

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

QUALCOMM INCORPORATED,
Petitioner,

v.

FEDEX CORPORATE SERVICES, INC.,
Patent Owner.

IPR2022-00585
Patent 8,766,797 B2

Before JEAN R. HOMERE, BARBARA A. PARVIS, and
CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

OGDEN, *Administrative Patent Judge*.

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

I. INTRODUCTION

In response to a Petition (Paper 1, “Pet.”) filed by Petitioner Qualcomm Incorporated (“Qualcomm”), the Board instituted an *inter partes* review of claims 1–33 of U.S. Patent No. 8,766,797 B2 (Ex. 1001, “the ’797 patent”). Paper 14 (“Dec.”); Ex. 1029 (public redacted version). Patent Owner FedEx Corporate Services, Inc. (“FedEx”) filed a Patent Owner Response (Paper 42 (“PO Resp.”); Ex. 1032 (public redacted version)), Qualcomm filed a Reply to the Patent Owner Response (Paper 46 (“Pet. Reply”); Paper 47 (public redacted version)), and FedEx filed a Sur-reply (Paper 56 (“PO Sur-reply”); Ex. 1034 (public redacted version)).¹

FedEx filed a motion to terminate the proceeding on the ground that Qualcomm had failed to accurately identify all real parties in interest. Paper 58. We separately denied that motion (Paper 72), and this decision does not further address the issues raised in that motion.

We held an oral hearing on August 8, 2023, and the transcript is entered into the record (“Tr.”). Paper 70.

This is a final written decision under 35 U.S.C. § 318(a) as to whether the claims challenged in the *inter partes* review are unpatentable. For the reasons below, we conclude that Qualcomm has shown that all the challenged claims are unpatentable on at least one ground of the Petition.

¹ In this decision, we refer only to non-confidential portions of the papers filed under seal, which may be found in the public redacted versions.

II. BACKGROUND

A. RELATED PROCEEDINGS

According to the parties, the following is a related U.S. district court case that involves the '797 patent: *FedEx Corporate Services, Inc. v. Roambee Corp.*, No. 1:21-cv-00175 (D. Del. filed Feb. 9, 2021). Pet. 2; Paper 3, 1.

FedEx also identifies the following *inter partes* reviews between the parties challenging related patents: IPR2022-00584 (instituted Oct. 11, 2022), IPR2022-00586 (instituted Oct. 11, 2022), and IPR2022-00587 (institution denied Oct. 11, 2022). Paper 3, 1.

B. THE '797 PATENT (EX. 1001)

The '797 patent is directed to a system for using sensors to track or otherwise monitor items during shipment and a rule-based system for allowing or restricting access to the sensor information. *See* Ex. 1001, code (57), 2:33–47. Figure 1, reproduced below, depicts such a system:

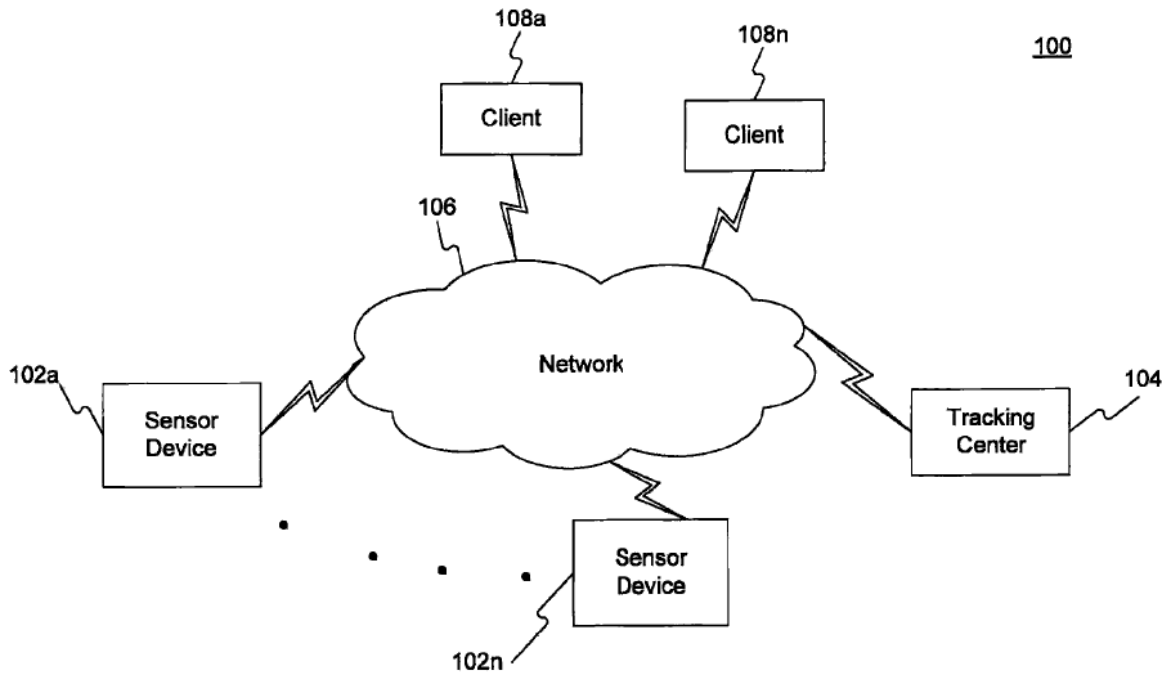


Fig. 1

Figure 1 depicts system 100 that includes sensor devices 102a–n, tracking center 104, and clients 108a–n, each communicating through network 106. Sensor devices 102a–n can detect “conditions such as location, temperature, light level, motion, pressure, humidity, acceleration, gas level, airflow, vibration, or other environmental conditions.” Ex. 1001, 3:66–4:3. Tracking center 104 is a “platform for tracking items being delivered to a recipient” and can also “respond to requests for sensor data” from clients 108 based on triggering parameters such as sensor identification number, item tracking number or the type of sensor information. *Id.* at 4:10–11, 4:21–32. Tracking center 104 may also authenticate clients 108 before allowing them to access sensor data. *See id.* at 4:37–39.

C. CHALLENGED CLAIMS AND GROUNDS

Claim 1, representative of the challenged claims, reads as follows:

1. A computer-implemented method for accessing information regarding one or more shipments, the method comprising the steps of:

- [1[a]] receiving, at a tracking center, sensor information associated with the one or more shipments;
- [1[b]] analyzing rules associated with a party to determine whether the party is authorized to access the received sensor information; and
- [1[c1]] restricting the party from accessing the received sensor information based on the analyzed rules,
- [1[c2]] wherein the restricting comprises the step of reporting the received sensor information to the party at a level of specificity that is less than a level of specificity of sensor information collected by a sensor associated with the one or more shipments.

Ex. 1001, 25:2–17 (Qualcomm’s reference numbers added in brackets).

Claims 12 and 23 are also independent, and the remainder of the claims each depend from one of these three independent claims. *See id.* at 25:18–28:42.

Qualcomm argues three grounds for *inter partes* review as summarized in the following table:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–10, 12–21, 23–32	103(a) ²	Lau ³
1–10, 12–21, 23–32	103(a)	Lau, Buford ⁴
1, 2, 11–13, 22–24, 33	103(a)	Ainsworth ⁵

Pet. 4.

D. DECLARATORY TESTIMONY

Qualcomm relies on a declaration of Dr. James Olivier. Ex. 1003; *see also* Ex. 1004 (Dr. Olivier’s curriculum vitae).

FedEx relies on a declaration by Dr. Mark P. Mahon. Ex. 2201; *see also* Ex. 2202 (Dr. Mahon’s curriculum vitae).

III. GROUNDS OF THE PETITION

For the reasons below, we determine that Qualcomm has shown, by a preponderance of the evidence, that claims 1–33 of the ’797 patent are unpatentable as obvious.

² 35 U.S.C. § 103(a) (2006), *amended by* Leahy–Smith America Invents Act, Pub. L. No. 112-29 § 103, sec. (n)(1), 125 Stat. 284, 287, 293 (2011) (effective Mar. 16, 2013). The ’797 patent issued from an application filed on September 14, 2012, which is before the effective date of this amendment to section 103. *See* Ex. 1001, code (22).

³ Lau et al., US 7,212,829 B1, issued May 1, 2007 (Ex. 1005). Qualcomm contends that Lau is prior art under § 102(b). Pet. 4.

⁴ Buford et al., US 2010/0151885 A1, published June 17, 2010 (Ex. 1007). Qualcomm contends that Buford is prior art under § 102(e). Pet. 4.

⁵ Ainsworth et al., US 2007/0290836 A1, published Dec. 20, 2007 (Ex. 1008). Qualcomm contends that Ainsworth is prior art under § 102(b). Pet. 7.

A. LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the pertinent art at the time of the invention is a factor in how we construe patent claims. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). It is also one of the factors we consider when determining whether a patent claim is obvious over the prior art. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To assess the level of ordinary skill, we construct a hypothetical “person of ordinary skill in the art,” from whose vantage point we assess obviousness and claim interpretation. *See In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998). This legal construct “presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan.” *Id.* (citing *In re Carlson*, 983 F.2d 1032, 1038 (Fed. Cir. 1993)).

Relying on Dr. Olivier’s testimony, Qualcomm argues that a person of ordinary skill in the art would have had “a bachelor’s degree in electrical engineering, computer engineering, or a related field, and at least two years of experience in design, development and/or testing of hardware and software used in sensor-based networks for monitoring items, or the equivalent.” Pet. 8 (citing Ex. 1003 ¶ 23).⁶ Qualcomm also contends that “additional education [may] substitute[e] for experience and vice versa.” Pet. 9 (citing Ex. 1003 ¶ 23).

FedEx and Dr. Mahon essentially agree with Qualcomm’s articulation of the level of ordinary skill as expressed above. *See* PO Resp. 30 n.2; Ex. 2201 ¶ 47. Because Qualcomm’s uncontroverted articulation of the level of

⁶ Qualcomm argues that this is “at least” the level of ordinary skill in the art. Pet. 8. As we did in our instituting decision, we disregard this qualification to avoid vagueness. Dec. 19 n.6; Dr. Mahon agrees. Ex. 2201 ¶ 47.

ordinary skill in the art is supported by testimonial evidence by both parties and appears consistent with the types of problems and solutions in the '797 patent, we adopt it for this decision. *See, e.g.*, Ex. 1001, 1:21–2:29 (“Technical Field” and “Background” sections of the '797 patent, describing background knowledge about methods for tracking packages using sensor devices including radio frequency identification (RFID) systems).

Qualcomm also contends that an ordinarily skilled artisan “would have been familiar with the field of technology described [on pages 9–11 of the Petition].” Pet. 9 (citing Ex. 1003 ¶ 23). The “Field of Technology” section of the Petition refers to background knowledge of RFID technology as discussed in the “Background” section of the '797 patent, but otherwise discusses teachings in the asserted prior art and other documents. *See* Pet. 9–11 (citing Ex. 1001, 1:19–2:16; Ex. 1005, 1:66–2:25, 2:42–48, 6:12–15, 6:23–31, 11:4–10; Ex. 1007 ¶¶ 5–7, 39, 72–87; Ex. 1008 ¶¶ 2–7, 19–20, 46–47, 55–56, 77–81; Ex. 1010, 9–13). Because whether this subject matter is part of the background knowledge in the art is not determinative of our decision, we need not adopt this part of Qualcomm’s articulation of the level of ordinary skill.

B. CLAIM CONSTRUCTION

In an *inter partes* review, we construe a patent claim “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).” 37 C.F.R. § 42.100(b) (2023). This generally includes “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.” *Id.* The ordinary

and customary meaning of a claim term “is its meaning to the ordinary artisan after reading the entire patent,” and “as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313, 1321. There are only two circumstances in which a construction departs from the ordinary and customary meaning: “1) when a patentee sets out a definition and acts as [their] own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). Any such special meaning of a term “must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention.” *Multiform Desiccants Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998).

To construe the claim terms, “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).

Qualcomm did not initially identify any claim terms needing an explicit construction. *See* Pet. 15. However, FedEx identified two terms for which it offered substantial claim construction arguments: the term “level of specificity” and the term “prevent[ing] the party from accessing the received sensor information.” PO Resp. 29–33 (alteration in original). We address these two terms below. To the extent that other claim terms are significant, we discuss them below in the context of the asserted prior art.

1. “Level of Specificity”

FedEx argues that we should construe the term “level of specificity” to mean “degree of precision.” PO Resp. 29 (citing Ex. 2201 ¶¶ 51–57).

FedEx contends that this interpretation finds support in dependent claims 3, 14, and 25, requiring that “sensor information is collected at a street address-level,” while “received sensor information is reported . . . at a city-level.” *Id.* at 30 (quoting Ex. 1001, 25:24–27, 26:31–34, 27:36–41). FedEx interprets this as evidence that “level of specificity” refers to “a degree of precision with which information is collected and reported (e.g., street-address vs. city)” rather than reporting “different portions or corpuses of information (e.g., data pertaining to different customers).” *Id.* (citing Ex. 2201 ¶ 53).

FedEx also argues that the ’797 patent, including dependent claim 11, distinguishes between the specificity or precision of data and the “frequency” in which it is collected or reported. PO Resp. 30 (citing Ex. 1001, 11:49–62, 12:12–26, 26:1–6; Ex. 2201 ¶ 53). According to FedEx, the prosecution history supports this distinction because the applicant added the “level of specificity” clause to distinguish Zhou,⁷ a prior art reference, and “[t]he applicant argued that Zhou’s reporting of a portion of data in its privacy modes does not alter the level of specificity of data reported.” *Id.* at 31 (citing Ex. 1002, 151, 153–54, 157, 161–164).

Qualcomm argues that what the applicant “distinguished during prosecution was *not* a difference between data collected and reported, but instead (1) not collecting or reporting *any* information, or (2) not collecting (or reporting) a particular type of information.” Pet. Reply 10 (citing Pet. 13–14). In other words, Qualcomm argues that Zhou reports whatever sensor information it collects, but in a particular mode it only collects “a particular type of data (such as location information) while still . . . provid[ing] a

⁷ Zhou et al., US 2005/0250440 A1, published Nov. 10, 2005 (Ex. 2209).

baseline level of information.” *Id.* at 11 (alterations in original) (quoting Ex. 1002, 163).

We agree with Qualcomm’s interpretation of the prosecution history. Although Zhou teaches collecting only a subset of sensor data that it *could* have collected, it reports all data it collects. Thus, the evidence does not suggest that Zhou discloses or teaches “reporting the received sensor information to the party at a level of specificity that is less than the level of specificity of sensor information collected by a sensor.” Ex. 1001, 25:13–16. Thus, the applicant’s amendment distinguished Zhou for reasons other than what FedEx suggests, and the prosecution history does not suggest that a person of ordinary skill in the art would have understood the phrase “reporting . . . at a level of specificity” to exclude reporting a specific subset of the collected information.

In its Sur-reply, FedEx argues that in one of its operating modes, Zhou excludes a particular type of data while reporting a baseline level of data, thus “Zhou reports a subset.” PO Sur-reply 11 (citing Ex. 1002, 150–164; Ex. 2201 ¶¶ 35–44, 54). We disagree that this supports FedEx’s proposed construction. While Zhou technically reports a “subset” of possible data that *could be collected* by the sensors, Zhou does not report a subset of data *collected* by the sensors.

Qualcomm also argues that reporting data with a delay, or with less frequency, would be examples of reporting with a lower “level of specificity.” *See* Pet. Reply 10 (citing Ex. 1001, 12:23–26; Ex. 1024, 69:1–22). According to Qualcomm, “‘reporting the received sensor information . . . at a level of specificity that is less than . . . [that] of sensor information collected’ simply means reporting less data—*e.g.*, at a lower frequency—

than is collected.” *Id.* at 11 (alterations in original) (quoting Ex. 1001, 25:13–16) (citing Ex. 1001, 11:58–62). Similarly, Qualcomm contends that “if GPS coordinates are collected, but a street address is reported, that street address is necessarily less specific.” *Id.* (citing Ex. 1001, 19:1–40, 11:55–62; Ex. 1003 ¶¶ 104–105). According to Qualcomm, the level of specificity is lower if there is either lower frequency or less precision. *See id.* at 11–12 (citing Ex. 1024, 42:12–44:14 (Dr. Mahon stating that more frequent sampling of a time-variant system would allow one to “know specific characteristics about the system at more—and at higher—a greater detail”)).

In its Sur-reply, FedEx responds that “[c]ity-level reporting does not report ‘less data’ [than street-level reporting]—it reports the same volume and lowers precision.” PO Sur-reply 11 (citing Ex. 1001, 12:12–26, Ex. 2201 ¶¶ 52–53). FedEx also characterizes Dr. Mahon’s deposition testimony as distinguishing between “accuracy” (which may improve with more frequent sampling), and “precision” (which does not). *Id.* at 12 (citing Ex. 1001, 12:23–26; Ex. 1024, 69:1–22). And a delay, according to FedEx, merely “postpones reporting. The same information is reported with or without delay, and it leaves frequency unchanged—only timing shifts.” *Id.*

As Qualcomm correctly points out, the ’797 patent does not include the exact phrase “level of specificity” outside the claims. Pet. Reply 10. But it does indicate that one *may* “limit the specificity of data provided *and* the frequency of data reporting by specifying a delay before another party may view or interact with data from [a] sensor device.” Ex. 1001, 12:23–26 (emphasis added). Qualcomm contends, and we agree, that a person of ordinary skill in the art would have interpreted this statement as indicating that a reporting delay is capable of limiting *both* the specificity and the

frequency of data reporting. *See* Pet. Reply 10. Thus, the '797 patent suggests that introducing a delay can affect the level of specificity of the sensor information.

We also note that, in addition to the example of providing address-level vs. city-level reporting, the '797 patent also provides examples of rules that “restrict the receiver from viewing data regarding the shipment to certain locations,” or that “permit the receiver to view all data of the shipment once it has entered within a certain radius of the delivery location.” Ex. 1001, 11:64–12:2. The '797 patent also indicates that such rules may take the form of “events and thresholds.” *See* Ex. 1001, 11:53–55.

Thus, we agree with Qualcomm that FedEx’s proposed construction of “level of specificity” as merely “degree of precision” is too narrow, at least to the extent that it rules out timing as a factor that can influence the level of specificity. For example, if a system provides location information only when the shipment is within a particular threshold distance or time from the delivery location, this can restrict the level of specificity of the reported information compared to what information the sensor collects. *See* Ex. 1001, 11:67–12:2, 25:45–67.

We need not otherwise construe the term to resolve the issues raised in the Petition. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e 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))).

2. *“Prevent[ing] the Party from Accessing the Received Sensor Information”*

FedEx argues that we should construe “prevent[ing] the party from accessing the received sensor information” as “block[ing] the party from receiving or retrieving the received sensor information.” PO Resp. 31 (alterations in original). FedEx relies on dictionary definitions for “prevent” and “access,” and points to examples of network access control in the ’797 patent. *Id.* at 31–33 (citing Ex. 1001, 4:33–42, 5:4–18, 5:42–53, 6:38–47, 8:12–33, 8:50–9:14, 10:11–21, 10:60–63, 11:38–48, 15:17–24, 17:31–40, 18:46–67, 20:45–65; Ex. 2203, 3; Ex. 2204, 3, 5; Ex. 2205, 4 (defining “block” as “prevent”); Ex. 2206, 6; Ex. 2201 ¶¶ 59–62).

Qualcomm argues that there is no support in the ’797 patent for requiring an affirmative action to block a party from receiving the information, and the network access control examples are simply one way to limit access to sensor information. *See* Pet. Reply 12–13 (citing Ex. 1001, 8:25–30). Qualcomm also argues that Dr. Mahon “conceded that providing access to data for which a user is authorized necessarily involves preventing that user from accessing other data.” *Id.* at 12–13 (citing Ex. 1024, 47:23–50:1).

FedEx acknowledges that “the intrinsic record offers no explicit definition” of the term, that the recited phrase is not a term of art, and “that authorization prevents access . . . because it blocks parties.” PO Sur-reply 13 (citing Ex. 2201 ¶¶ 60–61). However, FedEx argues that “the claims require blocking at specific times and places” rather than “merely happening to provide less data.” *Id.* at 13–14 (citing Ex. 2201 ¶ 64).

We disagree with FedEx’s proposed construction. Although we need not construe the term explicitly, we agree with Qualcomm that the step of “restricting the party from accessing the received sensor information” need not necessarily take the form of network access control and may, for example, take the form of making *only* certain information available to a specific party, which necessarily involves restricting the party’s access to any other information, whether by network access controls or by simply omitting the information from notifications the party receives. *See* Ex. 1001, 8:25–30; Ex. 1024, 47:23–50:1.

C. GROUNDS BASED ON LAU AND LAU IN VIEW OF BUFORD (CLAIMS 1–10, 12–21, AND 23–32)

Turning to the grounds of the Petition, we begin with the ground challenging claims 1–10, 12–21, and 23–32 as obvious over Lau or Lau in combination with Buford. Because these grounds are closely related and challenge the same claims, we address these grounds together. Also, as discussed below, we need not, and do not, separately consider the ground based on Lau alone with respect to claims 4–10, 15–21, 26–32. *See supra* Sections III.C.7–9.

A claim is unpatentable under § 103 for obviousness “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103; *see also KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

We base our obviousness inquiry on factual considerations 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) any objective indicia of obviousness or non-obviousness that may be in evidence. *See Graham*, 383 U.S. at 17–18.

Considering these factors,⁸ we determine that Qualcomm has shown, by a preponderance of the evidence, that claims 1–10, 12–21, and 23–32 are unpatentable under § 103 as obvious over Lau or Lau in combination with Buford.

1. Overview of *Lau*

Lau describes “approaches for monitoring status of articles being shipped” which “can produce notifications to interested parties.” Ex. 1005, code (57), 2:40–43. Figure 1, reproduced below, shows an example:

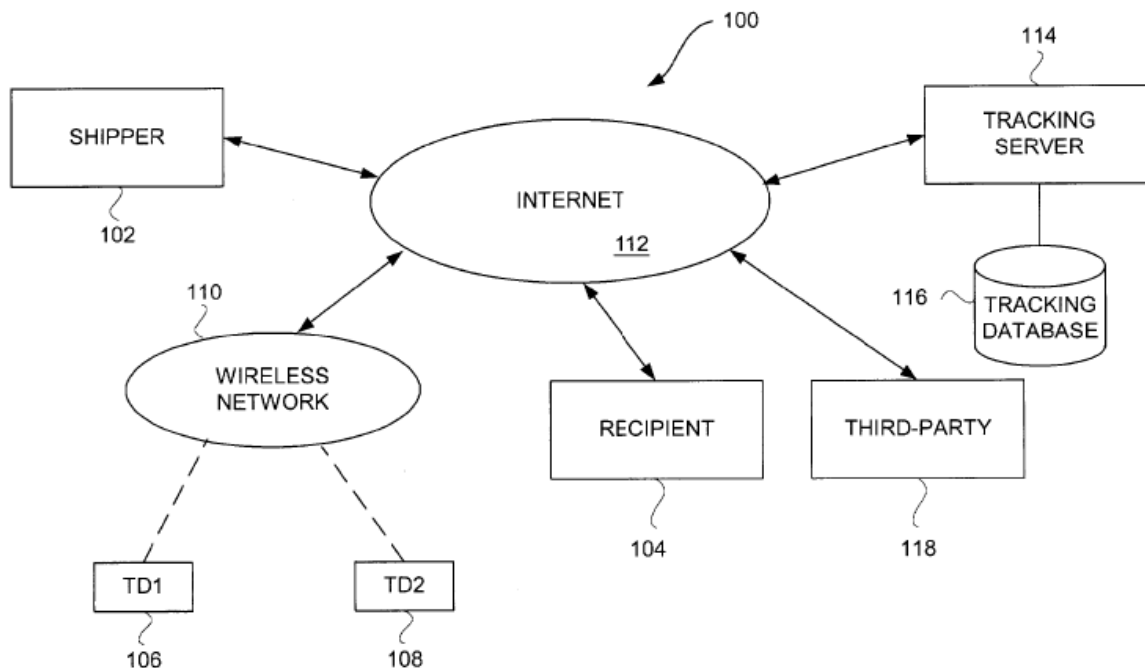


FIG. 1

⁸ Neither party presents evidence of objective indicia of obvious or non-obviousness, so no such evidence factors into our decision.

As shown above, Figure 1 is a block diagram of article shipping system 100 which includes shipper 102 (“a person, entity or associated computing device that is responsible or associated with shipping an article”) and recipient 104 (“a person, entity, or associated computing device to which the article is being shipped”). Ex. 1005, 4:21–37. Tracking devices 106 and 108 are “provided within or attached to” articles being shipped, and are “coupled to a wireless network 110” which is, in turn, coupled to the internet 112. *Id.* at 4:38–50. Also connected to the internet 112 is tracking server 114, which connects to tracking database 115. *Id.* at 4:51–53.

During transport of an article from shipper 102 to recipient 104, tracking device 106 obtains “position (location) information and/or shipping conditions information” such as “vibration, acceleration, speed, or direction of travel of, or force or pressure on, the article,” or environmental conditions as temperature, humidity, and pressure, or wind speed. Ex. 1005, 4:56–5:9. Tracking device 106 sends this status information to tracking server 114 via wireless network 110 and internet 112. *Id.* at 5:10–13. Tracking server 114 then stores the information in tracking database 116 “such that it is associated with the particular article being shipped.” *Id.* at 5:13–16. Tracking server 114 likewise monitors the status information associated with other tracking devices such as 108. *See id.* at 5:20–23.

Shipper 102 or recipient 104 can provide notification criteria to tracking server 114, which “can specify the channel, timing and nature of the notifications to be received.” Ex. 1005, 5:31–38. “[T]he notifications can have different levels” that “depend on security clearance, authorization, ranks within companies, or the recipient.” *Id.* at 6:23–26. A web interface for setting notifications is depicted in Figure 6, reproduced below:

600

NOTIFICATION SETUP

NOTIFICATION CHANNEL:

☐ EMAIL☐ PAGE☐ FAX

602

DESTINATION(S):
604

NOTIFICATION CRITERIA:606

☐ POSITION

☐ PERIODIC, EVERY DAY ▼

☐ DISTANCE, EVERY 100 Mi ▼

☐ ON-DELIVERY

☐ DELIVERED ☐ IMPENDING DELIVERY

☐ CONDITIONS

☐ PERIODIC, EVERY DAY ▼

☐ EXTREME CONDITIONS

☐ TEMPERATURE > °F

☐ FORCE > LBS

FIG. 6

Figure 6, above, depicts notification setup screen 600, which allows a user to set various notification criteria 606 including notifications about a package's position, delivery status, and conditions. Ex. 1005, 10:3–47. For condition notifications, a user may specify periodic notifications (e.g., daily) or notifications that only occur when an extreme condition has been met, such as when temperature or force measurements exceed a particular threshold. *Id.* at 10:41–47.

Lau's Figure 4, represented below, is a flow diagram of how notifications are processed:

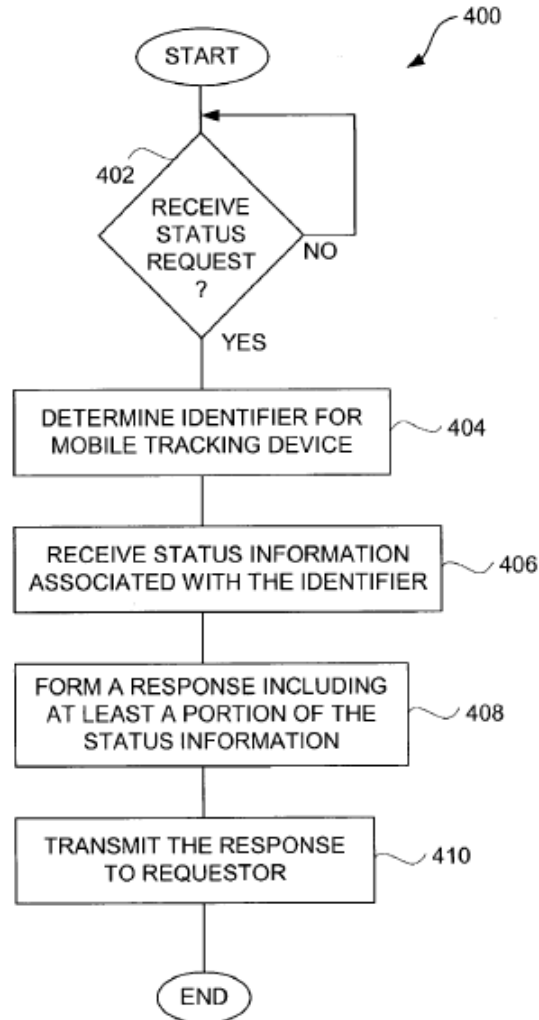


FIG. 4

Figure 4, above, depicts notification processing procedure 400. Ex. 1005, 8:31–32. If a status request has been received (step 402), the system determines the identifier for a mobile tracking device (step 404) and then retrieves the status information associated with that identifier (step 406). *Id.* at 8:36–52. Step 406 may also include “determin[ing] whether the requestor for the status information is authorized to receive the status information or

the level of status information the requester is authorized to receive.” *Id.* at 8:52–56. Then the system forms and transmits to the requester a response that includes “at least a portion” of the requested status information (steps 408 and 410). *Id.* at 8:57–9:6.

2. Overview of Buford

Buford describes “[a] method for determining the privacy settings for location-based services.” Ex. 1007, code (57). Buford’s Figure 4 is reproduced below:

Figure 4

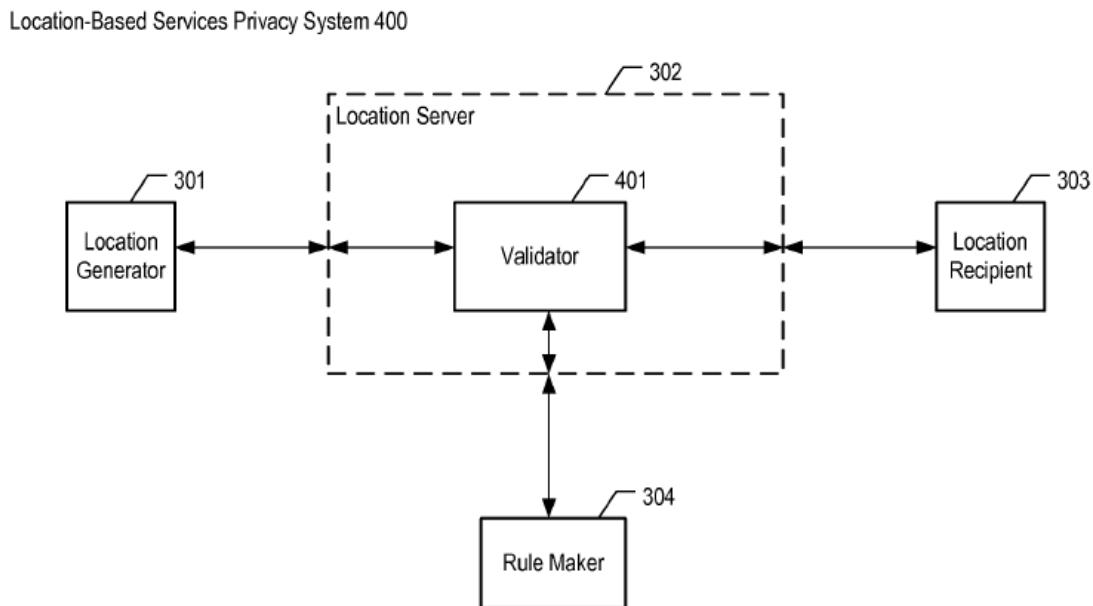


Figure 4, above, is a schematic diagram of location-based services privacy system 400. Ex. 1007 ¶ 38. System 400 includes a number of components including location generator 301 (which generates location information) and location recipient 303 (which receives the generated location information). *Id.* ¶¶ 38–41. Standing between generator 301 and recipient 303 is location server 302, which includes validator 401. *Id.* ¶ 38. Validator 401 accesses a

set of rules, provided by rule maker 304, to determine whether to grant a request by location recipient 303 to access information provided by location generator 301. *See id.* ¶¶ 13, 59–68, Fig. 6.

3. *Motivation to Combine Lau and Buford*

Qualcomm’s first two grounds rely primarily on the teachings of Lau, and in the second ground, Qualcomm provides alternative arguments based on additional teachings in Buford. *See* Pet. 55–71. The modification of Lau based on Buford involves incorporating Buford’s validator 401 and rule maker 304 as part of Lau’s tracking server 114 and tracking database 116. *See* Pet. 59; Ex. 1007, Fig. 4. This combination relies on Buford’s teachings about analyzing rules to determine whether location recipient 303 is authorized to access information provided by location generator 301. *See* Pet. 60 (citing Ex. 1007, code (57), ¶¶ 13, 61–67; Ex. 1010, 9–13; Ex. 1003 ¶¶ 156–157).

Qualcomm contends that a person of ordinary skill in the art “would have been motivated to extend the rules for accessing location information, as disclosed in Buford, to Lau’s shipment tracking system to accomplish Lau’s goals of providing status information on shipments at various levels based on the requesting party’s authorization.” Pet. 57 (citing Ex. 1003 ¶¶ 147–148).

FedEx responds that “Lau and Buford[] disclose markedly different systems.” PO Resp. 55. According to FedEx, “Lau addresses the problem of providing ‘precise and robust knowledge of the position and condition of the package throughout the shipping process’” by using servers to push notifications to authorized users based on location. *Id.* (citing Ex. 1005, 8:30–11:30, 13:10–45, 14:44–56, Figs. 4–6; Ex. 2201 ¶ 150). On the other

hand, according to FedEx, Buford “protects user privacy for location-based services and includes methods to limit shared information.” *Id.* at 56 (citing Ex. 1007 ¶¶ 8, 73–77, 87; Ex. 2201 ¶ 150). Thus, FedEx contends that the combination with Buford would alter Lau’s inventive concept.

FedEx also contends that Qualcomm has failed to show that there would have been a reasonable expectation of success in combining Lau with Buford because Lau discloses a push architecture, while Buford discloses a pull architecture, and Qualcomm has not explained how to successfully modify Lau’s push-architecture-based access controls by incorporating concepts from Buford’s pull architecture in a predictable way. PO Resp. 57–59 (citing Ex. 1007 code (57), ¶¶ 12–13, 53–58, 61–67, 69–77, 82–89, 88–89, claims 1, 10, Figs. 5–8; Ex. 2211, 1, 2, 8; Ex. 2201 ¶¶ 155–161); PO Sur-reply 25–27 (reiterating its arguments and contending that the modification of Lau would require extensive modifications).

Qualcomm responds that a person of ordinary skill in the art would have understood that “authorization is a separate step from . . . the process of fulfilling the user’s request.” Pet. Reply 22 (quoting Ex. 1024, 53:17–54) (citing Ex. 1024, 52:8–53:16, 54:9–20, 67:1–23 (testimony by Dr. Mahon)). Thus, Qualcomm contends that no architecture change would have been required to incorporate Buford’s validator and rules engine into Lau’s system. *Id.*; *see also* Pet. 59 (“Modification of Lau with Buford’s validator and rules engine would leave Lau’s system essentially unchanged, except for the addition of the [yellow] validator and [green] rules engine in Lau’s tracking server” (brackets in original))).

Having considered the arguments and evidence of record, we find more persuasive Qualcomm’s argument that its proposed, relatively minor

modification of Lau—which simply involves incorporating Buford’s validator 401 and rule maker 304 as part of Lau’s tracking server 114 and tracking database 116—would not fundamentally change Lau’s system. We agree that the access-control concepts on which Qualcomm relies from Buford would be generally applicable in both push and pull architectures. And such a modification would have been within the ordinary skill in the art at the time of the claimed invention.

FedEx also argues that Qualcomm has failed to assert a sufficient obviousness rationale because it “does not articulate what Lau lacks that Buford adds.” PO Resp. 56 (citing Ex. 2201 ¶¶ 151–154; *Nokia of Am. Corp. v. Oyster Optics, LLC*, IPR2017-02146, Paper 40 at 46–47, 49 (PTAB Feb. 13, 2019); *Cisco Sys., Inc. v K.Mizra LLC*, IPR2021-00593, Paper 41 at 34 (PTAB Sept. 19, 2022); *Apple Inc. v. Masimo Corp.*, IPR2020-01524, Paper 29 at 47 (PTAB Apr. 29, 2022).

We disagree that Qualcomm is required to make such a showing. A patent challenger “does not need to show that there was a known problem with the prior art system in order to articulate the required rational underpinning for the proposed combination.” *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002–03 (Fed. Cir. 2016).

For the above reasons, we find persuasive Qualcomm’s argument that a person of ordinary skill in the art would have had reason to modify Lau’s system based on the teachings of Buford, as we discuss in more specific detail in the sections below.

Independent Claim 1

(a) Preamble

The preamble of claim 1 recites “[a] computer-implemented method for accessing information regarding one or more shipments.” Ex. 1001, 25:2–4. Qualcomm contends that Lau discloses a computer-implemented method as recited. *See* Pet. 18 (citing Ex. 1005, 3:50–51, 5:10–19, 6:38–40, 8:33–35, 9:8–11, Fig. 1; Ex. 1003 ¶¶ 79–80).

FedEx does not dispute that Lau discloses the preamble of claim 1. *See* PO Resp. 40–41. Without deciding whether the preamble is limiting, we find Qualcomm’s arguments persuasive.

(b) Limitation 1[a]

Limitation 1[a] recites a step of “receiving, at a tracking center, sensor information associated with the one or more shipments.” Ex. 1001, 25:5–6. Qualcomm identifies the recited “tracking center” with Lau’s tracking server 114. *See* Pet. 19. According to Qualcomm, Lau discloses that tracking server 114 receives sensor information associated with shipments from the tracking devices associated with each article being shipped. Pet. 19–20 (citing Ex. 1001, 4:17–20, Ex. 1005, 4:38–41, 4:56–5:16, 8:50–52, Fig. 2, claims 17, 28; Ex. 1003 ¶¶ 81–85).

FedEx does not contest Qualcomm’s contentions regarding limitation 1[a] (*see* PO Resp. 40–41), and we find the arguments persuasive. *See, e.g.*, Ex. 1005, Figs. 1, 2.

(c) Limitation 1[b]

Limitation 1[b] recites a step of “analyzing rules associated with a party to determine whether the party is authorized to access the received

sensor information.” Ex. 1001, 25:7–9. Qualcomm argues that Lau teaches that “[s]tatus information is only presented to authorized requesters.” Pet. 20–22 (citing Ex. 1005, 3:4–14, 8:42–56, 9:23–30, Figs. 2, 4, claim 17; Ex. 1003 ¶¶ 86–87). Also, according to Qualcomm, “Lau teaches that different users can receive different notifications related to a package based on authorization levels of respective users.” Pet. 22–23 (citing Ex. 1005, 6:23–32; Ex. 1003 ¶ 88).

Based on the above disclosures, Qualcomm argues that the “determination by [Lau’s] tracking server necessarily analyzes rules associated with the requester.” Pet. 23 (citing Ex. 1003 ¶ 89). According to Qualcomm, a person of ordinary skill in the art would have understood that Lau’s system “makes a determination—via pre-programmed processes, which are logical rules,” and “this is necessarily so because a server is merely a computer that is incapable of making such a determination without such rules.” *Id.* (citing Ex. 1003 ¶ 89); *see also* Pet. 23–24 (citing Ex. 1005, 5:63–6:11; Ex. 1003 ¶¶ 89–90).

Alternatively, Qualcomm argues that a person of ordinary skill in the art would have found it obvious to carry out the disclosed determination using logical rules “because Lau’s tracking server would have been unable to do so without such logical rules being preprogrammed into the server.” Pet. 24–25 (citing Ex. 1003 ¶ 89).

As another alternative argument, Qualcomm relies on modifying Lau in view of Buford. Pet. 60–61. This modification involves incorporating Buford’s validator 401 and rule maker 304 as part of Lau’s tracking server 114 and tracking database 116. *See* Pet. 59; Ex. 1007, Fig. 4. Qualcomm argues that Buford teaches analyzing rules to determine whether location

recipient 303 is authorized to access information provided by location generator 301. *See* Pet. 60 (citing Ex. 1007, code (57), ¶¶ 13, 61–67; Ex. 1010, 9–13; Ex. 1003 ¶¶ 156–157).

For this and other limitations for which Qualcomm relies on Buford, Qualcomm contends that a person of ordinary skill in the art “would have been motivated to extend the rules for accessing location information, as disclosed in Buford, to Lau’s shipment tracking system to accomplish Lau’s goals of providing status information on shipments at various levels based on the requesting party’s authorization.” Pet. 57 (citing Ex. 1003 ¶¶ 147–148).

FedEx does not contest Qualcomm’s contentions regarding limitation 1[b] (*see* PO Resp. 40–41), and we find the arguments persuasive.

(d) Limitations 1[c1] and 1[c2]

Limitation 1[c1] recites a step of “restricting the party from accessing the received sensor information based on the analyzed rules.” Ex. 1001, 25:10–11. According to Qualcomm, “Lau teaches that the tracking server does not provide the information or it provides only ‘the level of status information the requester is authorized to receive.’” Pet. 25 (citing Ex. 1005, 8:52–56, claims 23, 29; Ex. 1003 ¶ 91). Qualcomm also argues that Lau teaches providing “at least a portion” of the requested status information, and that the notice can depend on security clearance or authorization, and that any such limitations constitute “restricting the party from accessing the received sensor information.” Pet. 25–27 (citing Ex. 1001, 16:17–35; Ex. 1005, 5:38–41, 6:24–31, 6:33–35, 8:57–59, 8:66–67, Fig. 4; Ex. 1008 ¶¶ 92–93).

Qualcomm also argues that a person of ordinary skill in the art “would have been motivated to limit the information provided in a notification for security or privacy reasons,” such as to prevent one customer from seeing another customer’s status information, or to protect drivers by limiting information about their precise location at any given time. Pet. 27 (citing Ex. 1003 ¶ 94).

Alternatively, Qualcomm argues that according to Buford’s teachings, “[a]fter determining the level of authorization of the requester, the tracking server provides sensor information to the requester at the appropriate access level.” Pet. 61 (citing Ex. 1005, 6:23–31; Ex. 1007, code (57), ¶¶ 13, 73–77; Ex. 1010, 10–13; Ex. 1003 ¶¶ 158–159).

Limitation 1[c2] recites “wherein the restricting comprises the step of reporting the received sensor information to the party at a level of specificity that is less than a level of specificity of sensor information collected by a sensor associated with the one or more shipments.” Ex. 1001, 25:11–17. Similarly to its arguments for limitation 1[c1], Qualcomm argues that Lau teaches providing “a portion” of the collected sensor information, and providing a notification that depends on the requester’s authorization level. Pet. 28 (citing Ex. 1005, 6:26–31, 8:52–56). This means, according to Qualcomm, that “specific reported sensor information has been removed in the response to the requesting party.” Pet. 29 (citing Ex. 1003 ¶¶ 95–96).

Qualcomm also argues that in one Lau embodiment, “a shipment’s location is tracked throughout the shipping process, but . . . a user only receives status information when the shipment is at a specific location” such as “when delivery is impending.” Pet. 29 (citing Ex. 1005, 10:34–41, 10:41–48; Ex. 1003 ¶ 97).

In response, FedEx relies on its proposed construction for “level of specificity” as being limited to “degree of precision,” and argues that Lau does not teach disclosing sensor data at a lower degree of precision than the collected sensor data (e.g., by reporting street-level data rather than city-level data). PO Resp. 40–41 (citing Ex. 1001, 11:49–62, 12:12–26, claims 3, 14, 25; Ex. 2201 ¶¶ 85–99). FedEx also argues that Qualcomm’s argument collapses distinctions between “restricting” (1[c1]) and “reporting” (1[c2]) limitations because Qualcomm relies on the same notifications for each limitation. *Id.* at 41 (citing Ex. 2201 ¶¶ 91–99); PO Sur-reply 18 (citing Ex. 2201 ¶¶ 35–44, 54, 73, 94).

In the Reply, Qualcomm disagrees that its arguments collapse limitations 1[c1] and 1[c2], because the latter is part of the former. Pet. Reply 13. And Qualcomm alleges that FedEx’s argument is invalid because it relies on its improper claim construction. *Id.* According to Qualcomm, “when the Petition addresses Limitation 1[c2], it necessarily does so in the context of portions of collected information to which access is restricted in Limitation 1[c1].” Pet. Reply 14 (brackets in original). Thus, the “reporting” step takes place depending on the requester’s access level which restricts the user’s access to the full sensor data. *See id.* (citing Ex. 1005, 6:26–31, 8:52–56, 10:41–48; Ex. 1003 ¶¶ 95–96).

Qualcomm also contends that Lau discloses limitation 1[c2] even under FedEx’s proposed construction of “level of specificity” as “degree of precision.” Pet. Reply 14. Qualcomm points to its arguments for dependent claim 3, which recites reporting location information at city level when the sensor data is collected at a street-address level. *Id.* at 13 (citing Pet. 31–32); Ex. 1001, 25:24–27. *See infra* Section III.C.6.

Similarly, Qualcomm also argues that Lau’s system reports location data at a lower degree of precision when a user is prevented from seeing the exact location (e.g., GPS coordinates or street address) except when a delivery is impending. *Id.* at 14–15 (citing Ex. 1005, 10:34–41). And according to Qualcomm, “with precise location known [as part of the received sensor information], a notification that a shipment is near necessarily reports that shipment’s location less precisely than collected.” *Id.* at 15 (citing Ex. 1005, 12:66–13:16).

In the Sur-reply, FedEx contends that a notification a shipment is near “only indicates *when* the notification is sent, not *what* it includes.” PO Sur-reply 17 (citing Ex. 1003, 10:34–41). Thus, according to FedEx, such a proximity report does not report “sensor information.” *Id.* at 17 (emphasis omitted). And in any event, FedEx argues, “reporting a ‘street address’ is not reporting ‘*received sensor information*’ (e.g., GPS)” as recited in the claims. *Id.* at 18.

FedEx’s argument that a proximity report is not a report of “sensor information” elevates form over substance. In limitation 1[c2], the “sensor information” is reported at a different level of specificity from what the sensors collect, so “sensor information” cannot always mean the raw sensor data, and can include information that has been transformed in some way, such as by converting a street-level location to a city-level location. *See, e.g.*, Ex. 1001, 25:24–26. Like a city-level location, a proximity indication is still information indicating an approximate location, although that location information is less specific (and, in this case, less precise) than the raw GPS sensor data.

Thus, we agree with Qualcomm that Lau discloses reporting the received sensor information at a lower level of specificity (e.g., as a proximity notification or other threshold event) than was collected by a sensor (e.g., as GPS coordinates or sensor data monitoring package conditions). *Compare* Ex. 1005, 10:40–42, 10:45–47, 11:6–10, *with* Ex. 1001, 11:51–12:2.

We also agree with Qualcomm that its argument does not improperly collapse limitations 1[c1] with 1[c2], which are part of the same limitation. *See* Ex. 1001, 25:10–16 (the “restricting” step 1[c1] “comprises the step of reporting . . .” 1[c2]). Lau discloses both parts of the limitation. *See, e.g.,* Ex. 1005, 14:44–56 (describing an embodiment in which a sensor collects GPS location data and reports either floor-level information (less specific) or the location of a particular office on that floor (more specific) to a user who has logged onto a website with a password).

Finally, FedEx does not contest Qualcomm’s alternative arguments for limitation 1[c1] relying on the combination of Lau and Buford. *See* PO Resp. 22–23. Rather, FedEx’s arguments as to the Lau–Buford ground are directed to whether there would have been a motivation to combine, which we address above. *See supra* Section III.C.3. We find Qualcomm’s alternative arguments relying on Buford persuasive for the reasons provided in the Petition. Pet. 60–61; Ex. 1003 ¶¶ 158–159.

For all the above reasons, Qualcomm has shown that Lau teaches limitations 1[c1] and 1[c2].

(e) Conclusion as to Claim 1

For all reasons discussed in the sections above, we determine that Qualcomm has shown by a preponderance of the evidence that claim 1 is

unpatentable as obvious over Lau, with or without combination with the teachings of Buford.

4. *Independent Claims 12 and 23*

Claims 12 and 23 are also independent and include essentially the same limitations as claim 1 except that claim 12 recites a “non-transitory computer-readable medium” and claim 23 recites a “tracking center.” Ex. 1001, 26:7–24, 27:16–29. Qualcomm’s arguments rely essentially on the same arguments it makes for claim 1. *See* Pet. 42–43, 48–50.

Likewise, FedEx relies on its arguments for claim 1 and makes no additional arguments. *See* PO Resp. 42. For the reasons given above for claim 1, we determine that Qualcomm has shown by a preponderance of the evidence that claims 12 and 23 are unpatentable as obvious over Lau, with or without the additional teachings of Buford.

5. *Claims 2, 13, and 24*

Claim 2 depends from claim 1 and further recites “wherein restricting the party from accessing the received sensor information further comprises the step of: reporting the received sensor information to the party at a frequency lower than collected by a sensor associated with the one or more shipments.” Ex. 1001, 25:19–23. Dependent claims 13 and 24 include similar limitations but depend from claims 12 and 23, respectively. *See id.* at 26:25–30, 27:30–35.

According to Qualcomm, Lau discloses “report[ing] status information if an extreme condition occurs, such as the temperature or force exceeding a threshold.” Pet. 29–30 (citing Ex. 1005, 10:33–35, 10:41–47, Fig. 6). Qualcomm argues that a person of ordinary skill in the art would

have known that information reported based on a threshold “is necessarily reported less frequently than the information is collected by the sensors” because, otherwise, the threshold would always be triggered and have no value. Pet. 30–31 (citing Ex. 1003 ¶¶ 98–99).

FedEx argues that Qualcomm does not rely on Lau’s periodic notifications, but exclusively on Lau’s extreme-condition-based reporting, which according to FedEx does not report at regular intervals and is thus not reporting at a lower “frequency.” PO Resp. 42 (citing Ex. 1001, 2:35–37, 2:41–48, 4:15–17, 5:65–67, 13:52–56, 14:66–15:1, Fig. 4; Ex. 1005, 10:16–48, Fig. 6; Ex. 2201 ¶¶ 97–100; *Henny Penny Corp., v. Frymaster, LLC*, 938 F.3d 1324, 1330–31 (Fed. Cir. 2019); *Colas Sols. Inc. v. Blacklidge Emulsions, Inc.*, 759 F. App’x 986, 990 (Fed. Cir. 2019); 37 C.F.R. § 42.23(b)).

Qualcomm responds that “the claims don’t require ‘regular intervals,’” and in any event, Lau also separately discloses reporting at periodic intervals (e.g., daily). Pet. Reply 15–17 (citing Ex. 1001, 9:22–29; Ex. 1005, 5:41–42, 10:34–37, Fig. 6).

In the Sur-reply, FedEx argues that Qualcomm’s reliance on periodic reporting is untimely because it was not made in the Petition. PO Sur-reply 19 (citing Ex. 2201 ¶¶ 98–99; 37 C.F.R. § 42.23(b)). FedEx also contends that a person of ordinary skill in the art “would have understood, and would even expect, that Lau’s data collection may occur *at the same rate* as its periodic reports.” *Id.* (quoting Ex. 2201 ¶ 100).

We disagree with FedEx that Qualcomm’s argument relying on Lau’s periodic reporting is untimely, because the Petition discusses the periodic reporting of shipment conditions in the context of claim 1. *See* Pet. 29

(noting that selective reporting of shipment conditions “can be initiated periodically or on-event,” and noting that Lau’s Figure 6 includes both embodiments).

We also agree with Qualcomm that claim 2 does not require reporting at regular intervals. To say that an event occurs at a “frequency lower than” some other event does not necessarily mean that the events occur at regular intervals. In other words, an event could be both frequent and unpredictable. We also find persuasive Qualcomm’s argument that, in either the periodic or on-event embodiments in Figure 6, a person of ordinary skill in the art would have understood that the shipment condition information is reported less frequently than the sensor information is collected. Pet. Reply 15–17. Regardless of how condition information is ultimately reported, Lau’s system would have to be sensing shipment conditions continually so that the system knows when a threshold is reached. *Id.* at 15; *see also* Ex. 1005, 7:44–54 (a condition-related notification does not occur unless the system determines that sensor data has exceeded a threshold); 11:10–13 (the system stores a “status information history” of sensor information over time that can be made available as part of a notification).

As an alternative to its arguments based on Lau alone, Qualcomm argues that “Buford discloses rules that allow a location generator to limit the level of access to the generator’s location information only during certain time periods” such as during the night between 9pm and 8am. Pet. 61 (citing Ex. 1007 ¶¶ 75, 77; Ex. 1010, 10). According to Qualcomm, a person of ordinary skill in the art “would have understood that the combined Lau–Buford system receives sensor information at all hours of the day, but only provides notifications during the designated time periods,” so “the sensor

information is reported at a lower frequency than the frequency at which it is collected.” *Id.* (citing Ex. 1003 ¶ 161).

In response, FedEx argues that “Buford’s system never reports location information collected outside the [designated] window” (e.g., 9pm to 8am), and “discloses nothing about the rate of reporting information collected during the window, much less that the reporting rate is less than the data collection rate.” PO Resp. 60 (citing Ex. 1007 ¶¶ 75, 77; Ex. 2201 ¶ 167); PO Sur-reply 29.

To this, Qualcomm replies that “Buford’s queries report received sensor information less frequently (e.g., 9 pm–8 am) than collected (all hours).” Pet. Reply 23 (citing Ex. 1007 ¶ 75; Ex. 1010, 10).

We find Qualcomm’s arguments persuasive because, as we discuss above, “frequency” does not necessarily denote regular intervals. Qualcomm has shown that collecting sensor information during all hours, but only reporting the information during some hours, is reporting the information at a lower frequency than collected.

For the above reasons, we determine that Qualcomm has shown by a preponderance of the evidence that claims 2, 13, and 24 are unpatentable as obvious over Lau, with or without the additional teachings of Buford.

6. *Claims 3, 14, and 25*

Claim 3 depends from claim 1 and further recites “wherein the sensor information is collected at a street address-level and the received sensor information is reported to the party at a city-level.” Ex. 1001, 25:24–27. Dependent claims 14 and 25 include similar limitations but depend from claims 12 and 23, respectively. *See id.* at 26:31–34, 27:36–40.

Qualcomm argues that Lau’s system collects location information with “a GPS-enabled tracking device attached to a shipment” but can convey the GPS coordinates in the form of a street address or at a more granular level such as by identifying a particular floor or office within a building. Pet. 31 (citing Ex. 1005, 4:60–62, 12:64–13:1, 13:22–25, 14:44–45, 14:50–56). According to Qualcomm, it would have been obvious to use Lau’s “logic for controlling the level of granularity of location information . . . such that the requester receives status information at a city-level despite the location information being collected at the street address-level.” *Id.* (citing Ex. 1003 ¶¶ 100–101). The motivation to do so would have been “for privacy and security reasons,” such as “to prevent drivers from being targeted for theft, and to prevent customers from intercepting the delivery driver to collect packages prior to scheduled delivery.” Pet. 31–32 (citing Ex. 1005, 6:24–26, 10:38–41; Ex. 1003 ¶¶ 100–101).

First, FedEx argues that “a street-address is not a GPS coordinate,” and that Lau does not disclose that its sensors collect location information as street addresses. PO Reply 43–44 (citing Ex. 1003 ¶ 100; Ex. 1005, 4:60–62, 12:64–13:1, 13:22–25, 14:44–45; Ex. 2201 ¶¶ 103–105).

Qualcomm responds that “the ’797 Patent itself relies on GPS to obtain location data, including street address” and “disclose[s] no other way of collecting information at a street address-level,” but in any event, “converting GPS data to a street address was within a [person of ordinary skill in the art]’s skill.” Pet. Reply 17 (citing Ex. 1001, 10:30–33, 15:61–64, 19:1–40; Ex. 1024, 50:2–52:2, 56:16–24). Qualcomm also points out that Lau discloses a way to convert GPS coordinates to street addresses. *Id.* (citing Ex. 1005, 13:13–16).

In its Sur-reply, FedEx argues that “Lau’s sensor does not generate addresses—it sends GPS data to the server, where it is converted.” PO Sur-reply 20 (citing Ex. 1005, 12:59–13:64).

We agree with Qualcomm that Lau is similar to the ’797 patent in that location information is collected as GPS coordinates. *See* Ex. 1001, 10:30–33, 15:61–64, 19:1–40. Thus, we determine that a person of ordinary skill in the art would not have interpreted claims 3, 14, and 25 to require a sensor that literally detects street addresses (e.g., by using computer vision to read street signs and building numbers), which finds no support in the ’797 patent.

During prosecution, the applicant cited paragraphs 46, 56, 70, and 80 of the original specification as support for the term “street address-level” in what eventually issued as claim 3. *See* Ex. 1002, 122. Paragraph 56 discloses that sensor data “may be correlated with the shipment” based on “business-events provided by third-party systems.” *Id.* at 40. Paragraph 80 discloses that sensor devices may be associated with databases so that the sensor–database combination can provide information about the origin and destination of shipments. *Id.* at 49. Thus, it appears that in the ’797 patent, street-level locations may be the result of communication between GPS sensors and a database, which is essentially what Lau also discloses. *See* Ex. 1005, 13:13–16. To the extent, if any, that claims 3, 14, or 25 require street-address-level information generated by the sensor–database combination to be generated or sent directly from the sensor itself, rather than from a server, this is a trivial difference and we agree with Qualcomm that such details of converting GPS data into street addresses would have

been within the ordinary skill in the art at the time of the claimed invention. *See* Pet. Reply 17; Ex. 1024, 50:2–52:2, 56:16–24.

Second, FedEx argues that Lau does not teach reporting location information at the city level, and arriving at this teaching requires improper hindsight, as Lau focuses not on granularity but on timing and the need for precision. PO Resp. 44–46 (citing Ex. 1005, 4:60–62, 6:23–32, 8:52–56, 12:64–13:1, 10:38–41, 13:22–25, 14:44–56; Ex. 2201 ¶¶ 106–112); PO Sur-reply 20–21 (citing Ex. 1005, 10:34–41; Ex. 2201 ¶¶ 108–111).

Qualcomm responds that Lau expresses a purpose “to provide different levels of information to different users.” Pet. Reply 18 (quoting Ex. 1005, 6:24–32). According to Qualcomm, Lau teaches reporting sensor data at a lower level of granularity, and a person of ordinary skill in the art would have had reason to select any such level of lower granularity, including at the city level. *Id.* (citing Ex. 1005, 10:37–41).

We agree with Qualcomm that Lau teaches providing location information at various levels of granularity. Ex. 1005, 10:37–41 (proximity to a destination), 13:22–40 (street level or floor level); 14:50–56 (floor level or office level). Lau also teaches reasons for providing different levels of information to different users, including the need for improved security. *Id.* at 6:24–32; Ex. 1003 ¶ 101. Based on the evidence of record, we are persuaded that a person of ordinary skill in the art would have had reason to report a location at any known level of granularity that is low enough to protect the security of a delivery, such as at the city level.

For the above reasons, we determine that Qualcomm has shown by a preponderance of the evidence that claims 3, 14, and 25 are unpatentable as obvious over Lau.

In its second ground, Qualcomm presents an alternative argument based on the combination of Lau and Buford, arguing that “Buford teaches rules that allow a location generator to specify that certain recipients can see when the location generator is within five miles of the recipient, but not disclose the generator’s exact location even though the exact location is known and disclosed to other recipients.” Pet. 61 (citing Ex. 1007 ¶ 87). According to Qualcomm, a person of ordinary skill in the art “would have understood that to share the exact location of the location generator, the location is collected on a street-address level,” but reported at a city level. Pet. 62 (citing Ex. 1003 ¶ 162); *see also* Pet. Reply 23–24.

FedEx contends that collecting information about an “exact location” (e.g., GPS coordinates) is not the same as collecting location data at a street-address level, and Qualcomm has not identified teachings in Buford relating to collecting sensor information at a street-address level. PO Resp. 60–61 (citing Ex. 1007 ¶¶ 36, 87; Ex. 2201 ¶¶ 170–174); *see also* PO Sur-reply 28–29.

This is essentially the same issue discussed above with respect to Lau’s teachings alone, and for the same reasons, we determine that a person of ordinary skill in the art would not have interpreted claims 3, 14, and 25 to require a sensor that literally detects a street address, which finds no support in the ’797 patent. FedEx acknowledges that Buford collects location information in the form of GPS coordinates (*see* PO Reply 61 (citing Ex. 1007 ¶ 36)), similarly to the ’797 patent. And likewise, a person of ordinary skill in the art would have had reason and ability to convert the raw GPS coordinate data to street addresses as the ’797 patent discloses.

Thus, we determine that Qualcomm has shown by a preponderance of the evidence that claims 3, 14, and 25 are unpatentable as obvious over either Lau or Lau in view of Buford.

7. *Claims 4, 5, 15, 16, 26, and 27*

Claim 4 depends from claim 1 and further recites “wherein restricting the party from accessing the received sensor information further comprises the step of: preventing the party from accessing the received sensor information when one or more sensors associated with the one or more shipments is at a predetermined location.” Ex. 1001, 25:28–34. Dependent claims 15 and 26 include similar limitations but depend from claims 12 and 23, respectively. *See id.* at 26:35–41, 27:41–28:3.

Claim 5 depends from claim 1 and further recites “wherein restricting the party from accessing the received sensor information further comprises the step of: preventing the party from accessing the received sensor information at a predetermined time.” Ex. 1001, 25:35–39. Dependent claims 16 and 27 include similar limitations but depend from claims 12 and 23, respectively. *See id.* at 26:42–46, 28:4–8.

Qualcomm argues, in its second ground, that “Lau teaches a server that knows the location of a shipment to a high degree of accuracy, even down to the particular office in which the shipment is located,” and that “access to status information can be restricted based on the requester’s authorization.” Pet. 62 (citing Ex. 1005, 9:50–56, 13:33–40) (claim 4); *see also* Pet. 63 (similar argument for claim 5). And “Buford discloses preventing access to location information when the location generator is in a specific location.” Pet. 62 (citing Ex. 1007 ¶ 76; Ex. 1010, 11) (claim 4); *see also* Pet. 63 (similar argument for claim 6). According to Qualcomm, access

can be restricted based on the identity of the requestor, and “rules are implemented to prevent a party from accessing sensor information when the shipment is at a predetermined location.” *Id.* (citing Ex. 1010, 11; Ex. 1003 ¶ 163).

Apart from its general arguments directed to the independent claims, FedEx does not specifically contest Qualcomm’s challenge to claims 4, 5, 15, 16, 26, or 27 based on the combination of Lau and Buford. *See generally* PO Resp.⁹ Having considered the uncontested evidence, we determine that Qualcomm has shown by a preponderance of the evidence that claims 4, 5, 15, 16, 26, and 27 are unpatentable as obvious over Lau in view of Buford.

8. *Claims 6, 17, and 28*

Claim 6 depends from claim 1 and further recites “wherein restricting the party from accessing the received sensor information further comprises the step of: reporting the received sensor information to the party after a predetermined time delay.” Ex. 1001, 25:40–44. Dependent claims 17 and 28 include similar limitations but depend from claims 12 and 23, respectively. *See id.* at 26:47–51, 28:9–13.

Qualcomm argues, in its second ground, that “Lau teaches a server that knows the location of a shipment to a high degree of accuracy, even down to the particular office in which the shipment is located,” and that “access to this information can be restricted based on the requester’s authorization.” Pet. 63 (citing Ex. 1005, 9:50–56, 13:33–40). Qualcomm

⁹ FedEx contests Qualcomm’s arguments based solely on Lau, but because we determine the claims unpatentable on the alternate ground, we need not address the arguments based on Lau alone.

also argues that “Buford discloses reporting location information only during certain time periods,” and that a person of ordinary skill in the art “would have understood that the location information is collected outside of these time periods, but not reported.” Pet. 63–64 (citing Ex. 1007 ¶ 75; Ex. 1003 ¶ 165). Thus, according to Qualcomm, “in the combined Lau–Buford system, this rule is implemented to delay reporting of sensor information until the expiration of a predetermined time delay (e.g., until the designated time).” Pet. 64 (citing Ex. 1010, 11).

Apart from its general arguments directed to the independent claims, FedEx does not specifically contest Qualcomm’s challenge to claims 6, 17, and 28 based on the combination of Lau and Buford. *See generally* PO Resp.¹⁰ Having considered the uncontested evidence, we determine that Qualcomm has shown by a preponderance of the evidence that claims 6, 17, and 28 are unpatentable as obvious over Lau in view of Buford.

9. *Claims 7–10, 18–21, and 29–32*

Claim 7 depends from claim 1 and further recites “wherein restricting the party from accessing the received sensor information further comprises the step of: reporting the received sensor information to the party when a sensor associated with the one or more shipments is within a predetermined boundary relative to the delivery location of the one or more shipments.” Ex. 1001, 25:45–51. Claims 18 and 29 include similar limitations but depend from claims 20 and 31, respectively. *See id.* at 26:52–58, 28:13–19.

¹⁰ FedEx contests Qualcomm’s arguments based solely on Lau, but because we determine the claims unpatentable on the alternate ground, we need not address the arguments based on Lau alone.

Claim 8 depends from claim 7 and further recites “wherein the predetermined boundary is defined as either a predetermined distance relative to the delivery location or as a predetermined time to reach the delivery location.” Ex. 1001, 25:52–55. Claims 19 and 30 include similar limitations but depend from claims 20 and 31, respectively. *See id.* at 26:59–62, 28:20–24.

Claim 9 depends from claim 1 and further recites
wherein restricting the party from accessing the received sensor information further comprises the step of:

preventing the party from accessing the received sensor information when a sensor associated with the one or more shipments is outside of a predetermined boundary relative to the originating location of the one or more shipments.

Ex. 1001, 25:56–63. Dependent claims 20 and 31 include similar limitations but depend from claims 12 and 23, respectively. *See id.* at 26:63–27:3, 28:24–31.

Claim 10 depends from claim 9 and further recites “wherein the predetermined boundary is defined as either a predetermined distance relative to the originating location or as a predetermined time away from the originating location.” Ex. 1001, 25:64–67. Dependent claims 21 and 32 include similar limitations but depend from claims 20 and 31, respectively. *See id.* at 27:4–7, 28:32–35.

For claims 7 and 8, Qualcomm argues, in its second ground, that “Lau teaches a server that knows the location of a shipment to a high degree of accuracy, even down to the particular office in which the shipment is located,” and that “access to this information can be restricted based on the requester’s authorization.” Pet. 64 (citing Ex. 1005, 9:50–56, 13:33–40). Qualcomm also argues that “Buford discloses reporting location information

when the location generator is within a predetermined boundary relative to the location recipient, based on the identity of the requester (e.g., spouse, friend, employer).” Pet. 64 (citing Ex. 1007 ¶¶ 73, 77, 87; Ex. 1010, 11); *see also* Pet. 65–66. Qualcomm argues that “[i]n the combined Lau–Buford system, this rule is implemented such that the sensor information is reported when the shipment is within a predetermined boundary [or distance] relative to the delivery location.” Pet. 64–65 (citing Ex. 1003 ¶¶ 166–167).

For claim 9, Qualcomm argues that a person of ordinary skill in the art “would have understood that when the location generator is outside of five miles of the friends, the system prevents the location recipient from receiving location information,” so “sensor information is *not* reported when the shipment is outside a predetermined boundary relative to the originating location.” Pet. 65 (citing Ex. 1003 ¶ 168).

For claim 10, Qualcomm similarly argues that “[i]n the combined Lau–Buford system, the boundary is based on the originating location of the shipment,” so the “rule is implemented such that the sensor information is reported when the shipment is within a predetermined distance relative to the originating location.” Pet. 66 (citing Ex. 1003 ¶ 169).

Apart from its general arguments directed to the independent claims, FedEx does not specifically contest Qualcomm’s challenge to claims 7–10, 18–21, and 29–32 based on the combination of Lau and Buford. *See generally* PO Resp.¹¹ Having considered the uncontested evidence, we determine that Qualcomm has shown by a preponderance of the evidence

¹¹ FedEx contests Qualcomm’s arguments based solely on Lau, but because we determine the claims unpatentable on the alternate ground, we need not address the arguments based on Lau alone.

that claims 7–10, 18–21, and 29–32 are unpatentable as obvious over Lau in view of Buford.

D. GROUND BASED ON AINSWORTH (CLAIMS 1, 2, 11–13, 22–24, 33)

For its third ground, Qualcomm argues that claims 1, 2, 11–13, 22–24, and 33 are unpatentable under § 103(a) as obvious over Ainsworth. Pet. 71–84.

Ainsworth describes a system for tracking items. *See* Ex. 1008, code (57). It involves a set of tracking devices attached to packages, and a set of beacon devices that detect environmental conditions along a delivery path of an item being shipped. *Id.* ¶¶ 23, 27–28. A tracking center, which includes a “certificate server,” controls access to the information from the tracking devices and beacon devices. *Id.* ¶¶ 45–46. If a user makes a request for such sensor information, but does not have authorization to access all the requested data, the “certificate server . . . recognizes the lack of authorization and only allows [the] tracking center . . . to send the client or user the portion of the requested sensor data for which the client or user has authorization.” *Id.* ¶ 46.

For the reasons below, we determine that claims 1, 2, 11–13, 22–24, and 33 are unpatentable as obvious over Ainsworth.

1. *Claims 1, 12, and 23*

Claims 1, 12, and 23 have essentially the same limitations. *See* Ex. 1001, 25:2–17, 26:7–24, 27:16–29. For these claims, Qualcomm argues that Ainsworth discloses the preamble because it describes a computer-implemented method as recited. Pet. 73 (citing Ex. 1008 ¶¶ 1, 19, 31, 32, 40, Figs. 1, 2; Ex. 1003 ¶ 203).

For limitation 1[a], Qualcomm alleges that “Ainsworth teaches that the beacon device periodically transmits sensor information to a tracking center or reports sensor data, recorded by an external sensor, to a tracking center.” Pet. 74 (citing Ex. 1008 ¶¶ 28, 31, 43; Ex. 1003 ¶ 204).

For limitation 1[b], Qualcomm alleges that Ainsworth discloses a tracking center that includes a rules engine, a web server, a sensor information database, and a “certificate server . . . configured to control access to data in the sensor information database.” Pet. 74–75 (citing Ex. 1008 ¶¶ 40, 41, 46, Fig. 2; Ex. 1003 ¶ 205). According to Qualcomm, the certificate server checks for authorization and only allows the tracking center to send a user an authorized portion of the sensor data. Pet. 75–76 (citing Ex. 1008 ¶¶ 46, 69, 75, Fig. 4; Ex. 1003 ¶¶ 206–207).

FedEx does not contest Qualcomm’s contentions regarding the preamble, limitation 1[a], limitation [b], or corresponding limitations in claims 12 or 23 (*see* PO Resp. 34–35), and without deciding whether the preamble is limiting, we find the arguments persuasive.

For limitations 1[c1] and 1[c2], Qualcomm argues that “Ainsworth teaches that the certificate server interacts with the rules engine to restrict the client from accessing sensor data based on the authorization criteria.” Pet. 77 (citing Ex. 1008 ¶¶ 46, 69, 75; Ex. 1003 ¶ 208). According to Qualcomm, a user can request information from some subset of sensors, and a user can only receive data for which the user has access rights. *Id.* (citing Ex. 1008 ¶¶ 63, 69–70, 78–79, Fig. 5). Qualcomm argues, for example, “that by restricting the reporting the received sensor information to the requester to half the sensor data, the level of specificity would be less than a level of specificity of sensor information that was collected by the sensor.” Pet. 78

(citing Ex. 1003 ¶¶ 209–210); *see also* Pet. Reply 24 (citing Ex. 1008 ¶ 58); PO Sur-reply 14 (citing Ex. 1008 ¶ 58).

In response, FedEx makes substantially the same arguments it did for the ground based on Lau, which we address above. *Compare* PO Resp. 34–35, *with id.* at 40–41; *supra* Section III.C.3(d). In particular, FedEx relies on its proposed construction for “level of specificity” as being limited to “degree of precision,” and argues that Ainsworth does not teach disclosing sensor data at a lower degree of precision than the collected sensor data (e.g., by reporting street-level data rather than city-level data). PO Resp. 34–35 (citing Ex. 1001, 11:49–62, 12:12–26, claims 3, 14, 25; Ex. 1002, 151, 154–56, 162–64, 172–78; Ex. 1008 ¶¶ 69–70, 78–79; Ex. 2209 ¶ 60; Ex. 2201 ¶¶ 68–74).

For the above reasons discussed above in the context of the ground based on Lau (*supra* Section III.C.3(d)), we agree with Qualcomm that Ainsworth discloses reporting the received sensor information at a lower level of specificity (e.g., where the user does not have access to some sensor information and thus that information is excluded from the report) than was collected by a sensor.

Thus, Qualcomm has shown that Ainsworth teaches limitations 1[c1] and 1[c2] and corresponding limitations in claims 12 and 23. Likewise, for all reasons discussed in the sections above, we determine that Qualcomm has shown by a preponderance of the evidence that claims 1, 12, and 23 are unpatentable as obvious over Ainsworth.

2. *Claims 2, 13, and 24*

For dependent claims 2, 13, and 24, Qualcomm relies on arguments for claim 1, and also contends that a person of ordinary skill in the art

“would have understood that by restricting the reporting the received sensor information to the requester to half the sensor data, the sensor information is reported at a lower frequency than the frequency at which it is collected.” Pet. 78–79 (citing Ex. 1008 ¶¶ 69–70, 78–79, Fig. 5; Ex. 1003 ¶ 211). “For example, when the requester asks for information from a single sensor and the tracking center returns half of the data it has collected (e.g., every other measurement), it has reported the sensor data at a lower frequency than the frequency at which it is collected.” Pet. 79 (citing Ex. 1003 ¶ 211).

In response, FedEx argues that “Ainsworth reports data *one time in response to a request*, not at a *frequency*.” PO Resp. 36 (citing Ex. 1008 ¶¶ 62–76, Fig. 4; Ex. 2201 ¶ 78). And FedEx asserts that Qualcomm’s example of only reporting “every other measurement” does not appear in Ainsworth, which only discloses reporting a portion of the sensor data. *Id.* at 37 (citing Ex. 1008 ¶¶ 69–70; Ex. 2201 ¶ 79).

In the Reply, Qualcomm argues that FedEx relies on a faulty “premise that ‘frequency’ requires reporting at regular intervals.” Pet. Reply 24. But according to Qualcomm, even under FedEx’s understanding of that term, Ainsworth discloses a real-time reporting embodiment in which “real-time data is delivered when the sensor meets a ‘triggering parameter’” but not delivered otherwise, thus “necessarily reporting the data at a lower frequency than collected.” *Id.* at 24–27 (citing Ex. 1008 ¶¶ 54, 71, Fig. 4).

In the Sur-reply, FedEx argues that even in this embodiment, the reports are “sporadic” (reporting after each triggering parameter only once) rather than a particular periodic “frequency.” PO Sur-reply 15–16 (citing Ex. 1008 ¶¶ 71–76, Fig. 4).

As we discuss above in the context of the grounds based on Lau and Buford, we do not agree with FedEx that “frequency” necessarily denotes regular intervals. *See supra* Section III.C.5. Based on the evidence of record, we agree with Qualcomm that Ainsworth reports sensor data “at a frequency lower than collected by the sensor” in at least the embodiments Qualcomm has pointed out. *See* Ex. 1008 ¶¶ 54, 69–71, 78–79, Fig. 4.

For the above reasons, we determine that Qualcomm has shown by a preponderance of the evidence that claims 2, 13, and 24 are unpatentable as obvious over Ainsworth.

3. *Claims 11, 22, and 33*

Claim 11 depends from claim 1 and further recites “reconfiguring one or more sensor devices associated with the one or more shipments to modify the frequency or precision of the received sensor information, wherein the reconfiguring occurs in response to an alert created by a reading of the sensor information.” Ex. 1001, 26:1–6. Dependent claims 22 and 33 include similar limitations but depend from claims 12 and 23, respectively. *See id.* at 27:8–15, 28:36–42.

Qualcomm argues that “Ainsworth discloses that[] the tracking center may provide updated and/or new programming for an item tracking device, a beacon device, or a user tracking device.” Pet. 79 (citing Ex. 1008 ¶¶ 34, 56). “Ainsworth provides the example of triggering an alarm if the beacon device detects a temperature above a certain level . . . then teaches that the tracking center can alter the programming of a beacon device as a result of the alarm to check the temperature more frequently.” *Id.* (citing Ex. 1008 ¶¶ 34, 56; Ex. 1003 ¶ 212).

In response, FedEx argues that “[t]he only ‘alert’ in Ainsworth’s passages is the ‘alarm or alert’ that ‘bring[s] this information to the attention of personnel associated with tracking center 108,’” but “[t]he ‘tracking center’ performs no action in response to that alert, which is sent to human ‘personnel.’” PO Resp. 39 (second alteration in original) (quoting Ex. 1008 ¶ 34) (citing Ex. 2201 ¶¶ 84–85). FedEx concedes that “the tracking center compares temperature measurements to thresholds, and it may alter beacon device programming ‘to check temperature more frequently,’” but FedEx disagrees this is done “in response” to the alert. *Id.* at 39–40 (quoting Ex. 1008 ¶¶ 34, 56).

FedEx also argues that when Ainsworth alters the programming to check temperature more frequently, this “is a change in a rate of data *collection*,” but “[a] changed data *collection* rate is not a changed ‘frequency or precision of the received sensor information.’” PO Resp. 40 (citing Ex. 1008 ¶¶ 34, 56; Ex. 2201 ¶ 86); *see also* PO Sur-reply 16–17 (citing Ex. 1001, 9:47–54, 10:60–11:9, 11:49–62, 15:25–36, claims 1, 12, 23).

In the Reply, Qualcomm disagrees that Ainsworth’s tracking center takes no action “in response” to the alert, because “Ainsworth’s use of ‘in turn’ in [paragraph 34] shows that, regardless of whether the tracking center makes its own determination that the threshold has been exceeded, its alteration of beacon device programming is responsive to such a determination.” Pet. Reply 27 (citing Ex. 1008 ¶¶ 34, 56).

Qualcomm also argues that “when a sensor measures the temperature more frequently, it is necessarily increasing the precision of the sensor information because the greater frequency means more-precise measurement over time.” Pet. Reply 28 (citing Ex. 1024, 42:12–44:14).

In the Sur-reply, FedEx argues that “the system reconfigures no device in response to [the identified] alarm,” and that Qualcomm is “shifting arguments to contend the tracking center adjusts measurement rates following its ‘*determination*’ that temperature exceeded a threshold. . . . But a ‘determination’ is not the ‘alarm or alert’ Qualcomm originally identified. It is no alert at all.” PO Sur-reply 16.

We agree with Qualcomm that Ainsworth teaches modifying the sensor collection frequency “in response to” the alert that Qualcomm identifies. Ex. 1008 ¶¶ 34, 56. Although notice of the “alert” is sent to personnel, we agree with Qualcomm that the alert, “in turn,” causes the tracking center to “alter the programming of beacon device 104a to check the temperature more frequently.” *Id.* ¶ 34.

As to FedEx’s argument that Ainsworth’s tracking center only modifies the frequency of *collecting* sensor information, this will also affect the frequency or precision of the sensor information “received” by the tracking center, which will at least in some cases be the same sensor information. *See* Ex. 1008 ¶¶ 28, 31, 43; Ex. 1003 ¶ 204. We also agree with Qualcomm that more frequent sampling corresponds to an increase in precision over time, and the reconfigured sensor devices would thus increase the precision of received sensor information. *See* Pet. Reply 28; Ex. 1024, 42:12–44:14.

For the above reasons, we determine that Qualcomm has shown by a preponderance of the evidence that claims 11, 22, and 33 are unpatentable as obvious over Ainsworth.

IV. CONCLUSION¹²

For the reasons above, Qualcomm has shown by a preponderance of the evidence that claims 1–33 of the '797 patent are unpatentable under § 103 as follows: claims 1–3, 12–14, 23–25 are unpatentable as obvious over Lau, claims 1–10, 12–21, 23–32 are unpatentable as obvious over Lau in view of Buford, and claims 1, 2, 11–13, 22–24, 33 are unpatentable as obvious over Ainsworth.

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1–10, 12–21, 23–32	103	Lau ¹³	1–3, 12–14, 23–25	
1–10, 12–21, 23–32	103	Lau, Buford	1–10, 12–21, 23–32	
1, 2, 11–13, 22–24, 33	103	Ainsworth	1, 2, 11–13, 22–24, 33	
Overall Outcome			1–33	

¹² Should FedEx wish to pursue amendment of claims in a reissue or reexamination proceeding after this decision, we draw 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 FedEx chooses to file a reissue application or a request for reexamination of the challenged patent, we remind FedEx 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).

¹³ As discussed above, we do not address the ground based on Lau alone with respect to claims 4–10, 15–21, 26–32. See *supra* Sections III.C.7–9.

V. ORDER

In consideration of the foregoing, it is
ORDERED that claims 1–33 of the '797 patent are unpatentable;
FURTHER ORDERED that parties to this proceeding seeking judicial
review of our decision must comply with the notice and service requirements
of 37 C.F.R. § 90.2.

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For PETITIONER:

Eagle H. Robinson
Daniel S. Leventhal
Richard S. Zembek
Valerie K. Barker
Mark Garrett
NORTON ROSE FULBRIGHT US LLP
eagle.robinson@nortonrosefulbright.com
daniel.leventhal@nortonrosefulbright.com
richard.zembek@nortonrosefulbright.com
valerie.barker@nortonrosefulbright.com
mark.garrett@nortonrosefulbright.com

For PATENT OWNER:

Jeffrey A. Berkowitz
Michael V. Young, Sr.
Luke H. MacDonald, Ph.D.
Daniel Jordan
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, LLP
jeffrey.berkowitz@finnegan.com
michael.young@finnegan.com
luke.macdonald@finnegan.com
jan.jordan@finnegan.com