimoto's changeover process, which relies on differing types of information to safeguard against any single signal being unusable." *Id.* Patent Owner alleges many fundamental issues exist in trying to "*implement* Hockley *into* Hashimoto." *Id.* at 14–17 (emphases added). Here again we find Patent Owner is arguing that the ordinarily skilled artisan would not have physically incorporated Hockley's system into Hashimoto's system (or would not have known how to do so), rather than properly addressing what *the combined teachings* of those references would have *fairly suggested* to those of ordinary skill in the art. Thus, for the same reasons discussed above regarding Patent Owner's "third" argument, we find Patent Owner's arguments unavailing. *See, e.g.*, *In re Mouttet*, 686 F.3d at 1332 ("It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements."); *In re Sneed*, 710 F.2d at 1550 ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); *In re Keller*, 642 F.2d at 425; *Burckel*, 592 F.2d at 1179 ("[A] reference must be considered not only for what it expressly teaches, but also for what it fairly suggests.").

(iv) Summary for Limitation 11[C](iv) ("fourth signal")

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches "transmitting to the tracking device . . . a fourth signal from an adjacent tracking device," as recited in claim 11. We additionally find Petitioner persuasively establishes that the combination of Hashimoto and Hockley teaches this limitation, and that the skilled artisan would have had sufficient rational reasons to combine the teachings of these references with a reasonable expectation of success in doing so.

(e) Summary for Limitation 11[C]

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto alone and in combination with Hockley teaches the entirety of limitation 11[C], as recited in claim 11. We also find Petitioner's cited evidence provides sufficient rational reasons to combine the teachings of Hashimoto and Hockley with a reasonable expectation of success in doing so.

(5) [11[D]] "determining which of the first signal, the second signal, the third signal, and the fourth signal match defined selection criteria stored in the tracking device"

Petitioner contends "[i]n Hashimoto, the 'defined selection criteria' for evaluating each of the signals is whether or not the four specific signals are sufficiently available to the tracking device, tested in an organized, hierarchical approach" (Pet. 36), as shown in Figures 2 and 6. Pet. 36–42 (citing, *inter alia*, Ex. 1005, 4:52–63, Figs. 2, 6; Ex. 1002 ¶¶ 128–139). Petitioner argues "[t]his is consistent with the '855 Patent, which states that '[t]he signal selection criteria, in one example, may be based on . . . availability of the signal.'" Pet. 36 (citing Ex. 1001, 15:6–8).

Patent Owner argues, in sum, "Hashimoto does not actually use 'availability' criteria and, thus, under Petitioner's own view of the 'defined selection criteria,' Hashimoto does not disclose the selection criteria of Claim 11." PO Resp. 38; *see id.* at 38–43. More specifically, Patent Owner argues:

> Hashimoto evaluates only one signal at a time regardless of what signals may be "available" (Ex. 2012, 81:6-16), with the process ending whenever a first location-related signal is received. Ex. 2010, ¶ 89. Thus, at least according to Petitioner's interpretation of the defined selection criteria as "availability," Hashimoto does not and cannot disclose determining which signals "match a defined selection criteria stored in the tracking device" as required by Claim 11. *Id.*, ¶ 91. That is, *Hashimoto cannot select and thus rely on all available signals to determine location*. *Id.*, ¶ 91.

PO Resp. 41 (emphasis added). But, as argued by Petitioner, Patent Owner's argument here is plainly divorced from the actual, broad limitations of claim 11, which do not limit the scope of claim 11 only to selecting and relying on all available signals to determine location. *See* Pet. Reply 11 ("[Patent Owner] argues that all four signals must be 'accumulated' before being 'sent to' selection criteria, and that Hashimoto's 'serial process' does not do this. However, this requirement is not found in Claim 11 or described anywhere in the '855 Patent.").

Patent Owner argues "Claim 11 requires that the process 'consume[s] *four inputs* . . . and [then] determine[s] an output on the basis of those inputs, even if those inputs are unavailable.'" PO Sur-reply 21 (quoting Ex. 2010 ¶ 86). But again, Patent Owner's argument here is plainly divorced from the actual, broad limitations of claim 11, which do not limit the scope of claim 11 to determining matches of first, second, third, and fourth signals to

defined selection criteria *in any particular grouping or order*. *See* Ex. 1001, claim 11, 15:42–46 ("[T]he order of performance of certain steps may be permuted, or performed in parallel (or series) if desired. Hence, the foregoing embodiments are merely illustrative of the broader methods of the invention disclosed herein."). Regardless, Petitioner responds that, "even under [Patent Owner's] narrow view of the claims, Hashimoto specifically teaches a scenario where the selection criteria is applied to each and every possible signal," as follows. Pet. Reply 12.

> [T]he first signal (call signal) was determined to be *available* at Figure 6, step S37. Then the second signal (GPS) was determined to be *unavailable* at Figure 2, step S1. Then the third signal (PHS) was determined to be *unavailable* at Figure 2, step S2. And last the fourth signal (Radio Marker) was determined to be *available* at Figure 2, step S3. The result of this scenario is that, after having considered all four signals, the location of the portable terminal is determined at Figure 2, Step S7.

Id. at 13 (emphases added) (citing Ex. 1041, 132:8–140:21; Ex. 1043 ¶ 18). As discussed above in Section III.D.3.a.4.a.iii, Patent Owner concedes that, if we accept Petitioner's arguments concerning a "call signal" (as we do), this scenario in Hashimoto teaches the consumption and analysis of all four signals in certain situations. PO Sur-reply 21; *see Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) ("[C]ombinations of prior art that sometimes meet the claim elements are sufficient to show obviousness." (citing *Hewlett-Packard Co. v. Mustek Sys., Inc.*, 340 F.3d 1314, 1326 (Fed. Cir. 2003))).

Patent Owner argues "*[e]ven if*[7] availability constitutes selection criteria, the call signal selection criteria would not be 'stored in the tracking device.'" PO Resp. 41 (emphasis altered); *see id.* at 41–43. More specifically, Patent Owner argues:

> [I]t would be illogical, if not impossible, for the portable terminal to make a decision, based on the call signal if that decision of arrival was made at the portable terminal, because the central system would then not have any instruction as to whether it should proceed to step S36 or S39 *without a reply sent from the portable terminal back to the central system* [Note: As discussed below, Hashimoto does disclose sending a response signal in reply to a call signal.]. Ex. 2010, ¶ 69.

PO Resp. 43 (emphasis added); *see id.* at 27 n.7 (arguing "[t]he 'call signal' is also never evaluated at the portable terminal in Hashimoto to determine if it matches a 'defined selection criteria stored in the tracking device'"), 35 ("[T]he decision as to whether Hashimoto's call signal is receivable (step S35) is unmistakably performed at the central system.").

Petitioner responds:

> There can be no meaningful dispute that Hashimoto discloses evaluating each of the availability selection criteria at the portable terminal. . . . Hashimoto evaluates the availability of the call signal at S36, and evaluates the availability of GPS, PHS, and the radio marker signals at S1, S2, and S3, respectively, all performed at the portable terminal. Even [Patent Owner's] expert agrees that each of these evaluations are done with processes stored at the remote terminal. Ex-1041, 106:10–18 ("The process of Figure 2 is performed . . . inside the portable remote terminal."), 131:21–134:2 ("S-36 operates on the third-party terminal."). So the selection criteria are "stored in the

[7] We find Patent Owner's use of "[e]ven if" here perplexing, because the '855 patent itself explicitly states, "signal selection criteria . . . may be based on . . . *availability of signal*." Ex. 1001, 15:6–9 (emphasis added).

> tracking device" as claimed because they are applied in a software process within Hashimoto's remote terminal, for example as executed by Controller 22. Pet. 41–42.
>
> * * *
>
> Despite the explicit teachings of Hashimoto, PO tries to manufacture a dispute by arguing that ***S35*** is performed by Hashimoto's central system instead of the remote portable terminal. POR, 41–43. But ***S35*** is different from ***S36***, which Petitioner refers to as the processing step that determines the availability of the call signal. Pet. 38–39. Even [Patent Owner's] expert agrees with Petitioner's actual argument; it is undisputed and undisputable that ***S36*** is performed by the remote portable terminal. Ex-1005, 9:55–67, Fig. 6.

Pet. Reply 14–16 (combined image of Figs. 2 and 6 omitted). We find Petitioner's reasoning and evidence persuasive because, contrary to Patent Owner's assertions, Hashimoto does teach determining at the remote portable terminal whether a "call signal" is available: "Whether or not arrival is possible, is judged depending upon whether or not *the portable terminal has sent a response signal in reply to a call signal* transmitted from the central system." Ex. 1005, 8:5–8 (emphasis added); *see id.* at 9:39–42; Pet. 38–39 (citing Ex. 1005, 8:6–8).

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches or at least fairly suggests "determining which of the first signal, the second signal, the third signal, and the fourth signal match defined selection criteria stored in the tracking device," as recited in claim 11.

(6) [11[E]] "determining location data in part based on a signal selected utilizing the defined selection criteria"

Petitioner contends Hashimoto teaches limitation 11[E] by disclosing "once the availability of an appropriate signal (whether first, second, third, or fourth) has been identified in element 11[D], the location of the tracking device will be determined using, at least in part, that identified signal." Pet. 42–44 (citing, *inter alia*, Ex. 1005, 9:44–48, 8:10–14, Figs. 2, 6; Ex. 1002 ¶¶ 140–143).

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches "determining location data in part based on a signal selected utilizing the defined selection criteria," as recited in claim 11. Patent Owner does not contest that this limitation is present in Hashimoto. *See generally* PO Resp.

(7) [11[F]] "transmitting the location data to the monitoring station for analysis to determine a location of the tracking device; and"

Petitioner contends Hashimoto teaches limitation 11[F] by disclosing that "portable remote terminal [11] transmits location data to the central system, which is the claimed monitoring station." Pet. 44–46 (citing Ex. 1005, 9:61–64, 10:25–35, Fig. 6; Ex. 1002 ¶¶ 144–145). Referencing an annotated version of Figure 6 of Hashimoto, reproduced below, Petitioner contends "Hashimoto also discloses that the monitoring station will perform 'analysis to determine a location of the tracking device' as claimed, in at least two ways:"

> *First*, when the positioning is based on the first signal, analysis performed by the monitoring station may include, for example element S39 shown in [annotated] Figure 6 below, "estimate

current position from a log." This log is populated using positions previously transmitted from the tracking device to the monitoring station at elements S31 and S32. *Second*, regardless of which signal is being used for positioning, *analysis performed at the monitoring station may include, at element S44, using the raw positioning data obtained from the portable terminal* or estimated from the log, *to locate the position of the portable terminal in map data*. Ex-1005, 10:25-35 ("The central system searches for the map data capable of displaying both the positions of the third party and the specific holder simultaneously, on the basis of the signal of the current positions of the third party and the specific holder."); *see also id.*, Fig. 6.

Pet. 44–45 (emphases added).

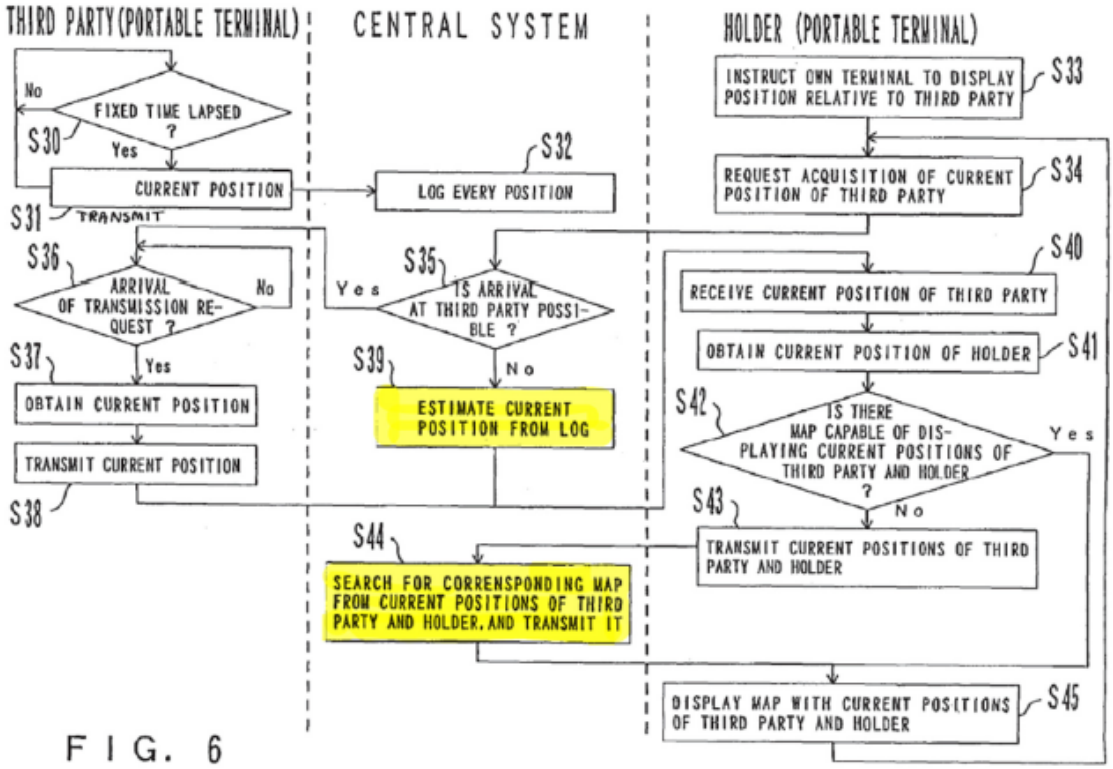

FIG. 6

Figure 6 of Hashimoto (annotated by Petitioner) depicts a flowchart showing processes in the case where Hashimoto's system is applied to position information acquisition between portable terminals.

Ex. 1005, Fig. 6, 3:1–3. Thus, Petitioner proffers two separate bases for how Hashimoto discloses that its monitoring station performs "analysis to determine a location of the tracking device," namely, a first basis that relies on analysis performed at element S39 and a second basis that relies on analysis performed at element S44. We have considered both bases and find Petitioner's second basis directed at element S44 persuasive. As such, we turn to the parties' arguments concerning the second basis (S44) and do not otherwise herein address the first basis (S39).[8]

Patent Owner argues, in sum, that S44 does not teach the "analysis" feature of the subject limitation. PO Resp. 43–45, 48–52; PO Sur-reply 14–17. In particular, Patent Owner argues the skilled artisan would have understood "that element 11[F] requires that *'location data' be received by the monitoring station* and that the determination of *the location of the tracking device* by the monitoring station is based on *received location data*." PO Resp. 43 (emphases added). Patent Owner then argues, in contrast, "Hashimoto discloses that *all locations (i.e., current positions) are calculated by the portable terminal* and then sent to the holder's (portable or home) terminal via the central system." *Id.* at 44. In other words, the premise of Patent Owner's argument here is that claim 11 requires that the

[8] *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"); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, Nos. 2019-1594, -1604, -1605, 2020 WL 2071962, at *4 (Fed. Cir. Apr. 30, 2020) (non-precedential) (recognizing that the "Board need not address issues that are not necessary to the resolution of the proceeding" and, thus, agreeing that the Board has "discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims").

(central) monitoring station analyze received "location data" to determine "location," whereas in Hashimoto, the monitoring station receives previously-determined "location" (not "location data"). *See* PO Resp. 48–52. We disagree with Patent Owner's premise, because it is divorced from the actual, broad limitations of claim 11 and belied by the written description of the '855 patent and Hashimoto's teachings, as discussed below.

The crux of Patent Owner's argument is that Hashimoto's central system does not perform "analysis" of "location data" to determine a "location" of the tracking device, because the central system "only selects a capable map based on positions provided by a portable terminal to locate a map capable of showing those location[s]." PO Resp. 49; *see id.* at 48–52; PO Sur-reply 14 ("Hashimoto's step S44 does not teach the claimed analysis to determine a location of the tracking device. Instead, location is already obtained at step S37 ("obtain current position") before the same current position is transmitted to the holder terminal."); *see id.* at 14 –17. We find this argument unavailing for several reasons.

First, Patent Owner appears to rely on there being a meaningful distinction between "location data" and "location," without explaining that distinction or citing sufficient evidentiary support therefor. Indeed, the '855 patent repeatedly and explicitly describes "location data" as including "*a longitudinal, latitudinal, and elevational position*, an *address*, a nearby landmark, and the like." Ex. 1001, 13:22–25 (emphases added); *id.* at 13:29–34, 14:40–41; *see* Pet. Reply 20. Patent Owner provides no explanation as to why the skilled artisan would have excluded an "address" or "a longitudinal, latitudinal, and elevational position" from the scope of the

recited "location data." The '855 patent also describes "location data" being transmitted to the (central) monitoring station "for further processing," which then results in "[a] user [being] informed of *the location* of the tracking device *on a map*." Ex. 1001, 15:10–13 (emphases added). Similarly, claim 11 recites a monitoring station analyzing "location data" to determine a "location," and informing a user of "*the location* of the tracking device *on a map*." *Id.* at 17:55–59 (emphasis added). In light of these disclosures, we find that *a location on a map* falls within the scope of the recited "location."

Second, Patent Owner appears to rely on an unduly narrow interpretation of "analysis," without identifying or explaining that interpretation or citing sufficient evidentiary support therefor. Claim 11 recites "*for analysis* to determine a location of the tracking device," and does not otherwise recite any limitation further informing (or narrowing) the scope of the required "analysis." Ex. 1001, 17:55–56; *see* Pet. Reply 20 ("[N]either the claim nor the specification of the '855 Patent establishes any requirement for any specific level of data processing that needs to be performed on the location data, and [Patent Owner] provides none in its Patent Owner Response."). Other portions of the '855 patent specification describe transmitting "location data" to a monitoring station not for "analysis," but "for further processing," and the result of that "further processing" is the "location of the tracking device on a map." *Id.* at 15:10–13, Fig. 7A (depicting a flow chart reciting "transmitting the location data" immediately followed by "informing user of location of the tracking device [on a map]"). Thus, "for analysis" as recited in claim 11 is broad, and

includes, for example, mere processing (or "further processing") of a signal to identify the location of a tracking device on a map.

Finally, Patent Owner minimizes and dismisses S44 operations performed by Hashimoto's central system on transmitted "positions," which Hashimoto actually describes as "*a signal indicative of* the current positions," but does so without sufficiently explaining "why" such operations do not fall within the broad scope of "analysis" of "location data," particularly as discussed above. *See* PO Resp. 48–52; Ex. 1005, 10:19–35 (emphasis added); Ex. 1001, 13:19–25 (The '855 patent itself describes a "position signal" as "contain[ing] *location data*," not "location." (emphasis added)); PO Sur-reply 14–17. For example, Patent Owner asserts: "The central system does not perform analysis 'to determine a location' of the tracking device—the central system *only selects a capable map based on positions provided by a portable terminal to locate a map capable of showing those location[s]*." PO Resp. 49 (emphasis added). Similarly, Patent Owner asserts: "[T]he central system of Hashimoto *merely provides maps capable of displaying current locations* and not plotting positions on maps." *Id.* at 50 n.14 (emphasis added). But in both of these instances, for example, Patent Owner does not explain why such disclosures in Hashimoto do not teach or at least fairly suggest *to the skilled artisan* the bare requirement of some "analysis" of "location data" to determine, for example, the "location" of the tracking device "on a map."

Petitioner argues, and we find, that "the 'analysis' performed by the monitoring station may be as simple as extracting the location data from the transmitted signal, or placing the data on a map." Pet. Reply 20 (citing Ex. 1043 ¶ 21). Petitioner also argues, and we find:

> S44 performs the claimed "analysis" because S44 would at least need to analyze the transmitted signal to extract the location data so that it can search for suitable map data, and this "analysis" is performed regardless of (1) "whether the map data actually [has the portable terminals'] positions on it and (2) whether the "positions ultimately displayed on the map 'came from the central system or . . . applied by the portable terminal.'"

Id. at 21 (citing Ex. 1043 ¶¶ 20–22[9]). Patent Owner responds that "Petitioner's argument that analysis is 'extracting the location data transmitted from the transmitted signal' is a new argument and cannot be considered at this stage." PO Sur-reply 15. We disagree. Petitioner argued in its Petition that "*analysis* performed at the monitoring station may include, *at element S44*, *using the raw positioning data obtained from the portable terminal* or estimated from the log, *to locate the position of the portable terminal in map data*." Pet. 45 (emphases added). Indeed, Patent Owner responded to this argument in the Patent Owner Response. PO Resp. 48–49. Thus, we disagree that Petitioner improperly put forth a new argument in its Reply.

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches or at least fairly suggests "transmitting the location data to the monitoring station for analysis to determine a location of the tracking device," as recited in claim 11.

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[9] Patent Owner argues that Petitioner submitted Exhibits 1045–1047 with its Reply "to try to plug *prima facie* evidentiary holes concerning this argument [that "analysis" includes extracting location data from a signal]," and that these exhibits "should have been submitted with the Petition and are subject to Patent Owner's objection, and thus should be excluded from consideration." PO Sur-reply 15; *see* Ex. 1043 ¶ 22. We do not rely on Exhibits 1045–1047 in this decision and, therefore, Patent Owner's objection is moot.

(8) [11[G]] "informing the user of the location of the tracking device on a map"

Petitioner contends Hashimoto teaches limitation 11[G] by disclosing "at element S45 [ ] in Figure 6 . . . to 'display map with current positions of third party and holder.'" Pet. 46–47 (citing Ex. 1005, 10:1–12, Fig. 6; Ex. 1002 ¶¶ 146–148).

Based on the foregoing evidence, we find Petitioner persuasively establishes that Hashimoto teaches "informing the user of the location of the tracking device on a map," as recited in claim 11. Patent Owner does not contest that this limitation is present in Hashimoto. *See generally* PO Resp.

b) Hindsight

The Board must "recognize that we cannot allow hindsight bias to be the thread that stitches together prior art patches into something that is the claimed invention." *Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017) ("Without any explanation as to how or why the references would be combined to arrive at the claimed invention, we are left with only hindsight bias that *KSR* warns against."); *see KSR*, 550 U.S. at 421 (2007) ("A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning."). "Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." *In re McLaughlin*, 443 F.2d 1392, 1313–14 (CCPA 1971).

In this case, Patent Owner asserts several times that Petitioner has engaged in impermissible hindsight in making its obviousness case, but Patent Owner does not meaningfully develop these arguments. *See, e.g.*, PO Resp. 2 ("[A]bsent hindsight, the [skilled artisan] would not have been motivated to combine [Hashimoto and Hockley]."), 7 ("use of hindsight bias"), 47 (same); PO Sur-reply 1. Patent Owner does not direct us to any knowledge *gleaned only from applicant's disclosure* that Petitioner allegedly relies upon to support its obviousness rationale. *See generally* PO Resp. Moreover, as discussed above, we are persuaded based on the complete record before us that the asserted teachings of the Hashimoto-Hockley combination would have been within the purview of the person of ordinary skill in the art at the time of the claimed invention. *See, e.g.*, *supra* § III.D.3.a.4.d.iii. Thus, we find Patent Owner's "hindsight" assertions unavailing.

c) "Purpose" of Hashimoto, Hockley, and the '855 Patent

To the extent that Patent Owner attempts to refute Petitioner's obviousness showing based on allegedly different objectives or purposes of the systems of Hashimoto, Hockley, and the '855 patent (*see, e.g.*, PO Resp. 23), we do not agree. It is sufficient that the skilled artisan would have had a rational reason to combine Hashimoto and Hockley to arrive at the invention of claim 11, even if the particular purpose of the invention of claim 11 is different from that of the references. *See In re Heck*, 699 F.2d 1331, 1333 (Fed. Cir. 1983) (citing *In re Gershon*, 372 F.2d 535, 538–39 (CCPA 1967)); *In re Graf*, 343 F.2d 774, 777 (CCPA 1965) ("Obviousness is not to be determined on the basis of purpose alone.").

The prior art need not have the same or similar utility as the patented invention. *In re Dillon*, 919 F.2d 688, 692–93 (Fed. Cir. 1990) (en banc) (overruling *In re Wright*, 848 F.2d 1216 (Fed. Cir. 1988).

d) Conclusion for Independent Claim 11

For the foregoing reasons, and the reasons stated in the Petition (Pet. 16–47), we conclude that Petitioner has demonstrated by a preponderance of the evidence that independent claim 11 is unpatentable as obvious over the combination of Hashimoto and Hockley.

E. Obviousness of Dependent Claims 12–14 over the Combination of Hashimoto, Hockley, and Luccketti

Petitioner contends dependent claims 12–14, which depend directly or indirectly from independent claim 11, are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Hashimoto (Ex. 1005), Hockley (Ex. 1006), and Luccketti (Ex. 1007). Pet. 47–61; Pet. Reply 24–26. Patent Owner opposes Petitioner's contentions. PO Resp. 52–59; PO Sur-reply 25–27. For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 12–14 are unpatentable as obvious over the combination of Hashimoto, Hockley, and Luccketti. We turn first to an overview of Luccketti.

1. Overview of Luccketti (Ex. 1007)

Luccketti generally relates to "personal monitoring and locating systems using [ ] Global Positioning System (GPS) technology," and more particularly to "a system including a portable transmitting unit worn by an individual that receives GPS ranging signals from the GPS satellite and relays them to a portable monitoring unit which determines the location of

the portable transmitting unit with GPS and displays the location on a display screen on the portable monitoring unit," as shown, for example, in Figure 1, reproduced below. Ex. 1007 ¶ 2, code (57), Fig. 1.

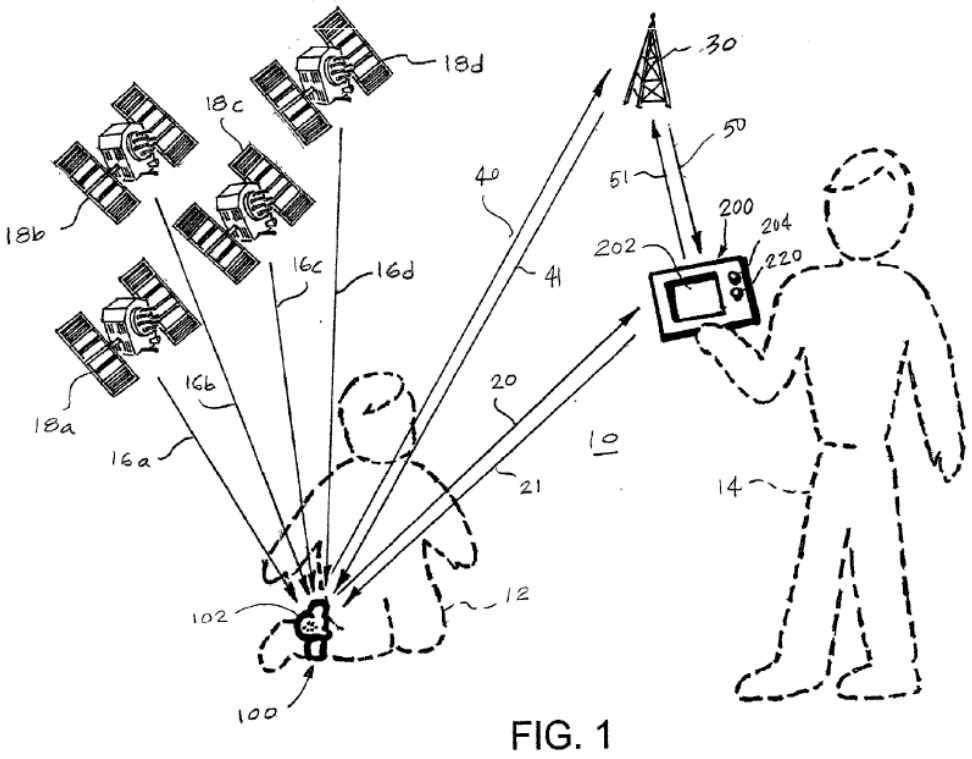

FIG. 1

Figure 1 depicts an exemplary simplified schematic view of Luccketti's system.

Id. ¶¶ 22, 30, Fig. 1.

As shown above in Figure 1, system 10 includes portable, mobile transmitter 100, which is removably secured to subject 12 being monitored (such as a young child); and portable monitoring unit 200, which is carried by or otherwise maintained in the vicinity of user 14 (such as a parent or guardian), who is monitoring the location of subject 12. Ex. 1007 ¶ 30. System 10 relies on "GPS technology," including satellites 18, to determine position of mobile transmitter 100. *Id.*

Mobile transmitter 100 continuously receives carrier signals 16a, 16b, 16c, 16d from satellites 18a, 18b, 18c, 18d, and portable monitoring unit 200 allows user 14 to locate mobile transmitter 100 (and consequently, subject 12) by sending a request signal including a unique user ID code to mobile transmitter 100. Ex. 1007 ¶ 34. Mobile transmitter 100 receives the request signal from portable monitoring unit 200, and determines whether the unique user ID code transmitted by portable monitoring unit 200 corresponds to the unique user ID code stored in mobile transmitter 100. *Id.* If the ID codes are matched, mobile transmitter 100 transmits carrier signals 16a, 16b, 16c, 16d to portable monitoring unit 200. *Id.*; *see id.* ¶ 44 ("Typically, a mobile transmitter 100/portable monitoring unit 200 will comprise a matched pair having the same unique user ID code.").

Petitioner contends Luccketti qualifies as prior art under 35 U.S.C. § 102(b) based on its publication date. Pet. 12. Patent Owner does not contest the prior art status of Luccketti. We determine that Luccketti qualifies as prior art under 35 U.S.C. § 102(b) because Luccketti's publication date of August 14, 2003, is more than one year before the earliest possible effective filing date of the challenged claims, which is February 1, 2005. Ex. 1001, codes (22), (63); Ex. 1007, code (43).

We further discuss below the disclosure of Luccketti in connection with the parties' arguments.

2. Reason to Combine Teachings of Hashimoto, Hockley, and Luccketti With a Reasonable Expectation of Success

In addition to the reasons for combining the teachings of Hashimoto and Hockley discussed above in Section III.D.3.a.4.d.iii, Petitioner argues the skilled artisan also would have combined the Hashimoto-Hockley

teachings with Luccketti's teachings of user identification codes to ensure that the person monitoring the tracking device is authorized to do so. *See, e.g.*, Pet. 49 ("[The skilled artisan] would have been motivated to include the telephone number of the user attempting to locate the tracking device because this information would have been helpful to ensure that the user was actually authorized to locate that tracked child." (citing Ex. 1002 ¶ 163)), 52 ("[The skilled artisan] would have understood that the ID codes are useful to ensure that any particular child (with a first user ID) is tracked only by the child's parent (with the second user ID comprising the other part of the "matched pair")." (citing Ex. 1002 ¶¶ 166–168)), 61 ("[The skilled artisan] would have been motivated to implement this user ID comparison in Hashimoto's communication protocol to ensure that the location information transmitted to the user is the location information of the correct tracking device and also that the user receiving it is authorized to do so." (citing Ex. 1002 ¶¶ 190–191)). Petitioner argues the skilled artisan would have had a reasonable expectation of success in combining such teachings, at least because the proffered combination "involves routine software functionality that is reasonably predictable to implement and amenable to simple substitution by [the skilled artisan]." Pet. 48.

Patent Owner disputes whether Petitioner has evidenced a sufficient rational reason to combine these references, and submits three main arguments, as discussed below. *See* Pet. Reply 24 ("[Patent Owner] does not dispute that Hashimoto-Hockley-Luccketti teaches claims 12–14. Instead, [Patent Owner] relies on its arguments against Ground 1 and further argues against motivation to combine Hashimoto and Luccketti.").

First, Patent Owner argues "Luccketti teaches away from the use of the central system of Hashimoto." PO Resp. 53; *see id.* at 53–55. For example, Patent Owner argues Luccketti teaches that "conventional systems include the 'inconvenience of relaying a child's coordinates to a central tracking station,'" and it "discards the use of a central station and implements a system where a parent's terminal communicates directly with a child's transmitter 100 over cellular or radio networks," whereas "[t]he central station . . . is integral to the system of Hashimoto, especially as it relates to efficient map utilization and portable terminal communications." *Id.* at 53–54. Petitioner responds that "Luccketti recognizes a 'shortcoming' of using a 'central tracking station,' but contrary to [Patent Owner's] assertion this recognition does not constitute teaching away from combining with Hashimoto." Pet. Reply 25.

We find Patent Owner misses the point of turning to certain teachings in Luccketti. In connection with dependent claim 12, for example, Petitioner turns to Luccketti's teaching of transmitting a signal to a tracking device that includes a user's or requestor's identification code, and particularly to Luccketti's teaching of a "matched pair" identification approach. Pet. 50–53. Petitioner contends an ordinarily skilled artisan would have been motivated by Luccketti's teachings of increasing security in a tracking system by requiring trackers and trackees to agree to communicate with each other, using, for example, authentication codes. *See id.* In the Petition, Petitioner explains why the skilled artisan would turn to Luccketti:

> [The skilled artisan] would have been motivated to add a user ID code to Hashimoto's communication exchange to achieve the benefits taught by Luccketti. Ex-1002 ¶¶166-168. Specifically, [the skilled artisan] would have implemented Luccketti's

> "matched pair" user ID approach in the tracking device *to ensure that the person monitoring the user was actually authorized to do so*. *Id.* Similar to Hashimoto's exemplary use, Luccketti explains that the relationship between the users may be, for example, parent and child(ren). Ex-1007 ¶4. And [the skilled artisan] would have understood that the ID codes are useful to ensure that any particular child (with a first user ID) is tracked only by the child's parent (with the second user ID comprising the other part of the "matched pair"). Ex-1002 ¶¶166-168. Indeed, Luccketti envisions situations to be avoided where a child is taken by an unauthorized person, such as a kidnapping. Ex-1007, [0036]. [The skilled artisan] would have been motivated to include this additional "match pair" level of security in Hashimoto to improve the security and safety of the tracked user, as in Luccketti. Ex-1002 ¶¶166-168.

Pet. 52–53. Petitioner also argues the skilled artisan would have had a reasonable expectation of success in making the combination "at least because each of these solutions involves routine software functionality that is reasonably predictable to implement and amenable to simple substitution by [the skilled artisan.]" Pet. 48. We find Petitioner's arguments persuasive.

Patent Owner does not direct us to any evidence of record, and we find none, evidencing that Luccketti criticizes, discredits, or otherwise discourages investigation into including such user identification codes in a centralized system, such as Hashimoto's "central system." Thus, we find Patent Owner's arguments unavailing.

Second, Patent Owner argues "Luccketti is unrelated to methods for tracking using a plurality of signals to determine location data." PO Resp. 55; *see id.* at 55–57; PO Sur-reply 25–27. Patent Owner argues, "[i]nstead, Luccketti is directed to the capabilities of the portable unit worn by a parent to monitor the location of a child wearing a portable transmitter."

Id. at 56. Patent Owner alleges that the skilled artisan "would not seek to implement features from a system that does not seek to improve methods of obtaining location data that specifically teaches away from a monitoring station." *Id.* at 56–57. Patent Owner faults Petitioner and its expert for "fail[ing] to address how [the skilled artisan] would successfully *integrate* a system championing a central station (Hashimoto) with a system discouraging the use of the same (Luccketti) with a reasonable expectation of success and have failed to meet their burden to prove any motivation to combine these systems." *Id.* at 57 (emphasis added).

But here again, we find Patent Owner is arguing that the ordinarily skilled artisan would not have physically integrated (incorporated) Luccketti's system into Hashimoto's system (or would not have known how to do so), rather than properly addressing what *the combined teachings* of those references would have *fairly suggested* to those of ordinary skill in the art. Thus, we find Patent Owner's arguments unavailing. *See, e.g.*, *In re Mouttet*, 686 F.3d at 1332 ("It is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements."); *In re Sneed*, 710 F.2d at 1550 ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); *In re Keller*, 642 F.2d at 425; *Burckel*, 592 F.2d at 1179 ("[A] reference must be considered not only for what it expressly teaches, but also for what it fairly suggests."). Further, we find Patent Owner's arguments unavailing because Patent Owner does not address the teachings of Luccketti relied upon by Petitioner.

Third, Patent Owner argues that the skilled artisan "would not have had a reason to modify the Hashimoto 'call signal,'" and disputes the skilled artisan would have understood the "call signal" could be used to increase security of the system, because Hashimoto's "location signals are continuously gathered and transmitted at fixed intervals" regardless of transmission of the "call signal." PO Resp. 57–59. Petitioner responds that the skilled artisan "would have been motivated to implement Luccketti's 'matched pair' user identification approach in Hashimoto's call signal *to ensure that the person monitoring the tracking device is authorized to do so*." Pet. Reply 26 (citing Pet. 50–53; Ex. 1002 ¶¶ 151–160) (emphasis added). Petitioner argues:

> [Patent Owner] does not dispute the [skilled artisan's] motivation, but argues that even if Hashimoto is modified as proposed, the modified system would "not provide the level of security" desired because Hashimoto would continuously gather and transmit location signals at fixed intervals (therefore defeating the purpose of implementing "matched pair" user identification in Hashimoto's call signal, according to [Patent Owner]). This is both untrue and irrelevant because (1) gathering location signals at fixed intervals would not defeat the purpose of implementing "matched pair" and (2) there is no specific "level of security" required by the claims. Ex-1043 ¶31.

Pet. Reply 26. We agree, and find Petitioner's arguments persuasive, because Hashimoto plainly teaches a scenario where a holder (user) of one portable terminal may *request* the position of another (third-party) portable terminal, separate from the system's automatic logging of positions at a given interval. *See* Ex. 1005, Fig. 6. We also are persuaded that, for security purposes, the skilled artisan would have recognized the benefits of Luccketti's teachings of using identification codes to authenticate the user's

right to access such position information before transmitting it to that user. *See, e.g.*, Pet. 52–53 (citing Ex. 1002 ¶¶ 166–168).

Accordingly, we find Petitioner proffers a rational reason to combine Luccketti's teachings of user identification codes with Hashimoto's teachings, namely, to ensure that the person monitoring the tracking device is authorized to do so, and Petitioner likewise explains persuasively why the skilled artisan would have had a reasonable expectation of success in doing so, as discussed above.

3. Dependent Claim 12

Dependent claim 12 recites, "[t]he method for locating an individual or an object of claim 11, wherein the signal transmitted from the monitoring station to the tracking device includes a user's identification code." Ex. 1001, 18:1–4.

Petitioner contends the combination of Hashimoto, Hockley, and Luccketti teaches the limitations of claim 12. Pet. 48–53 (citing, *inter alia*, Ex. 1002 ¶¶ 161–168). In particular, Petitioner argues "Hashimoto discloses that the user seeking to locate the portable remote terminal identifies the ID number or the telephone number of the terminal to the monitoring station," and in contacting or calling the remote terminal, that "call would have included the phone number (i.e., an identification code) for the user of the terminal (i.e. the claimed tracking device)" and "the phone number of the user placing the call is also transmitted." Pet. 48–49 (citing Ex. 1005, 9:33–35, 8:2–8; Ex. 1002 ¶¶ 162–163). Petitioner argues Luccketti teaches, *inter alia*, (1) "the request signal transmitted from the portable monitoring unit 200 [(i.e., the parents device)] typically includes a unique userID code to identify the particular mobile transmitter 100 [(i.e., the child's device)] to

be located" (Pet. 51 (citing Ex. 1007 ¶ 44) (emphasis omitted, alterations in original)); (2) "the user IDs comprise a 'matched pair,' [where] the user ID transmitted is the same ID for both the parent and the child" (Pet. 51 (citing Ex. 1002 ¶ 165)); and (3) "determin[ing] whether the ID code for portable monitoring unit 200 matches the ID code of mobile transmitter 100, in which case the mobile transmitter 100 begins transmitting the location signals" (Pet. 51 (citing Ex. 1002 ¶ 165)). *See* Pet. 50–53 (citing, *inter alia*, Ex. 1002 ¶¶ 163–168; Ex. 1007 ¶¶ 4, 34, 36, 44, Fig. 3). Petitioner argues the skilled artisan "would have implemented Luccketti's 'matched pair' user ID approach in the tracking device [of Hashimoto] to ensure that the person monitoring the user was actually authorized to do so." Pet. 52 (citing Ex. 1002 ¶¶ 166–168)); *see supra* § III.E.2 (reasons to combine subject references).

Except as discussed above regarding independent claim 11 (*see supra* § III.D.3.a), Patent Owner does not otherwise contest that the combination of Hashimoto, Hockley, and Luccketti teaches the limitations of dependent claim 12. *See generally* PO Resp.

Based on the foregoing evidence, we find Petitioner persuasively establishes that the combination of Hashimoto, Hockley, and Luccketti teaches or at least fairly suggests the limitations of dependent claim 12.

4. Dependent Claim 13

Dependent claim 13 recites:

> [A] The method for locating an individual or an object of claim 11, wherein the tracking device includes;
>
> a signal receiver adapted to receive the signal from the monitoring station to the tracking device, including a user's identification code;

> [B] a microprocessor/logic circuit adapted to store an identification code to utilize as a stored identification code, to determine a location of the tracking device, and to generate a positioning signal;
>
> [C] a programmable memory;
>
> [D] a wireless location and tracking system logic circuit; and
>
> [E] a signal transmitter.

Ex. 1001, 18:5–16 (shown with bracketed numbering added to match the parties' designation of limitations and subparts).

Petitioner contends the combination of Hashimoto, Hockley, and Luccketti teaches limitation 13[A] because "Hashimoto discloses that portable remote terminal 11 includes several signal receivers to receive the signal from the central system/monitoring station," where such signal receivers include "Radio Equipment 15 and 16," and "Luccketti teaches sending an identification code to the tracking device," as discussed above regarding claim 12. *See* Pet. 53–54 (citing, *inter alia*, Ex. 1002 ¶¶ 169–170; Ex. 1005, Fig. 1); *supra* § III.E.3 (discussing user identification codes in the context of claim 12).

Petitioner contends the combination of Hashimoto, Hockley, and Luccketti teaches limitation 13[B] because (1) "Hashimoto discloses that its portable remote terminal includes controller 22, which [the skilled artisan] would have understood as including a microprocessor and/or logic circuit"; (2) "Hashimoto explains that controller 22 determines the location of the tracking device"; (3) Hashimoto "explains that controller 22 generates a position signal, which is transmitted back to the monitoring station"; (4) Hashimoto discloses storing information, such as "map data 21," in the remote terminal"; and (5) although "Hashimoto is silent on storing a user's

identification information in the remote terminal," "Luccketti expressly teaches that '[t]he unique user ID code for each mobile transmitter 100 is stored in memory 128, preferably a non-volatile memory, such as ROM.'" Pet. 54–57 (citing, *inter alia*, Ex. 1002 ¶¶ 171–176; Ex. 1005, 2:56–58, 3:56–57, Figs. 1–2, 4; Ex. 1007 ¶ 44, Figs. 3–4); *supra* § III.E.3 (claim 12).

Petitioner contends the combination of Hashimoto, Hockley, and Luccketti teaches limitation 13[C] because "Hashimoto discloses that the portable remote terminal contains a programmable memory to download maps." Pet. 57 (citing, *inter alia*, Ex. 1002 ¶ 177; Ex. 1005, 7:8–10; Ex. 1007 ¶ 44).

Petitioner contends the combination of Hashimoto, Hockley, and Luccketti teaches limitation 13[D] because "Hashimoto discloses that the portable remote terminal contains logic circuits for determining its position using the algorithm in Fig. 2, based on wirelessly received signals." Pet. 58–59 (citing, *inter alia*, Ex. 1002 ¶¶ 178–179; Ex. 1005, 6:43–50).

Petitioner contends the combination of Hashimoto, Hockley, and Luccketti teaches limitation 13[E] because "Hashimoto discloses that the portable remote terminal contains a signal transmitter for transmitting the positioning/location data back to the central system/monitoring station," and specifically, Hashimoto's "Radio Equipment 15 and 16 . . . will transmit signals, as well as receive them." Pet. 59 (citing, *inter alia*, Ex. 1002 ¶¶ 180–183; Ex. 1005, 8:20–26, Fig. 5).

Except as discussed above regarding independent claim 11 (*see supra* § III.D.3.a), Patent Owner does not otherwise contest that the combination of Hashimoto, Hockley, and Luccketti teaches the limitations of dependent claim 13. *See generally* PO Resp.

Based on the foregoing evidence, we find Petitioner persuasively establishes that the combination of Hashimoto, Hockley, and Luccketti teaches or at least fairly suggests the limitations of dependent claim 13.

5. Dependent Claim 14

Dependent claim 14 recites, "[t]he method of claim 12, wherein the tracking device compares the user's identification code to a stored identification code and upon determining that the user's identification code matches the stored identification code, a signal transmitter from the tracking device transmits a positioning signal to the monitoring station." Ex. 1001, 18:17–22.

Petitioner contends the combination of Hashimoto, Hockley, and Luccketti teaches the limitations of claim 14. Pet. 60–61 (citing, *inter alia*, Ex. 1002 ¶¶ 184–191). In particular, Petitioner argues the combination teaches "matched pair" user identification codes as discussed above. *See* Pet. 60; *supra* § III.E.3 (discussing user identification codes in the context of claim 12). Petitioner argues that "since Luccketti explains that the user IDs comprise a 'matched pair,' the user ID transmitted is the same ID for both the parent and the child" (Pet. 60 (citing Ex. 1002 ¶¶ 186–187; Ex. 1007 ¶¶ 34, 44)), and that such disclosure would have taught the skilled artisan to "compare[] a received user ID with the stored ID" *before* providing position information, and, "if matching, . . . [to] then transmit[] the positioning signal to the monitoring station" (Pet. 60–61 (citing Ex. 1002 ¶¶ 188–189; Ex. 1007 ¶ 44)). Petitioner argues that combining Luccketti's teachings of "matched pair" user identification codes with Hashimoto's "first signal" from a monitoring station "would have ensured that there was an appropriate relationship between the trackor and the trackee, such as parent/child."

Pet. 61 (citing Ex. 1007 ¶ 4). Petitioner argues that the skilled artisan "would have been motivated to implement this user ID comparison in Hashimoto's communication protocol to ensure that the location information transmitted to the user is the location information of the correct tracking device and also that the user receiving it is authorized to do so." Pet. 61 (citing Ex. 1002 ¶¶ 190–191).

Except as discussed above regarding independent claim 11 (*see supra* § III.D.3.a), Patent Owner does not otherwise contest that the combination of Hashimoto, Hockley, and Luccketti teaches the limitations of dependent claim 14. *See generally* PO Resp.

Based on the foregoing evidence, we find Petitioner persuasively establishes that the combination of Hashimoto, Hockley, and Luccketti teaches or at least fairly suggests the limitations of dependent claim 14.

6. Conclusion for Claims 12–14

Based on the foregoing evidence, we find Petitioner persuasively establishes that the combination of Hashimoto, Hockley, and Luccketti teaches or at least fairly suggests the limitations of dependent claims 12–14. We also find Petitioner's cited evidence provides sufficient rational reasons to combine the teachings of Hashimoto, Hockley, and Luccketti with a reasonable expectation of success in doing so. Thus, for the foregoing reasons, and the reasons stated in the Petition (Pet. 47–61), we conclude that Petitioner has demonstrated by a preponderance of the evidence that dependent claims 12–14 are unpatentable as obvious over the combination of Hashimoto, Hockley, and Luccketti.

F. Obviousness of Dependent Claims 15 and 16 over the Combination of Hashimoto, Hockley, and Mohi

Petitioner contends dependent claims 15 and 16, which depend from independent claim 11, are unpatentable under 35 U.S.C. § 103 as obvious over the combination of Hashimoto (Ex. 1005), Hockley (Ex. 1006), and Mohi (Ex. 1008). Pet. 61–66; Pet. Reply 27. Patent Owner does not present any separate arguments that are distinct to any of these claims. Rather, Patent Owner generally states the view that the alleged deficiencies in the Petition with respect to claim 11 also are applicable to claims 15 and 16. *See* PO Resp. 52–53 ("[T]he addition of Mohi for claims 15–16 do[es] not overcome the shortcomings of the Hashimoto and Hockley combination for Claim 11. Therefore those dependent claims also are not rendered obvious."). For the reasons expressed below, and based on the complete record before us, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 15 and 16 are unpatentable as obvious over the combination of Hashimoto, Hockley, and Mohi. We turn first to an overview of Mohi.

1. Overview of Mohi (Ex. 1008)

Mohi generally relates to "tracking systems that use a radio positioning system such as GPS and wireless radio communications such as cellular telephone." Ex. 1008 ¶ 2. Mohi discloses that "the invention has as one use for keeping in touch with children, periodically determining a child's location or trail of movement, or alarm limit violation." *Id.* ¶ 25.

In addition to monitoring the location of a person (e.g., child), Mohi discloses several alarm modes that are also monitored. *See* Ex. 1008 ¶ 24. According to Mohi, an alarm may be triggered, for example, by the

monitored individual traveling at a speed in excess of a threshold. *Id.* For example, Mohi's "[a]larms . . . may activate at a speed limit, if the rover starts to move faster than the alarm limit." *Id.*

Petitioner contends Mohi qualifies as prior art under 35 U.S.C. § 102(b) based on its publication date. Pet. 14. Patent Owner does not contest the prior art status of Mohi. We determine that Mohi qualifies as prior art under 35 U.S.C. § 102(b) because Mohi's publication date of October 16, 2003, is more than one year before the earliest possible effective filing date of the challenged claims, which is February 1, 2005. Ex. 1001, codes (22), (63); Ex. 1008, code (43).

We further discuss below the disclosure of Mohi in connection with the parties' arguments.

2. Reason to Combine Teachings of Hashimoto, Hockley, and Mohi With a Reasonable Expectation of Success

In addition to the reasons for combining the teachings of Hashimoto and Hockley discussed above in Section III.D.3.a.4.d.iii, Petitioner argues the skilled artisan also would have combined the Hashimoto-Hockley teachings with Mohi's teachings of monitoring alarm modes associated with a tracking device to identify and protect users from potentially unsafe situations, such as a tracked child being beyond a set distance from a target boundary or traveling faster than a predetermined speed limit. *See* Pet. 62 ("[B]oth Hashimoto and Mohi disclose sounding alarms based on potentially unsafe situations that the tracked user may be in." (citing Ex. 1008 ¶ 24; Ex. 1005, 12:64–13:2)), 66 ("[The skilled artisan] would have been motivated to implement Mohi's speed limit alarms in Hashimoto's system because like Hashimoto, Mohi is directed to tracking children, and adding

such a feature to Hashimoto, which already tracks speed, would have further increased the safety of the monitored individual." (citing Ex. 1002 ¶ 207)). Petitioner argues the skilled artisan also would have had a reasonable expectation of success in combining such teachings, at least because Hashimoto, Hockley, and Mohi "each relates to the same well-known issue of determining a location of a device or an individual, such as a child, using a number of location determination signals," and because Mohi and the Hashimoto-Hockley system "both recognize these issues [arising from "potentially unsafe situations"] and propose solutions using the same types of hardware and software." Pet. 61–62 (citing Ex. 1002 ¶¶ 195–198; Ex. 1008 ¶ 24; Ex. 1005, 12:64–13:2).

Except as discussed above regarding independent claim 11 (*see supra* § III.D.3.a), Patent Owner does not otherwise contest that the skilled artisan would have had a rational reason to combine the relevant teachings of Hashimoto, Hockley, and Mohi with a reasonable expectation of success in doing so. *See* PO Resp. 52–53; *see generally* PO Resp.

Accordingly, we find Petitioner proffers a rational reason to combine Mohi's teachings of monitoring alarm modes with Hashimoto's teachings, namely, to further increase the safety of monitored individuals and protect them from potentially unsafe situations, such as a tracked child being beyond a set distance from a target boundary or traveling faster than a predetermined speed limit. *See, e.g.*, Pet. 61–62, 65–66 (citing, *inter alia*, Ex. 1002 ¶¶ 195–198, 205–207). We also find Petitioner explains persuasively why the skilled artisan would have had a reasonable expectation of success in doing so, as discussed above. *See* Pet. 61–62.

3. Dependent Claim 15

Dependent claim 15 recites:

[A] The method of claim 11, further comprising:

calculating speed of the tracking device; and

[B] providing a warning signal to at least one of the user, a subscriber of this method, the individual, or the object when movement of the tracking device exceeds a designated value.

Ex. 1001, 18:23–28 (shown with bracketed numbering added to match the parties' designation of limitations and subparts).

Petitioner contends the combination of Hashimoto, Hockley, and Mohi teaches limitation 15[A] because Hashimoto discloses that "the central system (i.e., the monitoring station) can calculate the speed of the portable remote terminal." Pet. 62–63; *see* Ex. 1005, 8:30–55 (describing determining "speed" of tracking device); Ex. 1002 ¶¶ 199–202.

Petitioner contends the combination of Hashimoto, Hockley, and Mohi teaches limitation 15[B] because (1) "Hashimoto discloses that the portable remote terminal has an alarm," which "may be sounded when the holder of the portable terminal spends an 'unnecessarily long' time in a monitored location" (Pet. 63–64 (citing, *inter alia*, Ex. 1002 ¶¶ 203–208; Ex. 1005, 3:48–50 ("Numeral 19 indicates a speaker, which is used in the case of sounding an alarm to the holder of the portable terminal 11."), 12:64–13:2, Fig. 8B)); and (2) "Mohi discloses several alarm modes, such as an alarm triggered by speed in excess of a threshold" (Pet. 65–66 (citing, *inter alia*, Ex. 1002 ¶¶ 205–207; Ex. 1008 ¶¶ 20–21, 24 ("Mohi's "[a]larms . . . may activate at a speed limit, if the rover starts to move faster than the alarm limit."))). Petitioner argues that the skilled artisan "would have been motivated to implement Mohi's speed limit alarms in Hashimoto's system

because like Hashimoto, Mohi is directed to tracking children, and adding such a feature to Hashimoto, which already tracks speed, would have further increased the safety of the monitored individual." Pet. 66 (citing Ex. 1002 ¶ 207).

Except as discussed above regarding independent claim 11 (*see supra* § III.D.3.a), Patent Owner does not otherwise contest that the combination of Hashimoto, Hockley, and Mohi teaches the limitations of dependent claim 15. *See* PO Resp. 52–53.

Based on the foregoing evidence, we find Petitioner persuasively establishes that the combination of Hashimoto, Hockley, and Mohi teaches or at least fairly suggests the limitations of dependent claim 15.

4. Dependent Claim 16

Dependent claim 16 recites, "[t]he method of claim 11, further comprising the step of: communicating at least one of a verbal or electronic signaling warning when the tracking device is detected more than a designated distance from a designated coordinate position." Ex. 1001, 18:29–33.

Petitioner contends the combination of Hashimoto, Hockley, and Mohi teaches the limitations of claim 16. Pet. 66 (citing, *inter alia*, Ex. 1002 ¶¶ 209–210). Petitioner argues, as with claim 15, that "Hashimoto discloses that the portable remote terminal/tracking device has an alarm" (Pet. 66 (citing Ex. 1005, 3:48–50)); and that "Mohi discloses additional alarm modes," including that "[a]larms may be spatial such as a boundary or radius passed" (Pet. 66 (citing Ex. 1008 ¶ 24)). Petitioner argues the skilled artisan "would have understood that a boundary and radius beyond which an alarm will sound is a designated distance from a designated coordinate position as

claimed" (Pet. 66 (citing Ex. 1002 ¶ 209)), and that "this additional alarm mode would have been implemented in Hashimoto for the same reasons discussed above with regard to claim 15 [*see supra* § III.F.3]" (Pet. 66).

Except as discussed above regarding independent claim 11 (*see supra* § III.D.3.a), Patent Owner does not otherwise contest that the combination of Hashimoto, Hockley, and Mohi teaches the limitations of dependent claim 16. *See* PO Resp. 52–53.

Based on the foregoing evidence, we find Petitioner persuasively establishes that the combination of Hashimoto, Hockley, and Mohi teaches or at least fairly suggests the limitations of dependent claim 16.

5. Conclusion for Claims 15 and 16

Based on the foregoing evidence, we find Petitioner persuasively establishes that the combination of Hashimoto, Hockley, and Mohi teaches or at least fairly suggests the limitations of dependent claims 15 and 16. We also find Petitioner's cited evidence provides sufficient rational reasons to combine the teachings of Hashimoto, Hockley, and Mohi with a reasonable expectation of success in doing so. Thus, for the foregoing reasons, and the reasons stated in the Petition (Pet. 61–66), we conclude that Petitioner has demonstrated by a preponderance of the evidence that dependent claims 15 and 16 are unpatentable as obvious over the combination of Hashimoto, Hockley, and Mohi.

IV. CONCLUSION

Petitioner has met its burden to show, by a preponderance of the evidence, that claims 11–16 are unpatentable on the asserted grounds.[10]

V. ORDER

Upon consideration of the record, it is

ORDERED that claims 11–16 of U.S. Patent No. 7,598,855 B2 are unpatentable; and

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

In summary:

Claim(s)	35 U.S.C. §	Reference(s)	Claims Shown Unpatentable	Claims Not Shown Unpatentable
11	103	Hashimoto, Hockley	11	
12–14	103	Hashimoto, Hockley, Luccketti	12–14	

[10] 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).

Claim(s)	35 U.S.C. §	Reference(s)	Claims Shown Unpatentable	Claims Not Shown Unpatentable
15, 16	103	Hashimoto, Hockley, Mohi	15, 16	
Overall Outcome			11–16	

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