

**United States Court of Appeals  
for the Federal Circuit**

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**CENTRAK, INC.,**  
*Plaintiff-Appellant*

v.

**SONITOR TECHNOLOGIES, INC.,**  
*Defendant-Appellee*

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2017-2510

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Appeal from the United States District Court for the District of Delaware in No. 1:14-cv-00183-RGA, Judge Richard G. Andrews.

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Decided: February 14, 2019

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JEFFREY I. KAPLAN, Kaplan, Breyer, Schwarz, LLP, Matawan, NJ, argued for plaintiff-appellant. Also represented by JOSEPH W. BAIN, Shutts & Bowen LLP, West Palm Beach, FL.

JACK B. BLUMENFELD, Morris, Nichols, Arsht & Tunnell LLP, Wilmington, DE, argued for defendant-appellee. Also represented by JENNIFER YING.

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Before REYNA, TARANTO, and CHEN, *Circuit Judges*.

CHEN, *Circuit Judge*.

CenTrak, Inc. sued Sonitor Technologies, Inc. for alleged infringement of U.S. Patent No. 8,604,909 ('909 patent), which claims systems for locating and identifying portable devices using ultrasonic base stations. The district court granted Sonitor's motions for summary judgment that claims 1, 7, 8, 16, 18, 21, 22, and 26 are invalid for lack of written description and that claims 1, 7, 8, 16, 18, 21, and 22 are not infringed. Because the district court erred in determining that there were no genuine disputes of material fact on both issues, we reverse and remand for further proceedings.

## BACKGROUND

### A. Asserted Patent

The '909 patent is entitled "Methods and Systems for Synchronized Ultrasonic Real Time Location." The '909 patent relates to systems for real-time location (RTL), which allow users to locate and identify portable devices in a facility. '909 patent col. 1 ll. 16–19, 23–24. Hospitals, for example, might use RTL systems to track equipment and patients. The asserted claims generally recite the following components: (1) ultrasonic (US) base stations; (2) portable devices (*i.e.*, tags); (3) a server; (4) radio frequency (RF) base stations; and (5) a backbone network that connects the server with the RF base stations. *See, e.g., id.* claim 1. The ultrasonic base stations can be mounted in various fixed locations in a facility, *see id.* col. 4 ll. 37–45, such as rooms in a hospital, and the portable devices can be attached to people or assets that move between rooms, *see id.* col. 4 ll. 60–65. Each portable device is configured to detect the ultrasonic location codes from the nearby ultrasonic base stations and "transmit an output signal including a portable device ID representative of the portable device and the detected ultrasonic location code." *Id.*, Abstract. While the portable devices receive location codes from ultrasonic base stations via ultrasound, they might transmit location and

device information via RF to an RF base station. *Id.* col. 2 ll. 59–62. The RF base station then transmits the location and device ID information obtained from the portable devices to the server. *See id.* col. 2 ll. 56–66.

To save power, the ultrasonic base stations and portable devices do not transmit or receive location information constantly; instead, they transmit and receive at predetermined times. *Id.* col. 3 ll. 56–61. To ensure that the components remain synchronized, the RF base station can periodically transmit “timing synchronization information (TSI) that may provide a unified time of origin to all nodes in the system.” *Id.* col. 3 ll. 51–56.

Claim 1 is illustrative:

1. A system for determining a location and an identity of a portable device, the system comprising:

means for transmitting timing synchronization information including a plurality of RF transceivers coupled to a backbone network and a time server generating the timing synchronization information;

wherein each of the plurality of RF transceivers periodically transmits a request to the time server to receive the timing synchronization information;

a plurality of stationary ultrasonic base stations, each ultrasonic base station configured to receive the timing synchronization information and to transmit a corresponding ultrasonic location code in a time period based on the received timing synchronization information, each ultrasonic location code representative of a location of the respective ultrasonic base station; and

a plurality of portable devices, each portable device configured to 1) receive the timing synchronization information, 2) detect the ultrasonic location codes from the ultrasonic base stations and 3) transmit an output signal including a portable device ID representative of the portable device and the detected location code,

wherein each portable device is synchronized to detect the ultrasonic location code in the time period based on the received timing synchronization information.

*Id.* col. 14 ll. 25–49.

Notably, while all claims of the '909 patent recite “ultrasonic” components, the vast majority of the specification focuses on infrared (IR) or RF components. *See, e.g., id.* fig. 1 (depicting infrared base stations labeled “IR-BS”). The '909 patent is a divisional of an application that became U.S. Patent No. 8,139,945, which contains claims that are similar to the ones in the '909 patent but that recite IR technology instead of ultrasonic technology for communications from the base stations to nearby portable devices. Only two sentences of the '909 patent’s specification discuss ultrasonic technology:

Although IR base stations 106 are described, it is contemplated that the base stations 106 may also be configured to transmit a corresponding BS-ID by an ultrasonic signal, such that base stations 106 may represent ultrasonic base stations. Accordingly, portable devices 108 may be configured to include an ultrasonic receiver to receive the BS-ID from an ultrasonic base station.

*Id.* col. 5 ll. 5–11.

### B. Accused Products

The accused Sonitor Sense system includes three pieces of hardware sold by Sonitor: RF “gateways,” ultrasonic location transmitters, and portable locator tags. *See* J.A. 642. Sonitor also provides software for installation on a customer’s server hardware. J.A. 491 at 25:8–11. When these components are integrated with a customer’s existing network and server hardware, CenTrak argues that the resulting system infringes the ’909 patent.

The parties dispute whether Sonitor personnel or third parties (who might or might not be hired by Sonitor) physically install the Sonitor hardware in client hospitals. Sonitor’s vice president testified that after the hardware is installed, Sonitor personnel go on site and “configure” the system. *See* J.A. 2130 at 27:8–13. CenTrak argues that the configuration entails bringing location transmitters online as part of a facility’s existing network. Appellant Br. 12–13 (citing J.A. 476 at 42:2–14). According to Sonitor’s vice president, Sonitor personnel also perform “data entry” in the server to map the locations of various ultrasonic transmitters to their physical locations in a building. Appellant Br. 14; J.A. 2745 at 29:5–23.

### C. Procedural History

CenTrak accuses Sonitor of infringing claims 1, 7, 8, 16, 18, 21, 22, and 26 of the ’909 patent. *CenTrak, Inc. v. Sonitor Techs., Inc.*, No. CV 14-183-RGA, 2017 WL 3730617, at \*1 (D. Del. Aug. 30, 2017). Sonitor does not sell all of the hardware necessary to practice the asserted claims, so while CenTrak asserted various theories of infringement before the district court, on appeal, CenTrak has only pursued a theory under 35 U.S.C. § 271(a) that Sonitor “makes” infringing systems when it installs and configures the Sonitor Sense system. *See* Appellant Br. 1, 23. CenTrak asserts only direct infringement. J.A. 2823 at 47:3–5.

Sonitor filed motions for summary judgment of non-infringement, J.A. 89, and invalidity for lack of written description and enablement, J.A. 3831.<sup>1</sup>

Sonitor's main non-infringement argument was that Sonitor does not make, use, or sell certain elements recited in the claims, including the required backbone network, Wi-Fi access points, or server hardware. J.A. 95. CenTrak responded that the party assembling components into the claimed assembly "makes" the patented invention, even when someone else supplies most of the components. J.A. 129. The district court ordered supplemental briefing so that CenTrak could identify evidence in support of its "final assembler" theory. *See* J.A. 2826–27 at 61:21–62:9.

Regarding written description, Sonitor argued that the two sentences in the specification dedicated to ultrasound, quoted above, did not show that the inventors had possession of an ultrasound-based RTL system. *See* J.A. 3839–49.

The district court granted summary judgment of non-infringement. It held that a defendant must be the actor who assembles the entire claimed system to be liable for direct infringement, and CenTrak had not submitted proof that Sonitor personnel had made an infringing assembly. *CenTrak*, 2017 WL 3730617, at \*6. The district court also ruled that CenTrak's infringement theory based on Sonitor allegedly undertaking the final act that completes assembly by "assigning location codes" was "entirely new." *Id.* at \*5 n.3. The district court ruled that even if it were to consider this theory, "[s]imply entering the data into a server does not constitute making the physical system claimed in the '909 patent." *Id.*

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<sup>1</sup> Sonitor moved for summary judgment of non-infringement on all asserted claims except claim 26. It directed its invalidity motion to all asserted claims.

Regarding invalidity, the district court ruled that while the specification “contemplated” ultrasound, “[m]ere contemplation . . . is not sufficient to meet the written description requirement.” *Id.* at \*8. The district court reasoned that “electromagnetic radiation and sound waves are not simply two species of the same genus; rather these are two completely different types of phenomena” and that “one could not simply drop [an ultrasonic] transmitter into the system as disclosed in the specification and have a functioning [ultrasonic] system.” *Id.* Accordingly, it granted summary judgment that CenTrak’s claims did not satisfy the written description requirement. *Id.* at \*9. The district court did not rule on the issue of enablement, *id.* at \*7 n.4, and denied other pending motions as moot. *Id.* at \*9.

Sonitor appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

#### DISCUSSION

A district court’s grant of summary judgment is reviewed under the law of the regional circuit. *Profectus Tech. LLC v. Huawei Techs. Co.*, 823 F.3d 1375, 1379 (Fed. Cir. 2016). “The Third Circuit reviews grants and denials of motions for summary judgment *de novo*, applying the same standard of review as the district court.” *MobileMedia Ideas LLC v. Apple Inc.*, 780 F.3d 1159, 1164 (Fed. Cir. 2015) (citing *Gonzalez v. Sec’y of Dep’t of Homeland Sec.*, 678 F.3d 254, 257 (3d Cir. 2012)). When reviewing a grant of summary judgment, we view the facts in the light most favorable to the nonmoving party and draw all inferences in that party’s favor. *Gonzalez*, 678 F.3d at 257.

##### A. Written Description

We have held that “the test for sufficiency” of a patent’s written description “is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Ariad Pharm., Inc. v. Eli*

*Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). “[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed.” *Id.* A “mere wish or plan” for obtaining the claimed invention does not satisfy the written description requirement. *Regents of the Univ. of Cal. v. Eli Lilly & Co.*, 119 F.3d 1559, 1566 (Fed. Cir. 1997). The issue of whether a claimed invention satisfies the written description requirement is a question of fact. *Ariad*, 598 F.3d at 1351.

The district court determined that the ’909 patent lacked adequate written description support for an RTL system that relied on ultrasound-based communication from the base stations to the portable devices. The district court found that IR and ultrasound are “fundamentally different” technologies, in part because IR radiation travels at approximately 300 million meters per second, while ultrasonic sound waves propagate at approximately 340 meters per second in air. *CenTrak*, 2017 WL 3730617, at \*8. Because “[t]iming is critical to the technology disclosed in the ’909 patent,” the district court found, these speed differences “would necessarily require a significantly different solution if implemented using IR than if [ultrasound] were used.” *Id.* at \*9. The district court also cited inventor testimony that interference from reflection and echoes is different in IR and ultrasonic systems. *Id.* (citing J.A. 442). The district court reasoned that because the ’909 patent’s written description does not discuss how to address propagation delays or interference in ultrasonic systems, the patent does not show that the inventors had possession of the claimed invention as of the filing date. *Id.*

CenTrak argues that the district court’s written description ruling erred by effectively requiring the specification to disclose basic, routine implementation details for



how a portable device can receive location and timing synchronization information from a neighboring base station using an ultrasound signal. In CenTrak's view, a skilled artisan reading the '909 patent's specification, with an understanding of the basics of IR and ultrasonic signals, would understand that the inventors had possession of RTL systems that could use either IR or ultrasound, and not merely an unformed wish or plan for an ultrasonic alternative. CenTrak further contends that the district court's invalidity analysis falls more in line with an enablement theory, which CenTrak believes its claims also satisfy.<sup>2</sup>

As CenTrak correctly points out, a patented invention must satisfy separate written description and enablement requirements. *Ariad*, 598 F.3d at 1351. The governing statute states, in relevant part: "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art . . . to make and use the same . . ." 35 U.S.C. § 112, ¶ 1 (2006).<sup>3</sup> One purpose of this statutory provision is to require an inventor to provide sufficient detail in a patent's specification to enable a person of ordinary skill in the art to make and use the invention. But a separate purpose of this text "is to 'ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of

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<sup>2</sup> As noted above, the district court declined to reach the parties' enablement arguments on summary judgment.

<sup>3</sup> Because the application resulting in the '909 patent was filed before September 16, 2012, the effective date of the amendments to 35 U.S.C. § 112 enacted in the Leahy–Smith America Invents Act (AIA), Pub. L. No. 112–29, § 4(c), (e), 125 Stat. 284, 296, 297 (2011) we refer to the pre-AIA version of § 112.

art as described in the patent specification.” *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 920 (Fed. Cir. 2004) (quoting *Reiffin v. Microsoft Corp.*, 214 F.3d 1342, 1345 (Fed. Cir. 2000)). Thus, we have explained, “written description is about whether the skilled reader of the patent disclosure can recognize that what was claimed corresponds to what was described; it is not about whether the patentee has proven to the skilled reader that the invention works, or how to make it work, which is an enablement issue.” *Alcon Research Ltd. v. Barr Labs., Inc.*, 745 F.3d 1180, 1191 (Fed. Cir. 2014).

In this case, genuine issues of material fact remain as to whether disclosure of the implementation details that the district court identified is necessary to satisfy the written description requirement. The considerations relied on by the district court and Sonitor do not compel summary judgment for lack of written description. As an initial matter, the district court leaned heavily on the fact that the specification devoted relatively less attention to the ultrasonic embodiment compared to the infrared embodiment. But in *ScriptPro LLC v. Innovation Associates, Inc.*, 833 F.3d 1336, 1341 (Fed. Cir. 2016), we explained that “a specification’s focus on one particular embodiment or purpose cannot limit the described invention where that specification expressly contemplates other embodiments or purposes.”

Here, as in *ScriptPro*, the fact that the bulk of the specification discusses a system with infrared components does not necessarily mean that the inventors did not also constructively reduce to practice a system with ultrasonic components. Sonitor attempts to distinguish *ScriptPro* on the basis that the specification at issue disclosed multiple problems and multiple, exemplary solutions, but “the written description requirement does not demand either examples or an actual reduction to practice; a constructive reduction to practice” may be sufficient if it “identifies the claimed

invention” and does so “in a definite way.” *Ariad*, 598 F.3d at 1352.

Sonitor’s citation to cases finding inadequate written description to support summary judgment here is unconvincing. The ’909 patent’s disclosure of an ultrasonic embodiment, albeit brief, distinguishes the instant case from *Rivera v. International Trade Commission*, 857 F.3d 1315, 1322 (Fed. Cir. 2017), in which we affirmed an invalidity finding because the specification at issue did not make any mention of the later-claimed container with an integrated filter and thus did not provide written description for such a container.

The ’909 patent’s express disclosure also distinguishes this case from *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565 (Fed. Cir. 1997), on which Sonitor relies. In *Lockwood*, we affirmed a summary judgment ruling that a patent was not entitled to an earlier priority date because its parent applications did not make any reference to an “individual merchandising apparatus that contained video disk players or other equivalent storage means,” which was a claimed limitation. *Id.* at 1572. We found that testimony by Lockwood’s expert arguing that such a feature “would have been apparent to one skilled in the art” was insufficient to “raise a genuine issue of material fact” because it was undisputed that one of the intervening applications did not disclose the claimed feature. *Id.* Here, in contrast, the specification at least mentions base stations and receivers that use ultrasound, which makes this case distinguishable from *Lockwood*.<sup>4</sup>

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<sup>4</sup> Sonitor also argues that the patentee’s original disclosure fails to describe other claimed features such as the “ultrasonic detector” recited in claim 7 or “concurrently” transmitting ultrasonic location codes as required by claim 8. Appellee Br. 54. Because the district court did not base

Sonitor argues that although the '909 patent's specification mentions ultrasonic communication between base stations and portable devices, the disclosure is insufficient, because, according to *Ariad*, "generic claim language appearing *in ipso verbis* in the original specification does not satisfy the written description requirement if it fails to support the scope of the genus claimed." 598 F.3d at 1350. While it is true that a specification's passing reference to generic claim language, without more, may not adequately support claims to a broad genus, we do not believe that CenTrak's claims to an ultrasonic RTL embodiment are akin to claiming a vast genus based on a limited disclosure of a species. The district court's analysis ignores the fact that at least some components recited in the claims, such as the "RF transceivers" and "backbone network" recited in claim 1, do not depend on IR or ultrasound. The question here is the level of detail the '909 patent's specification must contain, beyond disclosing that ultrasonic signals can be used, to adequately convey to a skilled artisan that the inventors possessed an ultrasonic embodiment. As we explained in *Ariad*, "the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology." *Id.* at 1351.

In this case, the parties disputed the complexity and predictability of ultrasonic RTL systems, and the district court erred at the summary judgment stage by not sufficiently crediting testimony from CenTrak's expert that the differences between IR and ultrasound, when used to transmit small amounts of data over short distances, are incidental to carrying out the claimed invention. CenTrak's expert opined that "[a] 2 byte location code would allow identification of up to 65,000 different locations" and

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its decision on these limitations, we do not address them in the first instance on appeal.

that “transmitting 2 bytes of ultrasonic data, regardless of the transmission speed, would certainly pose no obstacle and require no special instructions for a POSITA [person of ordinary skill in the art] using a standard ultrasonic transmitter at the time of the invention.” J.A. 882. He also opined that “[t]iming synchronization can be derived from . . . almost any amount of information ranging from a single start bit up to several bytes of date/time or timing offset data” and that “receiving several bytes of data from an ultrasonic signal would pose no obstacle . . . using a standard [u]ltrasonic receiver.” J.A. 883. In the context of the ’909 patent, the expert characterized IR and ultrasonic technologies as “interchangeable.” J.A. 901. Indeed, CenTrak points out that many features of the claimed system, such as the backbone network, time server, and RF transmitters do not depend on whether the base stations in each room communicate with portable tags using IR or ultrasound. On the other hand, Sonitor’s expert opined that the speed of ultrasonic signals “is roughly a million times slower than light,” J.A. 1414, and that “ultrasound would take hundreds of times longer than infrared to transmit the same amount of data,” J.A. 1416. Moreover, Sonitor argues that “[t]he specification is entirely silent about the structure of ultrasonic base stations or receivers.” Appellee Br. 50. But the testimony from CenTrak’s expert cited above suggests that those details were not particularly complex or unpredictable, and Sonitor does not explain why a person of ordinary skill in the art would need to see such details in the specification to find that the named inventors actually invented the claimed system. This, at the very least, presents a material factual issue still in dispute.

Putting aside the testimony of CenTrak’s expert, Sonitor argues that the named inventors actually admitted that the ’909 patent’s specification does not disclose certain ultrasonic limitations. For example, one of the inventors, Dr. Amir, testified as follows:

Q. But there's no ultrasonic portable device that is actually described in the '909 patent; right?

A. This is correct, yeah.

Q. And there's no ultrasonic base station that is actually described in the '909 patent; correct?

A. Yes. It's not explicitly, correct.

J.A. 447 at 166:24–167:5. In another exchange, however, Dr. Amir suggested that it would be simple for a person of ordinary skill to adjust for the differences between IR and ultrasound:

Q. And nothing in the '909 patent teaches a person specifically how to create or develop an RTLS system using ultrasonic signals; correct?

THE WITNESS: I disagree with you because I think it's almost like -- I can think about some example, but I can't think of it right now. The teaching -- once you have the teaching of the concept, the reduction to practice is immediate. I don't explain how to really even do the IR to this extent.<sup>5</sup> The only thing that's missing is understanding the relative ratios and understanding how ultrasound propagates to make it work. You have to understand how to drive an ultrasonic transmitter, how to receive an ultrasonic signal, and how to process them. But this is known art to people who are knowing ultrasound.

Q. But none of that knowledge of ultrasound is in your '909 patent; correct?

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<sup>5</sup> Sonitor disputes Dr. Amir's suggestion that the level of detail in '909 patent regarding IR and ultrasound is similar. See Appellee Br. 31; '909 patent col. 13 l. 20–col. 14 l. 16.

### A. Correct.

J.A. 447 at 167:6–168:1 (objection omitted).

Although Sonitor seems to treat this testimony as conclusive proof that the inventors did not “possess” an ultrasonic RTL system, we do not read this testimony as an admission, as a matter of law, that the specification does not adequately describe an ultrasonic embodiment. In context, a reasonable fact finder could interpret Dr. Amir’s testimony not as a legal conclusion regarding written description, but as an acknowledgement that the specification did not literally detail the inner workings of ultrasonic devices or identify particular examples of such devices because such details were known to skilled artisans and not part of the inventors’ inventive contribution. As explained above, however, it is not clear to us that a person of ordinary skill in the art would require disclosure of such details to find that the named inventors actually invented an ultrasonic embodiment.

Based on the evidence of record, there is a material dispute of fact as to whether the named inventors actually possessed an ultrasonic RTL system at the time they filed their patent application or whether they were “leaving it to the . . . industry to complete an unfinished invention.” *Novozymes A/S v. DuPont Nutrition Biosciences APS*, 723 F.3d 1336, 1350 (Fed. Cir. 2013) (quoting *Ariad*, 598 F.3d at 1353). Thus, the district court erred in granting summary judgment.

### B. Enablement

Sonitor argues that if we reverse the district court on written description, we should nevertheless rule that the asserted claims are invalid for lack of enablement. The district court concluded that it need not consider enablement because of its written description ruling. *CenTrak*, 2017 WL 3730617, at \*7 n.4. Although an “appellee may, without taking a cross-appeal, urge in support of a decree any

matter appearing in the record,” *United States v. Am. Ry. Express Co.*, 265 U.S. 425, 435 (1924), in this case we decline to reach the question of enablement for the first time on appeal, see *TypeRight Keyboard Corp. v. Microsoft Corp.*, 374 F.3d 1151, 1160 (Fed. Cir. 2004) (reversing summary judgment of obviousness and declining to reach issue of non-infringement that district court had not addressed).

### C. Infringement

CentTrak argues that the district court applied an incorrect legal standard to the infringement question and that Sonitor makes a system covered by the claims when it completes the installation of the Sonitor Sense system in a hospital.<sup>6</sup> Sonitor responds that we should reject CentTrak’s “final assembly” theory as untimely, that the district court applied the correct legal standard, and that CentTrak failed to present sufficient evidence to prove infringement. We address each of these issues in turn.

#### 1. Timeliness

Sonitor argues that we should not consider CentTrak’s “final assembly” theory—the main infringement theory that CentTrak presents on appeal—because CentTrak did not timely present it to the district court. As explained below, we find Sonitor’s argument unpersuasive.

On appeal, CentTrak presents a range of arguments for how Sonitor infringes the claimed system. First, CentTrak argues that the conduct of Sonitor’s customers in installing the claimed backbone network, RF transceivers (wireless access points), and other hardware is attributable to Sonitor. Second, CentTrak argues that Sonitor personnel

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<sup>6</sup> CentTrak also asserted an infringement theory before the district court based on “using” the claimed system, but CentTrak’s appellate briefs only pursue a theory based on Sonitor “making” an infringing system.



configure ultrasonic location transmitters to work with customers' networks. Third, CenTrak argues that Sonitor personnel enter into the Sonitor server a system of location codes and corresponding physical locations at which each ultrasonic location transmitter was installed.

Sonitor concedes that CenTrak presented its first argument regarding installation-as-infringement in its opposition brief to Sonitor's summary judgment motion, *see* Appellee Br. 38; J.A. 130, but Sonitor argues that CenTrak did not present its second or third arguments regarding configuration and entering location codes during summary judgment briefing. We disagree with Sonitor and find that CenTrak's arguments were adequately preserved. CenTrak's district court opposition brief argues that the installation process for an accused system involves, among other things, "installing the software to make the Sonitor server" and "integrating the entire system into the customer's network." J.A. 127–28. This argument, while briefly presented, is substantially the same as CenTrak's "configuration" argument on appeal. *See* Appellant Br. 26 (citing testimony that Sonitor's vice president "assists the Sonitor support team if they are doing an installation and have trouble getting the installed devices to come on line on the [customers] network." (emphasis and internal quotation marks omitted)). CenTrak also argued, with citations to deposition testimony, that Sonitor "personnel also enter the location data on the virtual server . . . where the Sonitor software was installed during installation." *CenTrak*, 2017 WL 3730617, at \*5 (quoting J.A. 128); J.A. 2745 at 29:2–23. CenTrak further argued that "the party assembling components into the claimed operable assembly is the direct infringer making the patented invention, even when most or all of those components are supplied by other parties." J.A. 129 (citing *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1311 (Fed. Cir. 2005)). In context, CenTrak's opposition brief was arguing that Sonitor performed the final setup to create a completed,

infringing system. Thus, we disagree with Sonitor’s contention that CenTrak’s configuration and location code arguments did not appear in CenTrak’s summary judgment briefs.<sup>7</sup>

We are also unpersuaded by Sonitor’s argument that CenTrak failed to present its infringement theories based on “making” during discovery. CenTrak’s First Amended Complaint accuses Sonitor of infringing by “making, using, marketing, testing, selling, installing, supporting or importing . . . the Sonitor Sense™ RTLS.” J.A. 56 ¶ 30. While mere allegations in an unverified complaint generally cannot defeat summary judgment, CenTrak’s expert also supported CenTrak’s position, opining that “SONITOR either provides or configures every component of the SONITOR Sense system” and that all ultrasonic location transmitters “are provided and configured by SONITOR.” J.A. 797. He further opined that “each of the components of the SONITOR Sense portion of the backbone is configured by SONITOR.” J.A. 798. We are troubled by CenTrak’s incomplete response to Sonitor’s interrogatory seeking CenTrak’s infringement contentions, which does not specify “the supplier, vendor, or other entity that provides such product, service, software, function, or [accused] instrumentality,” as Sonitor requested. J.A. 1742–43; *see* J.A. 2133–81. However, it does not appear that Sonitor moved to compel a more complete response or argued that the district court should disregard portions of CenTrak’s summary judgment opposition brief that went beyond the scope of its interrogatory response. Under these circumstances, we cannot say that CenTrak failed to preserve its infringement arguments for appeal.

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<sup>7</sup> Additionally, the district court was mistaken when it characterized CenTrak’s location code argument as “an entirely new theory of infringement.” *CenTrak*, 2017 WL 3730617, at \*5 n.3.

## 2. Infringement by Final Assembly

“Infringement is a question of fact.” *Medgraph, Inc. v. Medtronic, Inc.*, 843 F.3d 942, 949 (Fed. Cir. 2016). Direct infringement can be found when a defendant makes a product containing “each and every limitation set forth in a claim.” *Cross Med.*, 424 F.3d at 1310.

The district court found that CenTrak did not present sufficient evidence to raise a triable issue of fact as to whether Sonitor makes infringing systems. It is undisputed that Sonitor does not provide certain claimed elements in the accused systems, such as a backbone network, Wi-Fi access points, or server hardware. Moreover, the district court analyzed the evidence CenTrak offered and concluded that no reasonable jury could find that Sonitor “made” the claimed invention by performing installations. *See CenTrak*, 2017 WL 3730617, at \*4–6.

The district court and Sonitor relied on *Centillion Data Systems, LLC v. Qwest Communications International, Inc.*, 631 F.3d 1279 (Fed. Cir. 2011) for the proposition that to “make” a system, a single entity must assemble the entire system itself. *CenTrak*, 2017 WL 3730617, at \*6. In *Centillion*, we held that Qwest, which provided software to customers, did not “make” a patented phone billing system requiring a “back-end” system maintained by a service provider and a “front-end” system maintained by an end user. 631 F.3d at 1288. We explained that “to ‘make’ the system under § 271(a), Qwest would need to combine all of the claim elements” but that “[t]he customer, not Qwest, completes the system by providing the ‘personal computer data processing means’ and installing the client software.” *Id.* Sonitor argues that like Qwest, it does not directly infringe because it makes only part of a claimed system.

Sonitor and the district court misunderstand CenTrak’s argument. CenTrak’s infringement theory is comparing Sonitor not to the software maker Qwest, but to Qwest’s customers, who completed the claimed system by

installing Qwest's software onto their own hardware. Qwest's customers were not named defendants in *Centillion*,<sup>8</sup> and thus, according to CenTrak, *Centillion* does not rule out CenTrak's infringement theory. In this case, CenTrak argues that the final, missing elements are the configuration that allows the location transmitters to work with the network and the location codes that are entered into the Sonitor server. According to CenTrak, admissible evidence that Sonitor is the "final assembler" raises a triable issue of fact on infringement even though Sonitor does not "make" each of the claimed components of the accused systems.

CenTrak primarily relies on two cases in support of its argument that Sonitor infringes when it performs an act that completes an infringing assembly. In *Cross Medical*, we analyzed claims to surgical implants that would infringe when brought in contact with a patient's bone. We held that Medtronic, the manufacturer of the accused device, did not infringe because it "does not itself make an apparatus with the 'interface' portion in contact with bone." 424 F.3d at 1311. Instead, we explained, "if anyone makes the claimed apparatus, it is the surgeons" who installed the devices. *Id.*

Sonitor argues that, like Medtronic, it does not make the entire system alleged to infringe. But Sonitor's argument misses the mark again because CenTrak is arguing that Sonitor stands in the shoes of the surgeons, who acted as potentially infringing final assemblers in *Cross Medical*, and not in the position of the medical device maker.

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<sup>8</sup> We also held in *Centillion* that Qwest was not vicariously liable for its customers' conduct. 631 F.3d at 1288. CenTrak's "final assembly" theory focuses solely on Sonitor's actions, not those of its customers or others.

CentTrak also cites *Lifetime Industries, Inc. v. Trim-Lok, Inc.*, 869 F.3d 1372 (Fed. Cir. 2017), in which we analyzed claims to a two-part seal used on a recreational vehicle with a slide-out room. The defendant made only the seal, not the RV, but we held that an allegation that the defendant installed the seal on an RV was sufficient to state a claim for direct infringement:

Although Lifetime did not allege that Trim-Lok made the RV onto which it installed the seal, Lifetime did allege that Trim-Lok installed the seal onto the RV; that is, Lifetime alleged that Trim-Lok made an infringing seal-RV combination. Because Lifetime alleged that an agent of Trim-Lok installed the seal onto the RV, and that the resulting seal-RV combination infringed the '590 patent, it alleged that Trim-Lok directly infringed in a manner consistent with our precedents holding that assembling the components of an invention is an infringing act of making the invention.

*Id.* at 1378 (citation omitted).

Sonitor responds that *Lifetime* involved a motion to dismiss rather than summary judgment and that CentTrak has provided insufficient proof of infringement. But Sonitor does not challenge the core holding of *Lifetime* that as long as a defendant adds the final limitations to complete a claimed combination, the defendant infringes. Under *Lifetime* and *Cross Medical*, a final assembler can be liable for making an infringing combination—assuming the evidence supports such a finding—even if it does not make each individual component element.

### 3. CentTrak's Infringement Evidence

With the above framework in mind, we find that CentTrak's cited evidence raises a triable issue of fact regarding infringement.

On the question of whether Sonitor or its agents physically install components of the accused systems, a Sonitor employee testified that Sonitor employees “aren’t the main installers *typically*.” J.A. 2775 at 77:16–22 (emphasis added). But the witness noted that Sonitor’s vice president of technical and customer support “oversees the installation.” J.A. 2770 at 25:4–9, 18–24. Sonitor’s VP testified that “resellers or a subcontractor” perform the installation. Appellee Br. 43 (quoting J.A. 2130 at 27:22–23). The district court noted testimony that Sonitor has “integration agreement[s]” with third parties. *CenTrak*, 2017 WL 3730617, at \*5 (citing J.A. 2772–73 at 62:24–63:8). The district court found this evidence insufficient to create a material issue of fact, but we disagree. Part of CenTrak’s infringement theory is that Sonitor “integrat[es] the entire system into the customer’s network.” J.A. 128. An “integration agreement” could constitute circumstantial evidence that Sonitor hired a contractor to build at least part of an infringing system.

But even if a third party who does not work for Sonitor installed all claimed hardware, CenTrak argues that Sonitor would still infringe by configuring the Sonitor ultrasonic location transmitters to integrate with the customer’s network and by entering location codes into the Sonitor server software to associate location transmitters with locations in the facility. CenTrak notes that claim 1 contains a limitation requiring the base stations to be “configured to . . . transmit a corresponding ultrasonic location code . . . each ultrasonic location code representative of a location of the respective ultrasonic base station.” According to CenTrak, the accused system is not an operable assembly until it is configured.

CenTrak cites testimony from Sonitor’s VP that Sonitor employees “go on site and configure our system.” J.A. 2130 at 27:8–11. The VP further testified that before a system “goes live,” Sonitor employees will take drawings prepared by an “installation company . . . illustrating what

devices were put into which locations” and that Sonitor will then “take that data and create a system with it, that system is then put into the server on site.” Appellant Br. 27 (quoting J.A. 2745 at 29:5–23). He further testified that Sonitor personnel “are the ones who do the data entry for that system and then they go out and tune the system to ensure it functions normally.” *Id.* Based on this testimony, a reasonable jury could find that before an accused Sonitor system goes online, Sonitor personnel complete at least a portion of the final system configuration and software setup necessary to make the system work—in other words, that Sonitor makes a combination of hardware and software that is “configured” to infringe.

CenTrak argues that based on Sonitor’s failure to dispute CenTrak’s configuration and data entry evidence, the district court should have granted summary judgment of infringement in favor of CenTrak. This argument does not address the fact that the district court declined to analyze all of Sonitor’s non-infringement defenses in light of its ruling regarding “making.” *CenTrak*, 2017 WL 3730617, at \*4 n.2. Moreover, the record before us does not conclusively show who installs each claimed element or who, if anyone, completes an infringing combination. Thus, we decline CenTrak’s request for an order that the district court grant partial summary judgment of infringement. Moreover, we need not decide whether CenTrak’s request for summary judgment, which CenTrak made in its opposition brief to Sonitor’s motion for summary judgment and not in a separate filing, was procedurally proper. CenTrak’s motion to consider additional authority (ECF No. 72) is denied as moot.

Based on the record before us, the district court erred in ruling that there were no genuine issues of material fact and that Sonitor was entitled to summary judgment on the

issue of “making.”<sup>9</sup> We therefore reverse and remand for further proceedings.

## REVERSED AND REMANDED

### COSTS

Costs to Appellant.

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<sup>9</sup> CenTrak argues that on remand, it should be allowed to take additional discovery to address an argument it claims Sonitor made for the first time after summary judgment briefing was complete, namely, that Sonitor personnel do not install any accused hardware. We do not agree that this argument was untimely. The record shows that Sonitor served an interrogatory response during discovery stating: “Sonitor has not infringed any of the Asserted Claims because certain claimed limitations such as the ‘backbone network’ are not provided by Sonitor.” J.A. 1266. To the extent that CenTrak wanted additional detail into which specific elements Sonitor contended were provided by others, CenTrak has not explained why the district court’s discovery schedule was insufficient to seek such information. Accordingly, we ultimately leave the decision of whether to reopen discovery to the discretion of the district court, but we decline to order the district court to reopen discovery on remand.