

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ADT, LLC,
Petitioner,

v.

VIVINT, INC.,
Patent Owner.

IPR2022-00071
Patent 10,325,159 B1

Before JAMESON LEE, MICHAEL R. ZECHER, and
CHARLES J. BOUDREAU, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

JUDGMENT

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

I. INTRODUCTION

We instituted an *inter partes* review of claims 1, 2, 4, 8–10, and 12 (“challenged claims”) of U.S. Patent No. 10,325,159 B1 (Ex. 1001, “the ’159 patent”) owned by Vivint, Inc. (“Patent Owner”). Paper 7 (“Decision

to Institute” or “Inst. Dec.”). We have authority to conduct this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. We determine that ADT, LLC (“Petitioner”) has proven by a preponderance of the evidence that each of claims 1, 2, 4, 8–10, and 12 of the ’159 patent is unpatentable.

A. Background

Petitioner filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1, 2, 4, 8–10, and 12 of the ’159 patent. Patent Owner filed a Preliminary Response. Paper 6. The Decision to Institute was entered on April 18, 2022. Paper 7. Thereafter, Patent Owner filed a Response. Paper 15 (“PO Resp.”). Petitioner filed a Reply. Paper 17. Patent Owner filed a Sur-Reply. Paper 18.

An oral hearing was held on January 12, 2023. A copy of the hearing transcript has been entered into the record. Paper 22 (“Tr.”).

B. Real Parties in Interest

Petitioner identifies ADT, Inc. and Sercomm Corporation as real parties in interest. Pet. 1. Patent Owner identifies itself as the real party in interest but also notes that it is a wholly owned subsidiary of Vivint Smart Home, Inc. Paper 5, 2.

C. Related Matters

Each party identifies the following district court litigation involving the ’159 patent as a related matter: *Vivint, Inc. v. ADT LLC*, No. 2:21-cv-00115-JNP-DBP (D. Utah Feb. 25, 2021) (“the Utah Litigation”). Pet. 1; Paper 5, 2.

D. The '159 Patent (Ex. 1001)

The '159 patent pertains to a computer-implemented method for entity detection. Ex. 1001, 1:46–47. More specifically, it pertains to a computer-implemented method of detecting by use of a camera an entity passing through the perimeter of a predefined area. *Id.* at 1:47–49. Upon detecting an entity passing through the perimeter of a predefined area using a camera, a type of the entity may be classified from a captured image of the entity. *Id.* at 1:49–52. Then, a feature of the entity is detected from the captured image. *Id.* at 1:52–54. An identifier may be assigned to the entity based on the type and the detected feature of the entity. *Id.* at 1:54–55. The identifier distinguishes the entity from other entities of the same type. *Id.* at 1:56–57. Further, a detected entity may be recognized based on the detected feature and whether the entity was assigned an identifier on a previous visit by the entity to the predefined area. *Id.* at 1:63–67.

One type of detectable entity is a vehicle and the predefined area may be a parking lot. *Id.* at 2:16–17. Another type of detectable entity is a human, and the method can determine whether the human enters a predefined area. *Id.* at 2:17–21. A notification may be generated in response to such detections of an entity crossing the perimeter of the predefined area. *Id.* at 2:21–23.

The method makes use of an entity detection module that allows tracking of an entity in a predefined space. *Id.* at 5:40–41. The entity detection module may track a vehicle in a parking lot. *Id.* at 5:41–42. Also, the entity detection module may track a user exiting a vehicle and entering a predefined area, for example a place of business. *Id.* at 5:43–45. One example of entity detection module is entity detection module “145-a” as shown in Figure 2, reproduced below:

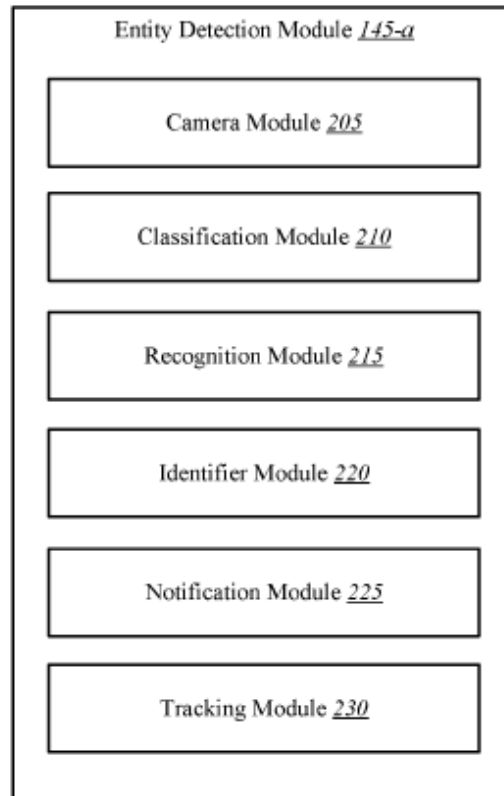


FIG. 2

Figure 2 illustrates a block diagram of a sample entity detection module. *Id.* at 3:4–5. Entity detection module 145-a includes camera module 205, classification module 210, recognition module 215, identification module 220, notification module 225, and tracking module 230. *Id.* at 5:54–57.

Camera module 205 uses a camera to detect an entity passing through a perimeter of a predefined area. *Id.* at 5:5–60. The predefined area may be a shop, a restaurant, a building, an area of the building, a home, an area of the home, a parking lot, an animal cage, or a wilderness area. *Id.* at 5:60–63.

Classification module 210 classifies a type of the entity from an image of the entity captured by the camera. *Id.* at 5:65–66. The entity types may include sub-types such as sub-types of vehicles. *Id.* at 6:2–3. Recognition module 215 detects one or more features of the entity from the image of the

entity, which features distinguish one entity from another. *Id.* at 6:7–10. Identifier module 220 assigns an identifier to the entity based on the type and the detected feature of the entity and the identifier is used to distinguish the entity from another entity of the same type. *Id.* at 6:11–14.

Notification module 225 generates a notification indicating detection of the entity. *Id.* at 6:33–35. For instance, a veterinarian may receive a first notification indicating that a person has entered the clinic, and may receive a second notification indicating that a second person has entered the clinic with an animal. *Id.* at 6:35–40. Tracking module 230 makes certain determinations such as how many entities of the same type as the detected entity are located in the predefined area and the length of stay of an entity in the predefined area. *Id.* at 6:41–51.

Claims 1, 9, and 12 are independent. Claims 1 and 9 are representative and reproduced below:¹

1. A method for entity detection by a processor, comprising:

[1a] detecting an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or an animal;

[1b] detecting a feature of the entity based at least in part on the camera data;

[1c] comparing the detected feature to one or more predefined features stored in a database;

[1d] matching the detected feature to one or more of the predefined features;

¹ The bracketed captions are used by Petitioner to reference the different elements required by independent claims 1 and 9. *See* Pet. 4–5, 22–23. We use the same captions here for ease of reference, understanding, and consistency.

- [1e] recognizing the entity based at least in part on an image of the entity captured by a camera and the detected feature;
- [1f] determining an identifier assigned to the entity based at least in part on matching the detected feature to one or more of the predefined features, wherein the identifier was assigned to the entity at a previous time; and
- [1g] generating a notification indicating the entity based at least in part on determining the identifier.

Ex. 1001, 11:42–61.

9. An apparatus for entity detection, comprising:
- a processor;
 - memory in communication with the processor; and
 - instructions stored in the memory and operable, when executed by the processor, to cause the apparatus to
 - [9a] detect an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or animal;
 - [9b] detect a feature of the entity based at least in part on the camera data;
 - [9c] compare the detected feature to one or more predefined features stored in a database;
 - [9d] match the detected feature to one or more of the predefined features;
 - [9e] recognize the entity based at least in part on an image of the entity captured by a camera and the detected feature;
 - [9f] determine an identifier assigned to the entity based at least in part on matching the detected feature to one or more of the predefined features, wherein the identifier was assigned to the entity at a previous time; and
 - [9g] generate a notification indicating the entity based at least in part on determining the identifier.

Ex. 1001, 12:35–58.

E. References and Other Evidence

Petitioner relies on the following patent document references:²

Name	Patent Document	Date	Exhibit Nos.
Monroe	US 2004/0117638 A1	Published June 17, 2004	1005
Jin	CN 102467800 A	Published May 23, 2012	1006, 1007 ³
Fadell	US 9,208,676 B2	Issued Dec. 8, 2015, based on U.S. Pat. Appl. 13/830,795, filed on March 14, 2013	1008

Petitioner also relies on the Declaration of James Parker. Ex. 1013.
In support of the Patent Owner Response, Patent Owner relies on the
Declaration of Richard A. Kramer, Ph.D. Ex. 2003.⁴

F. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable on the
following grounds:

² The '159 patent issued from U.S. Patent Application No. 16/101,654, filed on August 13, 2018, which is a continuation of U.S. Patent Application No. 15/589,730, filed on May 8, 2017, now U.S. Patent No. 10,061,990, which is a continuation of U.S. Patent Application No. 14/560,585, filed on December 4, 2014, now U.S. Patent No. 9,646,210. Ex. 1001, codes (21), (22), (63). The '159 patent also claims priority to U.S. Provisional Patent Application No. 61/912,947, filed December 6, 2013. *Id.* at code (60). Petitioner has not challenged the '159 patent's entitlement to the earlier filing date of any ancestral application. *See* Pet.

³ When citing to the contents of Jin, we refer to Exhibit 1007, which is a certified English translation of Jin.

⁴ In support of its Preliminary Response, Patent Owner had relied on a Declaration of James L. Oliver, Ph.D. Ex. 2001.

Claims Challenged	35 U.S.C. § ⁵	Reference(s)/Basis
1, 2, 4, 8–10, 12	102(a)(1)	Monroe
1, 2, 4, 8–10, 12	103	Monroe alone or Monroe and Fadell
1, 2, 4, 8–10, 12	103	Jin alone or Jin and Monroe

II. ANALYSIS

A. *The Burden of Proof on Challenged Patent Claims*

Petitioner must demonstrate by a preponderance of the evidence that the challenged claims are unpatentable. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d) (2021). The burden of persuasion does not shift to the patentee. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

B. *Level of Ordinary Skill in the Art*

Petitioner asserts that a person of ordinary skill in the art at the time of the alleged invention “would have had at least a bachelor’s degree in electrical engineering or computer engineering (or equivalent experience) and at least two years of experience in electronic monitoring.” Pet. 8 (citing Ex. 1013 ¶¶ 12–13).

In its Preliminary Response, Patent Owner asserted that a person of ordinary skill in the art at the time of the invention of the ’159 patent “would have had at least a bachelor’s degree in electrical engineering and at least two years of experience in media delivery systems, computer networking

⁵ The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. §§ 102 and 103. The ’159 patent has an effective filing date after the effective date of the applicable AIA amendments (March 16, 2013). Therefore, we refer to the AIA version of 35 U.S.C. §§ 102 and 103.

and computers or mobile devices *used in conjunction with camera or sensor-based remote electronic monitoring.*” Prelim. Resp. 8 (citing Ex. 2001 ¶¶ 18–20) (emphasis added).

In the Decision to Institute, we tentatively determined that Patent Owner’s articulation regarding the field of practical experience for one with ordinary skill in the art is more accurate and descriptive of the field of the ’159 patent and the subject matter claimed. Inst. Dec. 9. We explained that the ’159 patent is about camera-based remote monitoring, and noted that the challenged claims all require the use of a camera to detect a condition for generating a notification signal. *Id.* We further explained that Petitioner’s broad reference to “electronic monitoring” is over-inclusive as it may include as one with ordinary skill in the art a person who has had no experience integrating a camera-like sensor with a monitoring system. *Id.*

In the Decision to Institute, we adopted Patent Owner’s articulation of the level of ordinary skill in the art, sans the qualifier “at least” modifying the education and the qualifier “at least” modifying the number of years of experience. *Id.* We noted that inclusion of these two qualifiers renders the articulation vague by being open-ended and thus encompassing the level of education and experience of an expert, someone with more than ordinary skill in the art. *Id.* Thus, we preliminarily determined in the Decision to Institute that one with ordinary skill in the art at the pertinent time period would have had a bachelor’s degree in electrical engineering and two years of experience in media delivery systems, computer networking and computers or mobile devices used in conjunction with camera or sensor-based remote electronic monitoring. *Id.* at 10.

Post-institution, neither party objected to or disputed our adopted level of ordinary skill in the art set forth in the Decision on Institution. That level

is consistent with what is reflected by the content of the applied prior art references. *Cf. Okajima v. Bourdeau*, 261 F.3d 1350, 1354–55 (Fed. Cir. 2001) (acknowledging that the applied prior art may reflect an appropriate level of skill). Consequently, we adhere to the level of ordinary skill in the art as adopted in the Decision to Institute, i.e., one with ordinary skill in the art at the pertinent time period would have had a bachelor’s degree in electrical engineering and two years of experience in media delivery systems, computer networking and computers or mobile devices used in conjunction with camera or sensor-based remote electronic monitoring. We apply this level of ordinary skill in the art in our analysis below.

C. Qualification of James Parker as an Expert

“To offer expert testimony from the perspective of a skilled artisan in a patent case—like for claim construction, validity, or infringement—a witness must at least have ordinary skill in the art. Without that skill, the witness’ opinions are neither relevant nor reliable.” *Kyocera Senco Industrial Tools Inc. v. International Trade Commission*, 22 F.4th 1367, 1376–77 (Fed. Cir. 2022). Patent Owner argues that Petitioner’s declarant, Mr. Parker, lacks ordinary skill in the art. PO Resp. 8 n.3. On that basis, Patent Owner asserts: “Where the Petition cites Mr. Parker’s declaration (Ex. 1013) as support, the Board should regard those arguments as bare attorney argument devoid of evidentiary support.” *Id.* at 46–47.

Patent Owner explains:

Mr. Parker holds a “diploma” issued in 1982 from a two-year “electronic engineering technology” program operated by RCC Institute of Technology, located in Toronto, Ontario, Canada. (Ex. 1013, ¶ 4; Ex. 1014, 7.) Mr. Parker describes the diploma as “[r]oughly equivalent to a US bachelor’s degree,” (Ex. 1014, 7), but admitted at his deposition that that description is really just based on “hearsay from others that have told me

that,” (Ex. 2012, 38:13–20). In reality, RCC did not begin awarding bachelor’s degrees until 2004, when it “achieved consent” to do so. (Ex. 2011, 3; Ex. 2012, 36:5–14.) Ultimately, Mr. Parker himself agrees that he does not hold a bachelor’s degree in electrical engineering:

Q. So, you have a diploma from RCC Institute, but you don’t actually have a Bachelor’s degree in electrical engineering; is that correct?

A. That is correct.

PO Resp. 44 (citing Ex. 2012, 36:20–23).

Although we have stated the level of ordinary skill in the art as including a “bachelor’s degree in electrical engineering,” that is not a literal test. We know of no precedent from the U.S. Court of Appeals for the Federal Circuit, and Patent Owner has cited none, that requires the stated level of education for the level of ordinary skill in the art to be met literally without considering any equivalence. The inclusion of a statement of formal technical education in the articulated statement facilitates understanding for comparison purposes because, typically, (1) an expert would have a formal technical education, and (2) a formal degree is associated with an ascertainable or known curriculum. Accordingly, Petitioner may show that Mr. Parker possesses at least the level of skill corresponding to that of one who has a bachelor degree in electrical engineering.

Mr. Parker has a two-year diploma in “electronic engineering technology” from RCC Institute of Technology. Ex. 1013 ¶ 4; Ex. 1014, 7. There is a gap between that and a “bachelor’s degree in electrical engineering.” Petitioner points to Mr. Parker’s practical experience and inventions which, according to Petitioner, makes up for that gap. For reasons discussed below, notwithstanding contrary assertion of Patent Owner, we agree with Petitioner.

Petitioner explains:

As detailed in Mr. Parker’s Declaration and [curriculum vitae] (Exs. 1013 and 1014), Mr. Parker [has] over 38 years of experience in *electronic security systems and sensors, as well as electronic product research and development*. (Ex. 1013 at ¶ 1.) *For 19 years, he served as Vice President of Engineering for Digital Security Controls Ltd. (“DSC”), a leading global manufacturer of electronic security systems and components with sales exceeding \$400 million annually. At DSC, he was head of a 200+ member engineering department, and was involved in and responsible for the research, development, design, and manufacture of security systems, burglar alarm systems, intrusion detection systems, home automation systems, video verification systems, CCTV equipment, premise monitoring systems, and motion detectors.* (Id. at ¶ 2; Ex. 1014 at 001.) He is also a named inventor on numerous patents in the security field, and has consulted for security and home automation companies including 2GIG, Nest (Google), Alarm.com, MD Security Solutions and SecureNet Technologies. (Ex. 1014 at 001–005.)

Reply 18–19 (footnote omitted) (emphases added). The products and systems mentioned above are electrical equipment. Mr. Parker also is a named inventor on 25 U.S. Patents relating to electrical technology.

Ex. 1014, 2. Patent Owner applies a literal test and simply asserts that “Mr. Parker himself agrees that he does not hold a bachelor’s degree in electrical engineering.” PO Resp. 44. Patent Owner does not offer any reasoning why Mr. Parker’s 38-plus years of work experience, coupled with his two-year diploma in “electronic engineering technology,” are not at least equivalent to a “bachelor’s degree in electrical engineering.”

We find that Mr. Parker’s extensive work experience and numerous inventions, as identified by Petitioner, do make up the gap between a two-year diploma in “electronic engineering technology” and a “bachelor’s degree in electrical engineering.”

Our determined level of ordinary skill in the art also includes a statement of the minimal practical experience: “two years of experience in media delivery systems, computer networking and computers or mobile devices used in conjunction with camera or sensor-based remote electronic monitoring.” In this regard, we find, for example, that Mr. Parker’s work experience at EE-Systems Group Inc., listed in his curriculum vitae as “*August 2004 – 2014*,” satisfies this requirement. Ex. 1014, 5. Specifically, the corresponding description of that work experience reads, in relevant part: “Developed and licensed EE-SGI’s ‘ePIR’ software to several multinational companies including Zilog, now part of IXYS for *passive infrared motion detection* (marketed under the name ‘ZMOTION’). The ePIR / ZMOTION solution provides for *Intrusion as well as occupancy detection* Also developed full scalable suite of technology for solar powered, *motion controlled, LED illumination from patio to parking lot sizes*.” *Id.* (emphases added).

Patent Owner contends that Mr. Parker’s practical experience does not meet the required work experience for one with ordinary skill in the art. PO Resp. 46. Patent Owner asserts:

Asked whether he had any experience with video detection and analytics, Mr. Parker referred not to years of on-the-ground practical experience, but to a single litigation matter from 2017, for which he studied the subject. ([Ex. 2012,] 14:14–15:16, 16:4–18.) He was retained as an expert, but presumably not one in the use of cameras for video detection and analytics, because he testified to gaining that knowledge through reading about it as part of his expert witness engagement. (*Id.*)

Id. at 45. Patent Owner also asserts:

Mr. Parker likewise lacks any meaningful real-world experience in working with cameras used as sensors in remote electronic monitoring. He is a named inventor on 25 patents,

but only one deals with camera technology in any way. (Ex. 2012, 10:11–24, 13:20–14:12.) That one patent (attached as Ex. 2013) was filed in 1997 and involved using the camera not as a sensor but as a means of providing visual verification if an alarm event was detected, for the purpose of minimizing false alarms. (Ex. 2012, 10:25–13:12; *see also* Ex. 2013, 5:11–32.)

Id. at 44–45.

Patent Owner’s contentions are misplaced for several reasons. First, Patent Owner does not address Mr. Parker’s experience at EE-Systems Group, Inc. that we noted above. Ex. 1014, 5. Second, Patent Owner appears to consider only camera-based or video-based detection system experience as relevant. That is incorrect. The required experience for one with ordinary skill in the art is not limited to camera-based or video-based detection systems. Rather, by our determination discussed above, the systems in which one with ordinary skill in the art must have experience can simply be sensor-based: “two years of experience in media delivery systems, computer networking and computers or mobile devices used in conjunction with camera *or sensor-based* remote electronic monitoring” (emphasis added).

For the foregoing reasons, we find Mr. Parker does have at least ordinary skill in the art, and, therefore, Patent Owner’s assertion that Mr. Parker’s testimony should be accorded no weight on the basis that he lacks ordinary skill in the art is without merit. We will consider Mr. Parker’s testimony and, where necessary, accord it an appropriate weight in light of all circumstances including his qualifications, his reasoning, the underlying factual basis he provides, and the clarity of his explanations.

D. Claim Construction

1. General Principles

We use the same claim construction standard that would be used to construe a claim in a civil action under 35 U.S.C. § 282(b), including construing the claim in accordance with the ordinary and customary meaning of such claim as would have been understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b) (2021). The claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc) is applicable.

Claim terms are generally given their ordinary and customary meaning as would have been understood by one with ordinary skill in the art in the context of intrinsic record including the specification, the prosecution history, and other claims, and extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises. *Phillips*, 415 F.3d at 1312–17. Also, extrinsic evidence is less significant than the intrinsic record. *Id.* at 1317. Usually, the specification is dispositive, and it is the single best guide to the meaning of a disputed term. *Id.* at 1315. The following guidance from *Phillips* is instructive:

It is a “bedrock principle” of patent law that “the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Innova[/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.]*, 381 F.3d [1111,] 1115 [(Fed. Cir. 2004)]; *see also Vitronics [Corp. v. Conceptoronic, Inc.]*, 90 F.3d [1576,] 1582 [(Fed. Cir. 1996)] (“we look to the words of the claims themselves . . . to define the scope of the patented invention”); *Markman [v. Westview Instruments, Inc.]*, 52 F.3d [967,] 980 [(Fed. Cir. 1995)] (“The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims.”). That principle has been recognized since at least 1836, when Congress first required that the specification include a portion in which the inventor “shall

particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery.” Act of July 4, 1836, ch. 357, § 6, 5 Stat. 117, 119. In the following years, the Supreme Court made clear that the claims are “of primary importance, in the effort to ascertain precisely what it is that is patented.” *Merrill v. Yeomans*, 94 U.S. 568, 570, 24 L.Ed. 235 (1876). Because the patentee is required to “define precisely what his invention is,” the Court explained, it is “unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms.” *White v. Dunbar*, 119 U.S. 47, 52, 7 S.Ct. 72, 30 L.Ed. 303 (1886); *see also Cont’l Paper Bag Co. v. E. Paper Bag Co.*, 210 U.S. 405, 419, 28 S.Ct. 748, 52 L.Ed. 1122 (1908) (“the claims measure the invention”); *McCarty v. Lehigh Valley R.R. Co.*, 160 U.S. 110, 116, 16 S.Ct. 240, 40 L.Ed. 358 (1895) (“if we once begin to include elements not mentioned in the claim, in order to limit such claim . . . , we should never know where to stop”); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339, 81 S.Ct. 599, 5 L.Ed.2d 592 (1961) (“the claims made in the patent are the sole measure of the grant”).

Phillips, 415 F.3d at 1312.

In patent law, “the name of the game is the claim.” *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998). As the Federal Circuit further explained:

Though understanding the claim language may be aided by the explanations contained in the written description, it is important not to import into a claim limitations that are not a part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.

Superguide Corp. v. DirecTV Enters., 358 F.3d 870, 875 (Fed. Cir. 2004); *see also Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (“While we read claims in view of the specification, of which they are a part, we do not read limitations from the embodiments in the specification into the claims.”).

It is improper to add to a claim an “extraneous” limitation appearing in the specification, and “extraneous” means a limitation read into a claim from the specification wholly apart from any need to do so. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994) (citing *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 849 F.2d 1430, 1433 (Fed. Cir. 1988)); *see also Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950 (Fed. Cir. 1993).

The specification may reveal a special definition given to a claim term by the patentee, or the specification or prosecution history may reveal an intentional disclaimer or disavowal of claim scope by the inventor. *Phillips*, 415 F.3d at 1316. If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision. *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1249 (Fed. Cir. 1998). The disavowal, if any, can be effectuated by language in the specification or the prosecution history. *Poly-Am., L.P. v. API Indus., Inc.*, 839 F.3d 1131, 1136 (Fed. Cir. 2016).

It is inappropriate to construe claim terms as limited to preferred embodiments without a clear intent to redefine the term or a clear disavowal of claim scope. *See, e.g., Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). In order for prosecution disclaimer to attach, the disavowal must be both “clear and unmistakable.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1325 (Fed. Cir. 2013); *Lazare Kaplan Int'l, Inc. v. Photoscribe Techs., Inc.*, 628 F.3d 1359, 1370 (Fed. Cir. 2010); *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325–26 (Fed. Cir. 2003).

Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368 (Fed. Cir. 2019) (“The Board is required to

construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

2. “an identifier”

Petitioner asserts that two terms “may” require construction. Pet. 9. One of those terms is “an identifier,” as recited in each of independent claims 1 and 9. *Id.* Petitioner asserts: “[I]n the context of the ’159 patent, the ‘identifier’ is simply a label for a particular entity. It could be a name, a number, or some other string of characters, and must have been assigned to the entity at a previous time.” *Id.* at 9–10 (citation omitted). In the Decision to Institute, we stated:

Construction of the term is not necessary, because (1) it is not meaningful to replace the word “identifier” with the word “label” and Petitioner does not explain any difference between “identifier” and “label”; (2) there is no dispute regarding how Petitioner has applied the term “an identifier” to the teachings of the asserted prior art; and (3) other words in independent claims 1 and 9 already expressly require the identifier to have been assigned to the entity at a previous time.

Inst. Dec. 11. Post-institution, Patent Owner represents that it agrees with our preliminary determination that construction of “an identifier” is unnecessary. PO Resp. 23. When considering the arguments and evidence presented during trial, there still is no dispute between the parties regarding the meaning of “an identifier.” We, therefore, adhere to our reasoning quoted above and find it unnecessary to construe “an identifier.”

3. “*classifying a type of the entity*”

Another term Petitioner asserts “may” require construction is “classifying a type of the entity.” Pet. 10. The term only appears in claim 8. According to Petitioner, “[i]n its Infringement Contentions [in the Utah Litigation], Patent Owner contends that facial recognition satisfies the ‘classifying’ limitation of claim 8 since it necessarily determines that the entity is a human.” *Id.* at 10 (citing Ex. 1010, 22–23). Petitioner requests that we adopt that reading of the term. *Id.* at 11.

Patent Owner asserts “the fact that a thing (*e.g.*, facial recognition) might satisfy a claim limitation (*e.g.*, ‘classifying a type of entity’) does not mean the construction of that limitation is limited to that thing.” PO Resp. 22–23. We agree. Patent Owner, however, does not dispute that “facial recognition” satisfies the limitation “classifying a type of the entity.”

Patent Owner states that, “[t]he extent necessary to resolve the controversy here is that a POSITA [person of ordinary skill in the art] would have understood claim 8’s ‘classifying a type of entity’ as a species of claim 1’s genus ‘detecting an entity,’ as explained in more detail by Dr. Kramer in his declaration. (*See* Ex. 2003, ¶ 88; *see also id.* at ¶¶ 72–77, 86.).” *Id.* at 23. We see two deficiencies with Patent Owner’s stated position. First, Patent Owner engages in improper incorporation by reference from Dr. Kramer’s declaration. 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”). Second, Patent Owner effectively represents that, if something satisfies the “detecting an entity” limitation of claim 1, it satisfies the “classifying a type of the entity” of claim 8 without more. That means there is no separate dispute regarding claim 8’s limitation of “classifying a type of the entity.”

In summary, it is not necessary to construe “classifying a type of the entity,” because Patent Owner does not dispute Petitioner’s position that performing facial recognition satisfies “classifying a type of the entity.”

4. “*predefined area*”

The term “a predefined area” is recited in each of independent claims 1 and 9. Claim 1 recites: “detecting an entity entering a predefined area based at least in part on camera data.” Ex. 1001, 11:44–45. Claim 9 has a similar recitation. *Id.* at 12:41–43. Petitioner did not expressly construe “predefined area.” However, in applying the term to prior art, Petitioner asserts that a reference discloses that a camera views a scene of interest and that the camera’s field-of-view directed to the scene of interest is a predefined area. Pet. 14. Implicit in Petitioner’s assertion is that a camera’s entire field-of-view can satisfy “predefined area” so long as a user sets up the entire field-of-view of the camera to correspond to the user’s region of interest. Petitioner further clarifies in its Reply that the plain and ordinary meaning of “predefined” is “defined in advance,” citing two dictionaries and *IGT v. Bally Gaming Int’l Inc.*, 659 F.3d 1109, 1119 (Fed. Cir. 2011). Reply 3.

Notwithstanding Patent Owner’s arguments, discussed below, we agree with Petitioner’s construction. For numerous reasons, according to Patent Owner, “predefined area” cannot be met by a camera’s entire field-of-view. PO Resp. 8–22. This assertion is problematic, even without considering the merits, for two reasons.

First, Patent Owner proposes that “predefined area” means “a physical area defined by a user configurable region of a camera’s field of view having delineated boundaries, where the region within the boundary is a region of interest and any regions not within the boundary are regions of disinterest.”

PO Resp. 22. We do not see Patent Owner’s proposed construction as precluding a camera’s entire field-of-view from being set up by a user as a predefined area. We raised that question to counsel for Patent Owner at the oral hearing, and counsel confirmed that the entire field-of-view of a camera may indeed be configured by a user as the “predefined area.” Tr. 38:1–22. That answer is not consistent with and contradicts the arguments on pages 8–22 of the Patent Owner Response. We find that this position taken by counsel for Patent Owner at oral hearing effectively undermines the claim construction arguments on pages 8–22 of the Patent Owner Response. However, for completeness we still address those arguments below.

Second, counsel for Patent Owner argues for the first time, at oral hearing, that in Patent Owner’s proposed construction for “predefined area,” the configuring by a user must be in the form of a user’s “pre-interaction” with the camera screen such that the user needs to interact with the camera screen to select a boundary:

MR. FREEMAN: The Petitioner’s proposed construction is entire field of view without regard to any kind of pre-interaction with a screen by a user to configure that predefined area.

If the user wanted to ignore the capabilities of the technology, it is in the abstract possible that they could select the entire outer boundary.

But in order to be practicing the invention and to come within the scope of the claims, you need to interact with that screen to select that boundary.

Tr. 39:12–19. We find that this argument alleging the claim requires user interaction with the screen to configure a predefined area was not presented and developed in the Patent Owner Response, but rather is an improper new argument raised for the first time at the oral hearing. “During an oral

hearing, a party may rely upon appropriate demonstrative exhibits as well as evidence that has been previously submitted in the proceeding, but may only present arguments relied upon in the papers previously submitted.” Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019) (“Consolidated Practice Guide”)⁶ at 85; *see also Dell Inc. v. Acceleron, LLC*, 884 F.3d 1364, 1369 (Fed. Cir. 2018) (holding that the Board is obligated under its own regulations to dismiss untimely argument “raised for the first time during oral argument”).

Patent Owner’s new argument is not entitled to consideration and we decline to consider it. Alternatively, even if we do consider this belated argument, it is without merit because neither independent claim 1 and claim 9 nor Patent Owner’s proposed construction of “predefined area” say anything about user interaction with the camera screen to define, set up, or configure a predefined area.

Below, we discuss Patent Owner’s argument on pages 8–22 of the Patent Owner Response, alleging that the entire field-of-view of a camera cannot be a “predefined area.” Neither Petitioner nor Patent Owner asserts that the specification of the ’159 patent explicitly defines the term “predefined area.” Thus, we proceed with our discussion on that basis.

First, Patent Owner asserts that accepting Petitioner’s position that “predefined area” is met by the entire field-of-view of the camera would render the recitation “entering a predefined area” superfluous. PO Resp. 9. Patent Owner explains that every camera has a view and thus “[r]equiring detection upon ‘entering a predefined area’ thus adds nothing.” *Id.* According to Patent Owner, if Petitioner’s implied construction is adopted,

⁶ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

claims 1 and 9 could omit “entering a predefined area” and have the very same meaning. *Id.* We disagree.

Petitioner’s implied position is not that “predefined area” must be the entire field-of-view of a camera, but that “predefined area” can be satisfied by the entire field-of-view of the camera so long as a user sets up the entire field-of-view of the camera to correspond to the user’s region of interest. Pet. 14. With that meaning of “predefined area,” claims 1 and 9 do not cover taking images with the camera without the user matching the camera’s entire field-of-view to the user’s region of interest. Thus, the term “predefined area,” if applied to a camera’s entire field-of-view, would require the user to set up the camera such that the camera’s entire field-of-view would mark a perimeter that corresponds to the user’s region of interest, for example, by zooming in or panning out or by adjusting the direction or angle of view. A camera’s entire field-of-view does not automatically or necessarily correspond to the user’s region of interest. Consequently, Patent Owner’s argument, that construing “predefined area” to cover the entire field-of-view of the camera is superfluous, is unavailing.

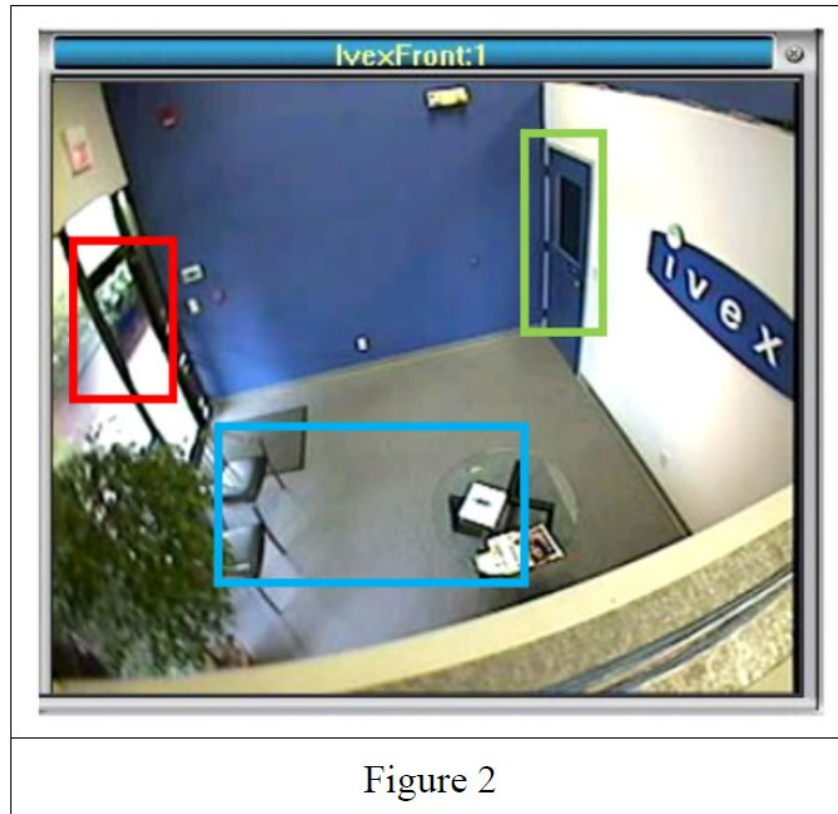
Second, Patent Owner asserts:

A POSITA knew in December 2013 that the term “predefined area” was a region of interest (also called an “ROI”), within a camera’s field of view, and not simply the camera’s entire field of view. A field of view is not “predefined” in any way—it is just the entirety of whatever the camera can see. A region of interest, on the other hand, is “predefined” in that a system user tells the system which parts of a camera’s field of view are of interest, and which parts the system should ignore.

PO Resp. 9–10. This argument reads as if Patent Owner is tacitly asserting that “predefined area” is an established term of art with a well-known and commonly accepted specific meaning in the field. At oral hearing, we

inquired counsel for Patent Owner in that regard. Tr. 35:13–36:16. Counsel for Patent Owner replied that that it is “a concept” and that Patent Owner is not alleging that “predefined area” is a recognized term of art. Tr. 36:17–20. We will proceed with our analysis on that basis, that Patent Owner has not alleged that “predefined area” is an established term of art with a well-known and commonly accepted specific meaning in the art.

Patent Owner refers to a computer-based system developed by Ivex Corporation (“Ivex System”) “around 2001 that allowed a user to set multiple predefined areas for motion detection.” PO Resp. 10. Patent Owner further describes the operation of the Ivex System by reference to a user manual for the system (Ex. 2008, “Ivex Manual”). *Id.* at 10–13. A figure from page 7 of the Ivex Manual, color annotated by Patent Owner and labeled by Patent Owner as “Figure 2,” appears on page 12 of the Patent Owner Response and is reproduced below:



PO Resp. 12. The figure illustrates a video display of the Ivex System.
Ex. 2008, 7.

Patent Owner describes that, according to the Ivex Manual, a user can set up three distinct regions of interest to monitor by camera, and to activate one or more of them for display on a viewing panel. PO Resp. 11. Patent Owner refers to descriptions in the Ivex Manual that a red rectangle can represent region of interest A, a green rectangle can represent a region of interest B, and a blue rectangle can represent a region of interest C. *Id.* Patent Owner explains that, according to the Ivex Manual, a user can draw the boundaries of these distinct regions of interest in a displayed scene by use of a mouse. *Id.* at 12–13. Patent Owner explains that, in the figure reproduced above, a red region of interest has been drawn to detect motion at the entry of a business, a green region of interest has been drawn to cover

the doorway to a business's secured area, and a blue region of interest has been drawn to detect motion activity in the business's waiting area, as evidenced by Patent Owner's illustrations. *Id.* at 12.

The Ivex Manual, however, is not the specification of the '159 patent. Nor are the Ivex System and the Ivex Manual mentioned in the specification of the '159 patent. Further, the Ivex Manual does not use the term "predefined area," and also does not indicate a user cannot draw a region of interest around the entire field of view of the camera. That is consistent with representation by counsel for Patent Owner, at oral hearing, that its proposed construction of "predefined area" does not preclude regarding the entire field-of-view of the camera as a predefined area. Tr. 38:1–22. Even assuming that the Ivex System and the Ivex Manual precludes marking the entire field-of-view of the camera as a region of interest, which they do not, that does not mean a different system within the scope of claims 1 and 9 must have the same exclusion.

Accordingly, Patent Owner has not shown the Ivex System and the Ivex Manual support a position that the term "predefined area" recited in each of claims 1 and 9 cannot be read as covering the entire field-of-view of a camera.

Third, Patent Owner asserts that "[t]he use of the term throughout the specification and the prosecution history, however, is consistent with meaning a bounded region of interest, and inconsistent with meaning the camera's entire field of view." PO Resp. 14. Patent Owner has not, however, pointed to anything in the specification or the prosecution history, that is inconsistent or incompatible with a camera's entire field of view serving as the region of interest and a predefined area. In that regard, Patent Owner asserts:

For example, the specification states that it describes “[a] computing device configured to obscure content on a screen” as well as “[a] computer-program product to obscure content on a screen.” (Ex. 1001, 2:24–31, 2:39–47.) Both make sense with a bounded region of interest that obscures content outside its boundaries. Neither makes sense if the predefined area is simply the camera’s entire field of view; such a system sees everything and nothing is obscured. (Ex. 2003, ¶ 94.)

PO Resp. 14 (alterations in original). But the cited text in the specification about the computer having capability to obscure content on a screen is expressed not in association with any definition of a “predefined area,” but as a general description of the computer. Ex. 1001, 2:24–31, 2:39–47. Even assuming that the obscuring feature is used when the predefined area occupies less area than the full screen, that does not mean the obscuring feature has to be invoked for every predefined area. Further assuming that the obscuring feature has to be invoked for every predefined area, that does not mean the image in the entire field-of-view of the camera cannot reside in the unobscured portion of the screen. Thus, the description identified by Patent Owner does not support a position that an entire field-of-view of a camera cannot be a predefined area.

Patent Owner asserts that, according to the specification of the ’159 patent, a “predefined area” must have a perimeter. PO Resp. 14. But the entire field-of-view of a camera does have a perimeter. Patent Owner explains that the perimeter of an entire field-of-view of a camera does not necessarily match the boundaries of a business, the boundaries of a parking lot, or a doorway, and thus regarding the entire field-of-view of a camera as a predefined area would lead to many problems, e.g., generating meaningful information or detection. *Id.* at 15–18. But a system that regards the entire field-of-view of a camera as a predefined area still is useful and has benefits

in cost as compared to a system that requires sophisticated software or other equipment to provide customized regions smaller than the entire field-of-view of a camera. The law does not require a claim term to read on only the most useful, most adaptable, or most advanced implementation. We note again that at oral hearing, counsel for Patent Owner informed the panel that the entire field-of-view of a camera may be configured by a user as the “predefined area.” Tr. 38:1–22.

Patent Owner asserts that the specification of the ’159 patent contemplates use of a second predefined area, separate from the first predefined area, useful in tracking two entity types, citing column 9, lines 19–21, column 2, lines 16–23, and Figure 7 of the ’159 patent. PO Resp. 18. Patent Owner further asserts that the claims of the parent application of the ’159 patent “expressly call for a single camera having both a first and a second predefined area.” *Id.* at 18–19. On that basis, Patent Owner asserts:

A claim that requires one camera having two separate predefined areas means that a predefined area cannot be one-and-the-same with that one camera’s field of view. This meaning from the ’990 patent carries through to the Challenged Claims of the ’159 patent because they are related by continuation and share a common specification, and claim language “is presumed to have the same meaning throughout all of the claims in the absence of any reason to believe otherwise.” *Digital-Vending Servs. Int’l, LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1274–75 (Fed. Cir. 2012) (applying consistent construction of “registration server” across all claims of three patents sharing common specification) (citing *Fin Control Sys. Pty, Ltd. V. OAM, Inc.*, 265 F.3d 1311, 1318 (Fed. Cir. 2001) (“the presumption [is] that the same terms appearing in different portions of the claims should be given the same meaning unless it is clear from the specification and prosecution history that the terms have different meanings at different portions of the claims”)).

Id. at 19 (footnote omitted) (alteration in original).

Patent Owner's arguments are misplaced and unavailing. The challenged claims in this proceeding do not recite multiple predefined areas. That alone is reason to treat the claims here and the claims in the parent application differently. Assuming the claims in the parent application exclude a predefined area that is the entire field-of-view of the camera by reason of their requiring multiple separate predefined areas, that is no reason to do the same with the challenged claims here, which do not require multiple separate predefined areas. The restriction in the parent application stems from the requirement of multiple predefined areas, not simply from the meaning of "predefined area." Although the specification of the '159 patent discusses an implementation with two predefined areas, "the name of the game is the claim." *In re Hiniker*, 150 F.3d at 1369. Further, the specification of the '159 patent nowhere forecloses an implementation with only a single predefined area.

Patent Owner has not demonstrated inconsistency from either the disclosures in the specification of the '159 patent or the representations made in the prosecution history of the '159 patent in regards to a predefined area being the entire field-of-vision of a camera. Patent Owner also has not demonstrated that the parent application's disclosing and claiming multiple predefined areas helps to preclude treating the entire field-of-view of the camera as a predefined area for purposes of the challenged claims in this proceeding.

Lastly, Patent Owner asserts:

The term "field of view" never appears in the '159 patent, and a POSITA at the time would not have been inclined to understand it that way, given the avoidable expense associated with tying one's entity detection system to the fixed and static field of view of a camera. In fact, to change the camera's field of view

required someone to visit every camera, including climbing telephone poles or using a bucket truck to service cameras located in parking lots, (*e.g.*, to mechanically or optically change the camera view) for fixed cameras that monitored scenes such as those described in the '159 patent. Such service calls were called “truck rolls,” and they were very expensive. They were, indeed, one of the very motivations behind the development of region of interest technology, which allowed cameras to remain static while users remotely defined areas of interest within a camera’s field of view, and distinguished them from areas to be obscured. (Ex. 2003, ¶¶ 92–93.)

PO Resp. 21–22.

For several reasons, the above-quoted arguments are unavailing for Patent Owner. Patent Owner does not explain why camera repositioning and zooming in or panning out of the field-of-view may not be accomplished by remote control, the same as Patent Owner asserts reconfiguring the predefined area can be done remotely on a computer screen. Also, the challenged claims require only one camera. Further, although economic factors may be considered in an obviousness analysis, Patent Owner cites no authority that claim terms should be construed to cover only embodiments which are the least expensive to operate. We disagree that it should.

For the foregoing reasons, we agree with Petitioner’s construction of “predefined area,” which permits the entire field-of-view of a camera to be a “predefined area.” During the oral hearing, Patent Owner’s counsel acknowledged that its proposed construction also permits the entire field-of-view of a camera to be a “predefined area.” Tr. 38:1–22. That is all the claim construction we need to do. No further discussion is necessary.

Also, with or without the dictionary definitions provided by Petitioner, and with or without the definition of “predefined” as articulated by the Federal Circuit in *IGT v. Bally Gaming Int’l Inc.*, 659 F.3d at 1119,

we agree with Petitioner that the plain and ordinary meaning of “predefined” simply is “defined in advance.”

5. “*detecting an entity . . . wherein the entity includes a human or an animal*”

The phrase “detecting an entity . . . wherein the entity includes a human or an animal” appears in claim 1. Ex. 1001, 11:44–46. Essentially the same phrase appears in claims 9 and 12, except those claims recite “detect” rather than “detecting.” *Id.* at 12:41–43, 13:6–8.

Patent Owner asserts that the plain and ordinary meaning of this claim language specifically requires “that there must be the capability to detect whether an entity is of a type that is human, or whether an entity is of a type that is an animal.” PO Resp. 25. Nothing appears incorrect here and this is not in conflict with Petitioner’s understanding.

Patent Owner, however, converts that understanding to the opposite of the plain and ordinary meaning so as to require *both* a functional ability to detect the case in which the entity is a human *and* a functional ability to detect the case in which the entity is an animal. *See* PO Resp. 25. We disagree with that proposed understanding and conversion. Only one alternative, detecting a human or detecting an animal, is required by the plain language.

Specifically, Patent Owner asserts:

As used in the claim, and when given its ordinary meaning, the word “or” links two alternative entity types that, together, define the overall functionality of the single “detecting” function. Thus, the claim limitation calls for a “detecting” function that operates in two alternative modes: (1) a first mode for assessment of whether the entity is human; and (2) a second mode for assessment of whether the entity is an animal. A prior art reference that only teaches assessment (or presumption) of one

of these conditions thus cannot anticipate the claim, because it does not provide for a second alternative. (Ex. 2003, ¶ 113.)

PO Resp. 25. Patent Owner further asserts: “Here, the grammatical structure of the provision covers a single detecting function for performing an assessment of two (or more) alternatives, rather than two separate detecting functions—one that detects a human, and one that detects an animal.” *Id.*

In full consideration of its plain language and grammatical structure, the phrase does not recite or require two separate modes. Nor does it recite or require at least two detecting functions. Patent Owner’s conversion of the alternative term “or” to a conjunctive term “and” is evident. Yet Patent Owner does not assert that the inventor of the ’159 patent acted as his own lexicographer and redefined the meaning of “or” as would be commonly understood in the English language, and we do not find that there is a special meaning of “or” defined in the specification of the ’159 patent.

The phrase does cover having the two modes identified by Patent Owner, but does not require having two modes at the same time. Having either mode satisfies the phrase. Similarly, the scope of the phrase covers a detecting function that is capable of detecting a human and of detecting an animal, but does not require it. Detecting either a human or an animal satisfies the claim phrase.

Patent Owner asserts that “the title of the patent, ‘Entity Detection,’ informs the public that this is an invention that detects alternate entity types” and that “[o]therwise, the generic term ‘entity’ is superfluous, and the title would be ‘Human Detection’ or ‘Animal Detection’ (or the like).” PO Resp. 26–27. The argument is without merit and unpersuasive. The term “Entity Detection” in the title of the ’159 patent does not itself convey how

many different types of entities must be detected. The detection of a single type of entity fits the title. Also, the suggestion by Patent Owner that the title would otherwise be “Human Detection” or “Animal Detection” is not rational, because that would limit the detected type of entity to a particular type rather than being open to either type. We find that the title supports the broader position that detecting at least two types of entities is covered but not required.

Patent Owner argues that, “if the system were only capable of detecting a human entity, or only of detecting an animal entity, [certain] functionality described within the patent would not be possible.” PO Resp. 28. Patent Owner identifies two functionalities that it alleges support its argument. PO Resp. 28.

Patent Owner explains one such functionality as follows:

For example, if a person is detected entering a predefined area, and an animal is detected entering the same predefined area, an appropriate message is provided, such as a “person has entered the clinic with an animal in tow.” (Ex. 1001, 6:35–40.) In contrast, if only a person is detected, an alternate message can be sent, such as “a person has entered the clinic.” (*Id.* at 6:35–40.)

Id. But Patent Owner has not shown where such functionality is claimed.

Patent Owner explains another such functionality as follows:

In yet another example, detection of one entity type (a human) relative to a second alternative entity type (a vehicle) can be used to generate another type of notification, namely, movement of the detected human relative to the detected vehicle. (Ex. 1001, 9:12–26, Figure 7.)

Id. at 29. But Patent Owner has not shown where such functionality is claimed. These arguments are unavailing for Patent Owner because, as we explained above, “the name of the game is the claim.” *In re Hiniker*, 150 F.3d at 1369. Furthermore, the examples as well as the title of the ’159

patent do not constitute disavowal of a scope of invention that covers detecting only one type of entity. Any such disavowal must be both “clear and unmistakable.” *3M Innovative Props. Co.*, 725 F.3d at 1325; *Lazare Kaplan Int’l, Inc.*, 628 F.3d at 1370; *Omega Eng’g, Inc.*, 334 F.3d at 1325–26. That is not the case here. Patent Owner has not identified anything in the specification or the prosecution history that clearly indicates coverage of the ’159 patent excludes detecting only a single type of entity.

For the foregoing reasons, we determine that the phrase “detecting an entity . . . wherein the entity includes a human or an animal” as recited in claim 1, and similar recited in claims 9 and 12, does not require a capability to detect at least two types of entities but may be met by detecting either a human or an animal.

*E. Alleged Anticipation of Claims
1, 2, 4, 8–10, and 12 by Monroe*
1. Principles of Anticipation

To establish anticipation, each and every element in a claim, arranged as recited in the claim, must be found in a single prior art reference. *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008). The anticipation inquiry takes into account the literal teachings of the prior art reference, as well as inferences the ordinarily skilled person would draw from it. *Eli Lilly & Co. v. L.A. Biomed. Res. Inst. at Harbor-UCLA Med. Ctr.*, 849 F.3d 1073, 1074–75 (Fed. Cir. 2017); *Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003); *In re Baxter Travenol Labs.*, 952 F.2d 388, 390 (Fed. Cir. 1991).

2. Overview of Monroe

Monroe’s disclosure integrates facial recognition capability into a multimedia security system “with IP [(Internet Protocol)] compatibility for

enhancing the collection, distribution and management of recognition data by utilizing the system's cameras, databases, monitor stations, and notification systems." Ex. 1005 ¶ 24. Monroe describes:

In its simplest configuration, a camera views a scene of interest, and a processor analyzes the video signals produced by the camera. The processor performs the steps of:

Facial separation, e.g., locating human faces within the viewed scene,

Facial signature generation, e.g., deriving a unique identifying descriptor for the detected faces,

Database Creation, adding said descriptors and separated facial image to a comparison database,

Database Lookup, matching the captured descriptors with previously-captured faces or images containing faces or other relevant data, and

Generating alarms as appropriate.

Id. ¶¶ 25–30.

Regarding the sending of alarms upon finding a match, Monroe describes that an alarm may be sent through a wired or wireless monitoring station and that the alarm notification may be by phone, cellular phone, pager, or email. *Id.* ¶¶ 76–78.

Monroe further explains:

In the subject invention, the basic facial recognition technology is incorporated into a networked surveillance system. In the preferred embodiment of the system, at least one camera, ideally an IP camera, is provided. This IP camera performs additional processing steps to the captured video; specifically the captured video is digitized, compressed into a convenient compressed file format, and sent to a network protocol stack for subsequent conveyance over a local or wide area network. Typical compression schemes include MPEG, JPEG, H.261 or H.263, wavelet, or a variety of proprietary compression schemes.

A typical network topology is the popular Ethernet standard, IEEE 802.3, and may operate at speeds from 10 Mb/s to 100 Mb/s. Network protocols are typically TCP/IP, UDP/IP, and may be Unicast or Multicast as dictated by the system requirements.

The compressed digital video is transported via Local Area Network (LAN) or Wide Area Network (WAN) to a processor which performs the steps of Facial Separation, Facial Signature Generation, and Facial Database Lookup.

Id. ¶¶ 32–33.

3. *Independent Claim 1*

a) *Preamble*

The preamble of claim 1 recites: “[a] method for entity detection by a processor, comprising.” Ex. 1001, 11:42–43. Petitioner contends Monroe discloses detecting and recognizing people using a processor. Pet. 14 (citing Ex. 1005 ¶¶ 25–30). Patent Owner does not present any contrary argument. We are persuaded that Monroe discloses a method for entity detection by a processor.

b) *Step [1a]*

Claim 1 recites: “detecting an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or an animal.” Ex. 1001, 11:44–46. Petitioner asserts: “Monroe discloses that a camera views a ‘scene of interest.’” Pet. 14 (citing Ex. 1005 ¶¶ 25, 157). Petitioner further asserts that Monroe’s camera detects motion when a person enters its “field-of-view,” at which time the camera generates images for facial analysis. *Id.* (citing Ex. 1005 ¶¶ 36, 44). Petitioner asserts that a camera’s field-of-view within the scene of interest is a “predefined area.” *Id.* Petitioner explains that, because the camera detects motion within its field-of-view, the camera detects an entity entering the predefined area, and

that the detection is based at least in part on camera data. *Id.* A pertinent portion of Monroe, cited by Petitioner, reads as follows:

An image server receives and stores still-frame images produced by the cameras for subsequent retrieval and analysis. These still-frame images are ordinarily produced only when the associated camera has detected motion within its field-of-view. The server may additionally be configured to store motion video streams upon detection of motion within its field-of-view.

Ex. 1005 ¶ 44.

Regarding the requirement of the entity being either a human or an animal, Petitioner asserts: “Monroe further discloses that in low resolution, it first detects a ‘head-like shape’ and then switches to high resolution for facial detection. (*Id.* at [0017].) Thus, the entity detected is a human.”

Pet. 15.

Petitioner’s assertions are rational and amply supported by the cited evidence. Specifically, Petitioner cites to Monroe’s Summary of the Invention (Ex. 1005 ¶ 25), which describes that Monroe’s camera is configured to view “a scene of interest.” Pet. 14. Petitioner also cites to paragraph 157 of Monroe, which describes various cameras “view scenes of interest.” *Id.* We find that from such disclosures one with ordinary skill in the art reasonably would have inferred that the user configures a camera so that the field of view of the camera matches a field of interest of the user. Consequently, Monroe discloses a “predefined area” for monitoring. The anticipation inquiry takes into account the literal teachings of the prior art reference, as well as inferences the ordinarily skilled person would draw from it. *Eli Lilly & Co.*, 849 F.3d at 1074–75.

Patent Owner asserts that Monroe does not disclose a “predefined area.” PO Resp. 36. But that argument is based on Patent Owner’s incorrect

claim construction assertions for the term “predefined area” discussed above. *See supra* Section II.D.4. Accordingly, the argument is unavailing. Patent Owner also asserts that Monroe does not disclose the rest of “detecting an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or an animal,” specifically the aspect of detecting an entity that “includes a human or an animal.” PO Resp. 30–33. But that argument also is based on Patent Owner’s incorrect claim construction discussed above regarding “detecting an entity . . . wherein the entity includes a human or an animal.” *See supra* Section II.D.5. Accordingly, the argument is unavailing.

Patent Owner also argues that Monroe does not detect a human entity, because Monroe presumes the entity present is human. PO Resp. 32. The argument is misplaced and unavailing. Although initial detection cannot confirm a human entity with certainty, Monroe provides means to confirm. Specifically, Monroe states:

Detection—When the system is attached to a video surveillance system, the recognition software searches the field of view of a video camera for faces. If there is a face in the view, it is detected within a fraction of a second. A multi-scale algorithm is used to search for faces in low resolution. The system switches to a high-resolution search only after a head-like shape is detected.

Ex. 1005 ¶ 17. In any event, Monroe regards as a successful detection of a human when the low resolution approach yields a positive result, because it states: “[i]f there is a face in the view, it is detected within a fraction of a second.” *Id.* Perfect accuracy of detection is not required by the claim.

Patent Owner additionally argues that Petitioner’s assertions are merely attorney argument not supported by any evidence. PO Resp. 43.

That is incorrect. As shown and discussed above, Petitioner’s explanations cite to the disclosures of Monroe, which constitute supporting evidence.

We are persuaded that Monroe discloses claimed Step [1a]:
“detecting an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or an animal.”

c) Step [1b]

Claim 1 further recites: “detecting a feature of the entity based at least in part on the camera data.” Ex. 1001, 11:47–48. Petitioner explains:

In Monroe, “A facial processor detects faces within a selected camera’s captured video, and subsequently derives unique Facial Signatures from the detected faces.” (Ex. 1005 at [0044]. *See also* [0027].) A “Facial Signature” is a digital representation of a face distilled from facial features such as, for example, the distance between eyes, and the relative portions of the nose, chin, and mouth. (*See* Ex. 1013 at ¶ 15.) Thus, Monroe discloses detecting a feature of the entity (facial features) based at least in part on the camera data.

Pet. 15. Patent Owner does not present arguments to the contrary with respect to Step [1b]. Petitioner’s assertions are rational and supported by the cited evidence. We are persuaded that Monroe discloses claimed Step [1b]: “detecting a feature of the entity based at least in part on the camera data.”

d) Steps [1c], [1d], [1e]

Claim 1 further recites: “comparing the detected feature to one or more predefined features stored in a database” (Step [1c]), “matching the detected feature to one or more of the predefined features” (Step [1d]), and “recognizing the entity based at least in part on an image of the entity captured by a camera and the detected feature” (Step [1e]). Ex. 1001, 11:49–55.

Petitioner asserts that “Monroe describes creating a database of facial features of previously defined or previously detected persons, and then

comparing newly detected faces to those in the database.” Pet. 16 (citing Ex. 1005 ¶¶ 28, 29, 44). Monroe describes:

A facial database processor contains a stored database of the Facial Signatures and associated “mugshots” of some previously-defined persons. A facial processor detects faces within a selected camera’s captured video, and subsequently derives unique Facial Signatures from the detected faces. Facial Signatures thus detected are forwarded to the Facial Database for correlation with a previously stored ‘library’ of facial mugshots, associated Facial Signatures, and database images in which the current Facial Signature was previously detected.

Ex. 1005 ¶ 44. Figure 5 of Monroe, partially cited by Petitioner on page 16 of the Petition, is reproduced below:

IMAGE DATABASE		SIGNATURE DATABASE	
IMAGE ID#	DATE/TIME	FACIAL SIGNATURE#	NAME
	LOCATION		AGE
	CAMERA #		HEIGHT
	IMAGE FILE URL		ALIASES
	DETECTED FACIAL SIGNATURE #1		MUGSHOT URL
	DETECTED FACIAL SIGNATURE #2		BIO FILE URL
	DETECTED FACIAL SIGNATURE #3		IMAGE ID #1
	" "		IMAGE ID #2
	" "		IMAGE ID #3
	" "		" "
	DETECTED FACIAL SIGNATURE #LAST		IMAGE ID #LAST

FIG. 5

Figure 5 illustrates the structure of an Image Database and a Facial Signature Database used in Monroe. Ex. 1005 ¶ 59. Monroe describes:

In a typical structure for the Facial Signature Database, each unique Facial Signature file contains the Facial Signature data, the subject’s name if known, age, weight, aliases if any, URL of a [mugshot] or separated facial image, URL of a

biographical file if any, and image ID numbers of any Image Database records which contain the current Facial Signature.

Ex. 1005 ¶ 153 (*cited in* Pet. 16).

Petitioner further contends that Monroe describes several potential applications, one of which is “Suspect Identification and Alarm Techniques.” Pet. 17. Petitioner asserts that Monroe describes, for that application, detecting faces and comparing the detected faces to facial signatures in a database. *Id.* (citing Ex. 1005 ¶ 157). In that regard, Monroe describes:

Within a facility, the various IP cameras view scenes of interest, and one or more monitor Stations display video from a selected group of cameras. Facial Processors locate faces in video from selected cameras, and derive Facial Signatures from the detected faces. These Facial Signatures are transmitted to a Facial Database, which searches through its stored Facial Signature library for a match.

Ex. 1005 ¶ 157. Petitioner asserts that, in Monroe, when the comparison finds a match, the system recognizes the individual. Pet. 17 (citing Ex. 1005 ¶¶ 158–163). In that regard, Monroe describes:

When the Facial Database scores a ‘hit’, it forwards appropriate information to the networked Image Database server. This information includes:

The camera ID and image ID in which the match was found

The location within the image where the matching face is located

The stored Facial Signature which matched

The stored mugshot associated with the Facial Signature

Related information associated with the Facial Database record, such as the person’s name, age, employer, criminal history, etc.

Ex. 1005 ¶¶ 158–163.

For the foregoing reasons, Petitioner contends that Monroe discloses Steps [1c], [1d], and [1e]. Pet. 17. Patent Owner does not present arguments to the contrary, except to argue that Petitioner’s assertions are merely attorney argument not supported by any evidence. PO Resp. 43.

Petitioner’s assertions are rational and supported by the cited evidence. As shown and discussed above, contrary to Patent Owner’s arguments, Petitioner’s explanations cite to the disclosures of Monroe, which constitute supporting evidence.

We are persuaded that Monroe discloses Steps [1c], [1d], and [1e].

e) Step [1f]

Claim 1 further recites: “determining an identifier assigned to the entity based at least in part on matching the detected feature to one or more of the predefined features, wherein the identifier was assigned to the entity at a previous time.” Ex. 1001, 11:56–59. Petitioner explains:

As shown above, in Monroe’s database, “each unique Facial Signature file” includes information identifying the entity, including the subject’s name. (Ex. 1005 at [0153] and Fig. 5.) This information constitutes an “identifier assigned to the entity.” These persons were “previously defined,” (*Id.* at [0044]), and the identifiers were therefore assigned to the person before the detection/comparison steps. In the Suspect Identification and Alarm Techniques example, when a “previously-defined” person is detected by the system, the identifiers (name, etc.) are determined and forwarded to the network server. (*Id.* at [0158]–[0163].)

Pet. 18. The assertions are rational and supported by cited evidence. Patent Owner does not present arguments to the contrary. We are persuaded that Monroe discloses Step [1f].

f) Step [1g]

Claim 1 further recites: “generating a notification indicating the entity based at least in part on determining the identifier.” Ex. 1001, 11:60–61.

Petitioner explains:

As noted above, in the Subject Identification and Alarm Technique example, “[w]hen the Facial Database scores a ‘hit’, it forwards appropriate information to the networked Image Database server.” (Ex. 1005 at [0158].) That “appropriate information” includes an identifier (“the person’s name, age, employer, criminal history, etc.”). (*Id.* at [0163].) The database server then generates a notification that includes the identifier, and delivers that notification to Monitor stations and to “appropriate personnel” by email, pagers, and telephone.

Pet. 18–19 (alteration in original). Petitioner further quotes from Paragraphs 164–172 of Monroe, reproduced below:

Upon receipt of this data, the Image Database server may perform the following steps:

The server appends the descriptive information from the Facial Database to the current image that contained the hit.

The server forwards the ‘hit’ information to all Monitor Stations on the network. The Monitor Stations thereupon bring the current image, containing the Facial Match, to the forefront of the application screen.

Monitor Stations additionally display the matching face from the database, plus other descriptive information provided by the database.

The ‘hit’ event is added to the system log.

The server likewise alerts any mobile or wireless Monitor Stations of the presence of the ‘hit’ and [its] location.

The server forwards the matching face and related descriptive information from the Facial Database to the wireless Monitor Station for display.

The server alerts appropriate personnel from a predetermined list, using email, pagers, or an automated telephone message.

The server may additionally send a message to an associated facility security system, which thereupon locks entry doors as appropriate.

Ex. 1005 ¶¶ 164–172.

Based on the foregoing, Petitioner asserts:

Monroe therefore “generates a notification” (the forward to the monitor stations as well as the email, page, and telephone call) that “indicates the entity” (it includes the person’s name as well as images) and the notification is “based at least in part on determining the identifier” (the notification is sent when there is a “hit” to a predefined person in the database). (*See also* Ex. 1005 at [0071]–[0078].)

Pet. 19–20. The assertion is rational and supported by the cited evidence.

Patent Owner does not present arguments to the contrary. We are persuaded that Monroe discloses Step [1g].

g) Conclusion

Petitioner has proven by a preponderance of the evidence that claim 1 is anticipated by Monroe.

4. Dependent Claims 2, 4, and 8

Claim 2 depends from claim 1. Claim 2 further recites: “wherein the feature of the entity is a facial feature, an audio feature, or a device identifier of a mobile device associated with the entity.” Ex. 1001, 11:62–64.

Petitioner notes that, in Monroe, the feature of the entity that is detected is a facial feature. Pet. 20 (citing Ex. 1005 ¶¶ 25–27, 44). The assertion is supported by the cited evidence. Patent Owner does not present arguments to the contrary. Rather, Patent Owner argues that, because Petitioner does not cite to any testimony of Mr. Parker to support its assertions with respect

to claim 2, Petitioner’s assertions are merely attorney argument not supported by any evidence. PO Resp. 43. We disagree. Petitioner cites to the specific disclosures of Monroe, which do constitute supporting evidence. Further, Patent Owner’s expert, Dr. Kramer, has not provided any testimony that contradicts Petitioner’s reading of Monroe with respect to the added limitation of claim 2. We are persuaded that Monroe discloses the additional limitation recited in claim 2.

Claim 4 depends from claim 1 and further recites: “wherein the predefined area includes a shop, a restaurant, a home, an area of a home, an animal cage, or a wilderness area.” Ex. 1001, 12:5–7. Petitioner argues that “Monroe states that his system can be used at both business facilities and residences.” Pet. 20–21 (citing Ex. 1005 ¶¶ 13, 236, 258). In particular, the Petition cites to the following disclosure of Monroe:

The system permits the creation of watch lists or the like. This could include, for example known shoplifters, terrorists or criminals, as well as frequent customers, VIP’s, expected visitors or individuals generally classified as friends or foes. The system can be used at airports, casinos, public buildings, schools, subways, colleges, factories, *business facilities*, housing complexes, *residences* and the like.

Id. at 20 (quoting Ex. 1005 ¶ 13 (emphases added)). Petitioner asserts that “[t]he reference to ‘shoplifters’ shows that shops are a type of ‘business facility’ contemplated by Monroe, and that ‘residences’ are expressly disclosed.” *Id.* at 21. The assertions are supported by the cited disclosure of Monroe.

Patent Owner argues that Petitioner relies on Mr. Parker’s testimony but that Mr. Parker “does not cite to any evidence to support his opinions regarding how a [person of ordinary skill in the art] would have understood the Challenged Claims and the Asserted Prior Art at the time of the

invention of the '159 patent.” PO Resp. 39, 43. Patent Owner does not point out where Petitioner has relied on the testimony of Mr. Parker for claim 4. As explained above, Petitioner relies on the cited disclosures of Monroe, which do constitute evidentiary support. Further, Patent Owner’s expert, Dr. Kramer, has not provided any testimony that contradicts Petitioner’s reading of Monroe with respect to the added limitation of claim 4. Accordingly, we are persuaded that Monroe discloses the additional limitation recited in claim 4.

Claim 8 depends from claim 1 and further recites: “further comprising classifying a type of the entity based at least in part on the image of the entity captured by a camera, wherein recognizing the entity is based at least in part on the type of the entity.” Ex. 1001, 12:30–34. Petitioner explains:

Monroe discloses “locating **human** faces within the viewed scene.” (Ex. 1005 at [0026], emphasis added.) It does so by first detecting a “head-like shape” in low resolution, and then switching to high-resolution for facial detection. (*Id.* at [0017].) Thus, Monroe discloses first classifying the detected entity as a human (by detecting a “head-like shape”) and then performing the facial recognition steps. Monroe’s recognition of the entity “is based at least in part on the type of the entity” because the Facial Signature comparison is only performed when a human head is located.

Pet. 21. In the alternative, Petitioner further explains:

Monroe further discloses an additional classification step beyond identifying an entity as human. In various Monroe examples, people are sub-classified as different categories of humans, for differential tracking and treatment. For example, Monroe discloses identifying security guards within the system, so they can be located and tracked against their expected rounds (*Id.* at [0177]–[0178], [0189]). In the example of a hotel security system, Monroe discloses distinguishing hotel employees and

guests. When guests are detected on the wrong floor, an alarm may sound, but different rules may apply to employees. (*Id.* at [0190].) Similarly, in the example of an airport system, Monroe discloses separately identifying passengers and employees, so that passengers can be tracked against their itineraries. (*Id.* at [0190]–[0195].) Other examples include tracking a “Lost Child,” and tracking the location of firefighters. (*Id.* at [0196], [230]–[232].) And since hotel guests, airport passengers, and a Lost Child are distinguished within the database, the recognition of the “guest,” “passenger,” or “Lost Child” is based at least in part on the classification.

Pet. 21–22.

Petitioner’s contentions are rational and supported by the cited evidence. Patent Owner reiterates its argument that Petitioner relies on Mr. Parker’s testimony and that Mr. Parker “does not cite to any evidence to support his opinions regarding how a [person of ordinary skill in the art] would have understood the Challenged Claims and the Asserted Prior Art at the time of the invention of the ’159 patent.” PO Resp. 39, 43. Patent Owner does not point out where Petitioner has relied on the testimony of Mr. Parker for claim 8. As explained above, Petitioner relies on the cited disclosures of Monroe, which do constitute evidentiary support. Further, Patent Owner’s expert, Dr. Kramer, has not provided any testimony that contradicts Petitioner’s reading of Monroe with respect to the added limitation of claim 8. Accordingly, we are persuaded that Monroe discloses the additional limitation recited in claim 8.

For the foregoing reasons, Petitioner has proven by a preponderance of the evidence that claims 2, 4, and 8 are anticipated by Monroe.

5. *Independent Claim 9*

Petitioner explains: “Claim 9 is similar to claim 1, except that it is an apparatus claim, and recites a processor, memory, and instructions stored in

the memory that cause the apparatus to perform the steps of the claim. Elements [9a] through [9g] are substantively identical to elements [1a] through [1g].” Pet. 23. Petitioner further explains:

Monroe discloses a security system (an apparatus) with a processor, memory, and operative code stored in the memory. In the Summary of the Invention, Monroe states that a processor performs the system’s functions:

In its simplest configuration, a camera views a scene of interest, and a processor analyzes the video signals produced by the camera. The processor performs the steps of:

Facial Separation, e.g., locating human faces within the viewed scene,

Facial Signature generation, e.g., deriving a unique identifying descriptor for the detected faces,

Database Creation, adding said descriptors and separated facial image to a comparison database,

Database Lookup, matching the captured descriptors with previously-captured faces or images containing faces or other relevant data, and

Generating alarms as appropriate.

(Ex. 1005 at [0025]–[0030].) The processor can be connected via a local or wide area network, or can partly reside in the camera. (*Id.* at [0039], [0031]–[0033], [0143].) Monroe further discloses that the databases “are resident on the LAN or WAN,” and notes that “these functions are essentially software.” (*Id.* at [0142].)

Monroe does not explicitly recite “instructions stored in memory [i.e., software or firmware] and operable, when executed by the processor, to cause the apparatus to” perform the processor’s various functions. The instructions and memory, however, are inherent in Monroe’s disclosure. One of skill in the

art, reading Monroe, would understand that the system necessarily includes code for causing the processor to perform the recited functionality, and that the code would necessarily be stored in some form of memory, (Ex. 1013 at ¶ 23.) *See HTC Corp. v. Cellular Commn's Equip. LLC*, IPR2016-01501, 2018 WL 842897, at *7–*8 (P.T.A.B. Feb. 12, 2018). Claim 9, therefore, is inherently anticipated by Monroe under 35 U.S.C. § 102(a)(1).

Pet. 23–24 (footnote omitted) (alteration in original).

Petitioner's contentions are rational and supported by the cited evidence. Patent Owner relies on the same arguments it asserts for claim 1 to rebut Petitioner's explanation and supporting evidence for claim 9, which for the same reasons discussed above in the context of claim 1 are not persuasive. One point, however, requires additional discussion for the stored instruction in memory aspect of claim 9. It is Patent Owner's assertion that Mr. Parker "does not cite to any evidence to support his opinions regarding how a POSITA would have understood the Challenged Claims and the Asserted Prior Art at the time of the invention of the '159 patent." PO Resp. 39. For reasons discussed below, the argument is without merit and unavailing.

For claim 9, Petitioner relies on the testimony in paragraph 23 of Mr. Parker's declaration (Ex. 1013) to assert:

The instructions and memory, however, *are inherent* in Monroe's disclosure. One of skill in the art, reading Monroe, would understand that the system *necessarily includes code* for causing the processor to perform the recited functionality, and that the code would *necessarily be stored* in some form of memory. (Ex. 1013 at ¶ 23.)

Pet. 24 (emphases added). Paragraph 23 of Mr. Parker's declaration is reproduced below:

23. In my opinion, Monroe inherently discloses these limitations. One of skill in the art, reading Monroe, would understand that Monroe's system necessarily includes code with instructions that, when executed by the processor, cause the processor to perform the recited functionality, and that the code would necessarily be stored in some form of memory. Monroe describes a system that in any practical sense could only be implemented in software ("instruction stored in memory") running on some form of microprocessor or computer-based hardware ("operable, when executed by the processor"). At ¶¶ [0025]–[0030], Monroe discloses a processor performing various computational tasks, which would necessarily require instructions in code, which must be stored in memory. From this disclosure, a POSITA would understand that the above limitations are necessarily present in Monroe.

Ex. 1013 ¶ 23.

Regarding inherency, Mr. Parker's testimony in paragraph 23 of his declaration, as reproduced above, is not merely conclusory. Rather, it cites to portions of Monroe and provides succinct reasoning as to why stored instructions and memory would be inherent in Monroe's system. Further, Patent Owner's expert, Dr. Kramer, does not provide any testimony to the contrary.

Petitioner has proved by a preponderance of the evidence that claim 9 is anticipated by Monroe.

6. *Dependent Claim 10*

Claim 10 depends from claim 9 and further recites: "wherein the feature of the entity is a facial feature, an audio feature, or a device identifier of a mobile device associated with the entity." Ex. 1001, 12:59–61. Claim 10 is the same as claim 2, except that claim 10 depends from claim 9 rather than from claim 1. Neither Petitioner nor Patent Owner presents substantively different arguments for claims 2 and 10. Our analysis of claim 10 is the same as our discussion of claim 2 above. *See supra* Section II.E.4.

7. *Independent Claim 12*

Petitioner explains:

Claim 12 is identical to claim 9, except that the preamble recites a non-transitory computer readable medium storing code, rather than reciting an apparatus that comprises a processor, memory, and instructions stored in the memory. The steps [12a] through [12g] performed by the code are identical to the steps [9a] through [9g] in claim 9.

As discussed [above] with respect to claim 9, Monroe inherently discloses code stored in a non-transitory computer readable medium (i.e., memory), the code comprising instructions causing the processor to perform the functionality disclosed in Monroe. (*See* Ex. 1013 at ¶ 23.)

Pet. 25–26. Petitioner’s reasoning is rational and also supported by the cited evidence. Patent Owner relies on the same arguments it asserts for claim 9 to rebut Petitioner’s explanation and supporting evidence for claim 12. For the same reasons discussed above, in the context of claim 9, those arguments are also unavailing for claim 12.

Petitioner has proven by a preponderance of the evidence that claim 12 is anticipated by Monroe.

F. *Alleged Obviousness of Claims 1, 2, 4, 8–10, and 12 over Monroe Alone or over Monroe and Fadell*

1. *Principles of Obviousness*

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the claimed invention, as a whole, would have been obvious to a person having ordinary skill in the art to which the claimed invention pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the

claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.⁷

Graham v. John Deere Co., 383 U.S. 1, 17–18 (1966). There must be reasoning with rational underpinning to support combining teachings from multiple references. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

2. *Obviousness over Monroe Alone*

Petitioner’s arguments for obviousness over Monroe alone for claims 1, 2, 4, 8–10, and 12 are the same as its assertion that Monroe anticipates these same claims. Petitioner states: “As discussed above in [the ground based on anticipation by Monroe], Monroe discloses all the limitations of claims 1, 2, 4, 8, 9, 10, and 12. Thus, the claims can be cancelled on single-reference obviousness grounds as well as anticipation grounds.” Pet. 26. Petitioner cites *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019), for the position that a disclosure that anticipates under 35 U.S.C. § 102 also renders the claim obvious under 35 U.S.C. § 103. *Id.* Patent Owner presents no arguments to the contrary.

We agree that an anticipatory reference can be deemed, *pro forma*, to render the anticipated claims obvious. All the limitations are disclosed by the single reference and no modification is necessary. Accordingly, for the same reasons discussed above, Petitioner has proven by a preponderance of the evidence that claims 1, 2, 4, 8–10, and 12 would have been obvious over Monroe alone.

Alternatively, for claims 4, 9, and 12, Petitioner provides additional reasons as to why these claims would have been obvious over Monroe alone.

⁷ Patent Owner has not presented objective evidence of nonobviousness in this proceeding. See PO Resp.

Claim 4 depends from claim 1 and further recites: “wherein the predefined area includes a shop, a restaurant, a home, an area of a home, an animal cage, or a wilderness area.” Ex. 1001, 12:5–7. Petitioner relies on the ground of obviousness over Monroe only to cover a potential argument from Patent Owner that Monroe’s teachings for application of its system in a shop and in a home are different embodiments. Pet. 29. Petitioner asserts, even assuming that application of the system in a shop and application of the system in a home are different embodiments, it would have been obvious to apply details of Monroe’s Suspect Identification and Alarm Techniques either in a home or in a shop, in light of the fact that Monroe discloses “providing email or telephone notification to ‘appropriate personnel’ when a pre-defined person is identified.” *Id.* at 30 (citing Ex. 1005 ¶ 171).

Petitioner further asserts: “In implementing Monroe’s system in a home, it would have been obvious to one of skill [in the art] to include the email notification disclosed for the Suspect Identification embodiment. At the time of the invention, email was ubiquitous, and homeowners would expect notification by email.” *Id.* (citing Ex. 1013 ¶ 20).

Patent Owner has not argued that the application of Monroe’s Suspect Identification and Alarm Techniques in a shop and in a home are different embodiments. We also see nothing in Monroe that distinguishes a shop embodiment from a home embodiment insofar as the features of the Suspect Identification and Alarm Techniques are concerned. Also, claim 4 has a scope that covers either a shop embodiment or a home embodiment. Ex. 1001, 12:5–7. Either embodiment satisfies the claim.

We agree with Petitioner that it would have been obvious to one with ordinary skill in the art to apply Monroe’s technique either in a shop embodiment or a home embodiment, because Monroe describes that its

system “can be used at airports, casinos, public buildings, schools, subways, colleges, factories, *business facilities*, housing complexes, *residences* and the like.” Ex. 1005 ¶ 13 (emphases added).

Patent Owner asserts that Mr. Parker “does not cite to any evidence to support his opinions regarding how a POSITA would have understood the Challenged Claims and the Asserted Prior Art at the time of the invention of the ’159 patent.” PO Resp. 39. But it is not necessary for Petitioner to rely on the testimony of Mr. Parker, because Monroe itself already describes that its system “can be used at airports, casinos, public buildings, schools, subways, colleges, factories, *business facilities*, housing complexes, *residences* and the like.” Ex. 1005 ¶ 13 (emphases added).

Furthermore, we do not find the testimony in paragraph 20 of Mr. Parker’s declaration (Ex. 1013) to be merely conclusory. He reasoned that, because “[b]y the date of the invention, email was ubiquitous,” “a POSITA would have understood that home owners and shop owners would expect notifications by email, phone, or text.” Ex. 1013 ¶ 20.

With respect to claims 9 and 12, Petitioner asserts:

As discussed above in [the ground based on anticipation by Monroe], Petitioner contends that Monroe inherently discloses the “instructions stored in memory [i.e., software or firmware] and operable, when executed by the processor, to cause the apparatus to” limitation of claim 9, and the preamble limitation “A non-transitory computer readable medium storing code for entity detection, the code comprising instructions executable by a processor” of claim 12. Alternatively, at the least, claims [9 and 12] are invalid as obvious under 35 U.S.C. § 103.

First, one of skill in the art, at the time of the invention, in view of Monroe alone, would have known that instructions are necessary to operate a processor, and that those instructions would need to be stored in memory. It would have been obvious,

therefore, to add memory, in electronic communication with the processor, storing instructions (code) to operate the processor of the system of Monroe, to the extent it is not inherently disclosed. (Ex. 1013 at ¶ 25.) *See HTC*, 2018 WL 842879 at *7–*8; *Unified Patents Inc. v. Kojicast, LLC*, IPR2019-01118, 2019 WL 6719969, at *11 (P.T.A.B. Dec. 10, 2019).

Pet. 30–31 (second alteration in original). Petitioner’s contentions are rational and supported by the cited evidence.

Patent Owner relies on the same arguments it asserts for claim 1 to rebut Petitioner’s explanations and supporting evidence for claims 9 and 12, which for the same reasons discussed above in the context of claim 1 are not persuasive. One point, however, requires additional discussion for the stored instruction in memory aspect of claims 9 and 12. It is Patent Owner’s assertion that Mr. Parker “does not cite to any evidence to support his opinions regarding how a POSITA would have understood the Challenged Claims and the Asserted Prior Art at the time of the invention of the ’159 patent.” PO Resp. 39. For reasons discussed below, the argument is without merit and unavailing.

We do not find the testimony in paragraph 25 of Mr. Parker’s declaration (Ex. 1013) to be merely conclusory. In the first sentence of that paragraph, he referred to his earlier testimony: “First, as noted above, I believe one of skill would recognize that Monroe’s system necessarily has the recited memory and code.” Ex. 1013 ¶ 25. In earlier paragraph 23, he explained:

Monroe describes a system that in any practical sense could only be implemented in software (“instruction stored in memory”) running on some form of microprocessor or computer-based hardware (“operable, when executed by the processor”). At ¶¶ [00025]–[00030], Monroe discloses a processor performing

various computational tasks, which would necessarily require instructions in code, which must be stored in memory.

Id. ¶ 23. Patent Owner’s expert, Dr. Kramer, has not provided testimony to the contrary. The testimony in paragraph 23 of Mr. Parker’s declaration constitutes sufficient factual basis for Mr. Parker’s testimony in paragraph 25 of his declaration.

Petitioner has proven by a preponderance of the evidence that claims 1, 2, 4, 8–10, and 12 would have been obvious over Monroe alone.

3. *Alleged Obviousness of Claims 1, 2, 4–8, 10, and 12 over Monroe and Fadell*

Although Petitioner asserts that claims 1, 2, 4, 8–10, and 12 would have been obvious over Monroe in combination with Fadell, Petitioner provides specific reasoning, additional to that based on anticipation by Monroe, only with respect to claims 4, 9, and 12. Petitioner states: “In addition, depending on arguments raised by Patent Owner, claims 4, 9, and 12 can alternatively be cancelled as obvious over Monroe in combination with Fadell.” Pet. 27.

a) *Claims 1, 2, 8, 10*

Because we are persuaded that Monroe alone would have rendered obvious the subject matter of claims 1, 2, 8, and 10, we are equally persuaded that these claims would have been obvious over Monroe and Fadell with the source of all applicable teachings coming from Monroe. Petitioner has proven by a preponderance of the evidence that claims 1, 2, 8, and 10 would have been obvious over Monroe and Fadell.

b) *Claims 4, 9, and 12*

(1) *Overview of Fadell*

Fadell relates to various techniques for providing home security objectives. Ex. 1008, 1:35. For example, a method is provided for creating

and using a neighborhood security network to detect security-related conditions and to distribute notifications thereof. *Id.* at 1:66–2:2. The method includes monitoring at the server security-related information received from home devices to detect a security-related condition, and distributing, in response to that detection, a security notification to the home devices. *Id.* at 2:2–2:16.

One of the home devices is smart doorbell 106. *Id.* at 47:54–55, Fig. 8. Smart doorbell 106 is enhanced with network connectivity and a variety of multi-sensing capabilities. *Id.* at 47:61–63. Smart doorbell 106 includes head unit 804, which includes a video camera. *Id.* at 48:25–28, 48:65–49:3. Regarding smart doorbell 106 and facial recognition, Fadell describes:

According to embodiments, the central server or cloud-computing system 164 may obtain and store identifying information, such as facial recognition data, for the occupants of the smart-home environments 100. In this case, when “recognized” an individual who is an occupant of one of the smart-home environment 100 is approaching an external door, such as the front door, of another smart-home environment, the smart doorbell 106, via the processing capabilities of the central server or cloud-computing system 164, is able to recognize the approaching individual and announce his presence. For example, the approaching individual’s name and/or status as being a neighbor may be announced, a video of him approaching may be displayed, and/or his image (such as a photograph taken from his social networking account) may be displayed inside the smart-home environment 100.

Id. at 28:50–64. Regarding system components which perform the functionalities, Fadell describes:

The above methods may be implemented by computer-program products that direct a computer system to perform the actions of the above-described methods and components. Each such

computer-program product may comprise sets of instructions (codes) embodied on a computer-readable medium that directs the processor of a computer system to perform corresponding actions. The instructions may be configured to run in sequential order, or in parallel (such as using different processing threads), or in a combination thereto. After loading the computer-program products on a general purpose computer system 1526, it is transformed into the special-purpose computer system 1600.

Id. at 65:39–51.

(2) *Claim 4*

Claim 4 depends from claim 1 and further recites: “wherein the predefined area includes a shop, a restaurant, a home, an area of a home, an animal cage, or a wilderness area.” Ex. 1001, 12:5–7. Petitioner relies on the ground of obviousness over the combination of Monroe and Fadell only to cover a potential argument from Patent Owner that Monroe’s teachings for application of its system in a shop and in a home are different embodiments. Pet. 29. Petitioner asserts, even assuming that application of the system in a shop and application of the system in a home are different embodiments, in light of Fadell’s disclosure of facial recognition and alarm notification in the context of home surveillance, it would have been obvious to apply Monroe’s Suspect Identification and Alarm Techniques in the home environment. *Id.* at 30 (citing Ex. 1005 ¶ 171).

Patent Owner has not argued that application of Monroe’s Suspect Identification and Alarm Techniques in a shop and in a home are different embodiments. We also see nothing in Monroe that distinguishes a shop embodiment from a home embodiment insofar as the features of the Suspect Identification and Alarm Techniques are concerned. In any event, claim 4 has a scope that covers both a shop embodiment and a home embodiment. Ex. 1001, 12:5–7. Either embodiment satisfies the claim.

We agree with Petitioner that it would have been obvious to one with ordinary skill in the art to apply Monroe's technique in a home, because Monroe describes that its system "can be used at . . . residences" (Ex. 1005 ¶ 13), and also because Fadell describes using facial recognition and alarm notification in the context of home surveillance (Ex. 1008, 2:2–16).⁸ We agree with Petitioner that Fadell's disclosure would have suggested to one with ordinary skill in the art the home context as an application of surveillance and notification. Patent Owner presents no argument to the contrary. Petitioner has proven by a preponderance of the evidence that claim 4 would have been obvious over Monroe and Fadell.

(3) *Claims 9 and 12*

We determined above that Petitioner has shown that Monroe discloses all the features of claims 9 and 12. Here, as an alternative, Petitioner explains:

To the extent the "memory in the electronic communication with the process[or]; and instructions stored in the memory and operable, when executed by the processor," and "non-transitory computer readable medium storing code for entity detection, the code comprising instructions executable by a processor" limitations of claims 9 and 12 are not inherently disclosed in Monroe, or rendered obvious by Monroe alone, they would have been obvious to one of ordinary skill in the art in view of Monroe in combination of Fadell. Fadell and Monroe are both directed to security/home automation systems that include entity detection. To the extent one of skill in the art would have been unsure how to instruct and operate the processor of Monroe, he or she would have looked to Fadell, which explicitly discloses including memory with stored code. (Ex. 1013 at ¶¶ 26–30.)

⁸ Petitioner asserts that "Fadell discloses facial recognition and notification in the context of home surveillance." Pet. 30.

Pet. 31–32.

Petitioner’s assertions are rational and supported by the cited evidence. In addition, Petitioner’s motivation to combine teachings has rational underpinnings, more than that both Monroe and Fadell are in the same technical field. Specifically, Petitioner explains that Fadell informs one with ordinary skill in the art how to operate the processor of Monroe. *Id.*

Patent Owner relies on the same arguments as those it presents in the context of the alleged anticipation of claims 9 and 12 by Monroe, which for the same reasons discussed above are not persuasive. We also do not find Mr. Parker’s testimony regarding applying Fadell’s teaching of using stored instructions in memory to operate Monroe’s processor is merely conclusory. Citing specific portions of Fadell, Mr. Parker explains that “Fadell explicitly discloses that the facial recognition and announcement functionality are performed by a processor running code stored in memory.” Ex. 1013 ¶ 29. Mr. Parker further explains: “To the extent one of skill in the art would have been unsure how to instruct and operate the processor of Monroe, he or she would have looked to Fadell, which explicitly discloses including memory with stored code.” *Id.* ¶ 30. In that regard, Patent Owner’s expert, Dr. Kramer, has not provided contrary testimony.

Accordingly, Petitioner has proven by a preponderance of the evidence that claims 9 and 12 would have been obvious over Monroe and Fadell.

*G. Alleged Obviousness of Claims 1, 2, 4–8
10, and 12 over Jin Alone or over Jin and Monroe*

1. Overview of Jin

Jin discloses an intrusion detection and alarm system that performs detection “on images from an area under surveillance” and sends an alarm “when there are intruding objects.” Ex. 1007 ¶ 1. Specifically, Jin describes:

In order to achieve the objective of the present invention, the present invention provides an intrusion detection and alarm system comprising the following: an image acquisition module acquiring images from an area under surveillance; a central processing module comparing changes between every two images and capturing real-time images when said changes exceed a predetermined threshold; and an alarm module sending said real-time images to a predetermined user.

Further, said system further comprises a data storage module and a facial recognition module. Said data storage module stores the facial features of predefined users in a database, and said central processing module captures real-time images and performs face detection on said real-time images. When a face is detected in said real-time images, said facial recognition module performs facial recognition using the database of the facial features of predefined users.

Further, if the facial recognition performed by said facial recognition module is successful, said alarm device send said real-time image to a predetermined user. If the facial recognition performed by said facial recognition module is not successful, then said alarm device sends said real-time image to a predetermined user and calls a predetermined telephone number.

Further, said image acquisition module is a light sensor or a camera device.

Id. ¶¶ 10–13. More specifically, Jin describes that central processing module 106 “compares changes between every two images and captures real-time images when said changes exceed a predetermined threshold,” and

“sends the captured real-time images to facial recognition module 108 to perform facial recognition.” *Id.* ¶ 28. Jin further describes:

Said facial recognition module 108 performs face detection and recognition on said real-time images using the database of the facial features of predefined users. It sends different signals to said central processing module 106 based on whether it does not detect a face, does detect a face or identifies a face, and said central processing module 106 sends a “Yes” or “No” alarm instruction to said alarm module 110 based on said different signals.

Said alarm module 110 comprises an instruction receiving unit, an SMS [(Short Message Service)] unit and a telephone unit. Upon receiving an instruction from the central processing module said alarm module 110 starts the SMS unit or simultaneously starts the SMS unit and the telephone unit. In one embodiment, said alarm module 110 starts the SMS unit if it receives a “Yes” from central processing module 106, or it simultaneously starts the SMS unit and the telephone unit if it receives a “No” from central processing module 106.

Id. ¶¶ 29–30.

2. *Independent Claim 1*

a) *Preamble*

The preamble of claim 1 recites: “[a] method for entity detection by a processor, comprising.” Ex. 1001, 11:42–43. Jin discloses an intrusion detection and alarm system which performs detection “on images from an area under surveillance” and sends an alarm “when there are intruding objects.” Ex. 1007 ¶ 1. Although Petitioner does not point to any express mention of the use of a processor in Jin, Mr. Parker testifies: “One of skill in the art would have understood that the central processing module 106, facial recognition module 108, and alarm module 110 would necessarily be performed by one or more processors running software, and that the software would be stored in memory (either memory module 102 or other

memory).” Ex. 1013 ¶ 39. Patent Owner does not present any contrary argument. We are persuaded that Jin discloses a method for entity detection by a processor.

b) Step [1a]

Claim 1 recites: “detecting an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or an animal.” Ex. 1001, 11:44–46. Petitioner asserts:

Jin includes an image acquisition module 104, which “may be a light sensor or a camera device.” (Ex. 1007 at [0027].) The image acquisition module detects when an “intruding object” (an entity) enters the area under surveillance by continuously monitoring changes between successive images:

In one embodiment, said image acquisition module 104 constantly acquires images during surveillance, and said central processing module 106 comparing changes between every two images refers to subtracting the accumulated pixel brightness values in corresponding rows in the two images from each other to find absolute values. If any of said absolute values are greater than a preset threshold T1, this indicates that the rows corresponding to said discrepancies have changed, and means that an intruding object is present.

(*Id.* at [0028]. *See also* [0010].) Since Jin performs facial recognition, the “intruding object” can be a human. (*See id.* at [0011].)

Pet. 33–34.

Petitioner’s assertions are firmly supported by the cited evidence. Patent Owner asserts that Jin does not disclose a “predefined area.” PO Resp. 36–37. But that argument is based on Patent Owner’s incorrect claim construction assertions for the term “predefined area” discussed above. *See supra* Section II.D.4. Accordingly, the argument is unavailing.

As in the case of Monroe, Petitioner regards Jin’s area under surveillance in the field of view as the predefined area. Patent Owner misses Petitioner’s point, a valid one, that the camera’s field of view, when the camera is put in place to monitor an “area under surveillance,” constitutes a predefined area. If someone enters the camera’s field of view, he or she has entered the predefined area. We see nothing wrong with that approach.

Jin does not describe that its camera is randomly placed without an objective. Rather, Jin describes:

The objective of the present invention is to provide an intrusion detection and alarm system that performs identification and detection when there is an intrusion and uses a central processing module to control security after the user leaves.

In order to achieve the objective of the present invention, the present invention provides an intrusion detection and alarm system comprising the following: an image acquisition module acquiring images from *an area under surveillance*; a central proceeding module comparing changes between every two images and capturing real-time images when said changes exceed a predetermined threshold; and an alarm module sending said real-time images to a predetermined user.

Ex. 1007 ¶¶ 9–10 (emphasis added).

Patent Owner also asserts that Jin does not disclose the rest of “detecting an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or an animal,” specifically the aspect of detecting an entity that “includes a human or an animal.” PO Resp. 33–34. But that argument also is based on Patent Owner’s incorrect claim construction discussed above regarding “detecting an entity . . . wherein the entity includes a human or an animal.” *See supra* Section II.D.5. Accordingly, the argument is unavailing.

Patent Owner also argues that Jin does not detect a human entity, but merely presumes the presence of a human based on pixel brightness values between successive images. PO Resp. 34. The argument is misplaced and unavailing. Although initial general motion triggers processing, Jin describes subsequent processing as follows: “said facial recognition module performs facial recognition using the database of the facial features of predefined users.” Ex. 1007 ¶ 11. Thus, a successful facial detection by Jin’s facial recognition module completes detecting a human entity.

Patent Owner additionally argues that Petitioner’s assertions are merely attorney argument not supported by any evidence. PO Resp. 43. That is incorrect. As shown and discussed above, Petitioner’s explanations cite to the disclosures of Monroe, which constitute supporting evidence.

We are persuaded that Jin discloses Step [1a]: “detecting an entity entering a predefined area based at least in part on camera data, wherein the entity includes a human or an animal.”

c) Step [1b]

Claim 1 further recites: “detecting a feature of the entity based at least in part on the camera data.” Ex. 1001, 11:47–48. Petitioner explains:

When Jin detects an “intruding object” (an “entity”), its central processing module “sends the captured real-time images to facial recognition module 108.” (Ex. 1007 at [0028].) The facial recognition module then “performs face detection and recognition on said real-time images using the database of the facial features of predefined users. It sends different signals to said central processing module 106 based on whether it does not detect a face, does detect a face or identifies a face” (*Id.* at [0029].) Thus, Jin discloses detecting a feature of the entity (the face) based at least in part on the camera data sent from the image acquisition module to the central processing module.

Pet. 34. Petitioner’s assertions are rational and supported by the cited evidence. Patent Owner does not present arguments to the contrary in this regard. We are persuaded that Jin discloses Step [1b].

d) Steps [1c], [1d], [1e]

Claim 1 further recites: “comparing the detected feature to one or more predefined features stored in a database” (Step [1c]), “matching the detected feature to one or more of the predefined features,” (Step [1d]), and “recognizing the entity based at least in part on an image of the entity captured by a camera and the detected feature” (Step [1e]). Ex. 1001, 11:49–55.

Petitioner explains:

Jin’s facial recognition module 108 performs these steps. Jin’s system has a database that includes facial features of multiple predefined users. When a face is detected by the camera, the facial recognition module compares the detected facial features to the facial features of the predefined users in the database:

Further, said system further comprises a data storage module and a facial recognition module. Said data storage module stores the facial features of predefined users in a database, and said central processing module captures real-time images and performs facial detection on said real-time images. When a face is detected in said real-time images, said facial recognition module performs facial recognition using the database of the facial features of predefined users.

(Ex. 1007 at [0011]. *See also* [0025], [0026], and [0029].) Thus, the comparing, matching, and recognizing steps are all performed by Jin.

Pet. 35.

Petitioner's assertions are rational and supported by the cited evidence. Patent Owner argues that Petitioner's assertions are merely attorney argument not supported by any evidence. PO Resp. 43. That is incorrect. As shown and discussed above, Petitioner's explanations cite to the disclosures of Jin, which constitute supporting evidence. We are persuaded that Jin discloses Steps [1c], [1d], and [1e].

e) Step [1f]

Claim 1 further recites: “determining an identifier assigned to the entity based at least in part on matching the detected feature to one or more of the predefined features, wherein the identifier was assigned to the entity at a previous time.” Ex. 1001, 11:56–59. Petitioner acknowledges that Jin does not expressly disclose determining an identifier that was assigned to the entity at a previous time, but asserts that such a determination would have been obvious to one with ordinary skill in the art either in view of Jin alone or in view of the combination of Jin and Monroe. Pet. 35.

Jin describes:

Said data storage module 102 stores the facial features of predefined users in a database, the telephone numbers of predefined users, and real-time images captured by said image acquisition module 104. It can be in software form as a database, linked list or stack, or it can be in hardware form as a hard disk, hard disk array or flash storage device.

Pet. 36 (quoting Ex. 1007 ¶ 26). Petitioner explains:

Since the database includes multiple records, a person of skill in the art would assume that Jin is employing a standard relational database. (Ex. 1013 at ¶ 32–34.) In a relational database, the files for each predefined user would be linked together to form a record, and each record would include a primary key that uniquely identifies the record (the predefined user). This primary key could be, e.g., a name, an employee number, or simply a sequential number. This primary key would be an “identifier

assigned to the entity at a previous time.” (Ex. 1013 at ¶ 33.) It therefore would have been obvious to a person of skill to implement Jin by employing a standard relational database. (Ex. 1013 at ¶ 34.)

Id. Petitioner’s contentions are rational and supported by the cited evidence. Patent Owner does not present arguments to the contrary in this regard. We are persuaded that Jin alone would have reasonably suggested to one with ordinary skill in the art Step [1f]: “determining an identifier assigned to the entity based at least in part on matching the detected feature to one or more of the predefined features, wherein the identifier was assigned to the entity at a previous time.”

Petitioner further alternatively explains:

If not obvious in view of Jin alone, it would certainly have been obvious over Jin in view of Monroe. Both Jin and Monroe deal with using facial recognition as part of a security system, and are therefore in the same field. Jin discloses storing the facial features of predefined users in a database, (*id.* at [0026]), but does not disclose a specific structure for the database. Monroe also discloses a database for storing facial signatures of “previously-defined persons,” and includes specific structure for the database. (*See* [the ground based on anticipation by Monroe] above, citing Ex. 1005 at [0044], [0028]–[0029], and Fig. 5). It would have been obvious to one of skill in the art, seeking to implement Jin, to have included the structure of Monroe’s database, or at the very least, to include the “Name” identifier disclosed in Monroe, to facilitate creation of the database and uploading the images of “predefined users.” (Ex. 1013 at ¶ 35.)

Id. at 36–37. In its analysis of the ground based on anticipation by Monroe, Petitioner asserted: “As shown above, in Monroe’s database, ‘each unique Facial Signature file’ includes information identifying the entity, including the subject’s name. (Ex. 1005 at [0153] and Fig. 5.) This information constitutes an ‘identifier assigned to the entity.’” Pet. 18.

Petitioner's contentions are rational and are supported by the cited evidence. Patent Owner does not present arguments to the contrary in this regard. We are persuaded that Jin and Monroe as combined by Petitioner reasonably would have suggested Step [1f] to one with ordinary skill in the art.

f) Step [1g]

Claim 1 further recites: “generating a notification indicating the entity based at least in part on determining the identifier.” Ex. 1001, 11:60–61.

Petitioner cites to the following disclosure of Jin:

The facial features in the real-time images are assessed to determine whether they are the facial features of a predefined user. If they are, then the operation proceeds to step 304, where the SMS unit is started up and a predefined user is notified using the telephone number of said predefined user.

Pet. 27 (quoting Ex. 1007 ¶ 38). Petitioner explains: “The notification includes a ‘real-time image’ of the detected entity captured by the camera. (*Id.* at [0011] and [0012].) Thus, Jin’s system ‘generates a notification’ upon recognizing a face, and that notification ‘indicates the entity’ because it includes a real-time image of the entity.” Pet. 37.

Petitioner further explains:

As discussed above under limitation [1f], it would have been obvious to include an identifier for each of the predefined users in Jin’s database. The notification is “based at least in part on determining the identifier,” because the notification is only sent if a particular identified predefined user is recognized. (Ex. 1013, at ¶ 36.)

Id. at 37–38 (footnote omitted).

Petitioner's contentions are rational and are supported by the cited evidence. Patent Owner does not present arguments to the contrary. We are

persuaded that Step [1g] reasonably would have been suggested by Jin alone, or by the combination of Jin and Monroe as proposed by Petitioner.

g) Conclusion

Petitioner has proven by a preponderance of the evidence that claim 1 would have been obvious over Jin alone, and also would have been obvious over Jin and Monroe.

3. Dependent Claim 2

Claim 2 depends from claim 1 and further recites: “wherein the feature of the entity is a facial feature, an audio feature, or a device identifier of a mobile device associated with the entity.” Ex. 1001, 11:62–64.

Petitioner asserts: “In Jin, the feature of the entity is a facial feature. (*See, e.g.,* Ex. 1007 at [0029].)” Pet. 40. Petitioner’s assertion is rational and supported by the cited evidence. Patent Owner does not present arguments to the contrary. Rather, Patent Owner argues that, because Petitioner does not cite to any testimony of Mr. Parker to support its assertions with respect to claim 2, the assertions for claim 2 are merely attorney argument not supported by any evidence. PO Resp. 43. We disagree. Petitioner cites to the specific disclosures of Jin, which do constitute supporting evidence. Further, Patent Owner’s expert, Dr. Kramer, has not provided any testimony that contradicts Petitioner’s reading of Jin with respect to the added limitation of claim 2. We find that Jin discloses the additional limitation recited in claim 2.

Petitioner has proven by a preponderance of the evidence that claim 2 would have been obvious over Jin alone and also over Jin and Monroe.

4. Dependent Claim 4

Claim 4 depends from claim 1 and further recites: “wherein the predefined area includes a shop, a restaurant, a home, an area of the home,

animal cage, or a wilderness area.” Ex. 1001, 12:5–7. Petitioner acknowledges that Jin does not describe any particular type of surveillance area. Pet. 41. Petitioner asserts: “It would have been obvious to one of skill [in the art], however, to install Jin[’s system] at a home, an area of a home, or a shop. These are obvious locations for a security system like the one disclosed in Jin. (Ex. 1013, at ¶ 41.)” Pet. 41.

Patent Owner argues that Petitioner relies on Mr. Parker’s testimony and that Mr. Parker “does not cite to any evidence to support his opinions regarding how a [person of ordinary skill in the art] would have understood the Challenged Claims and the Asserted Prior Art at the time of the invention of the ’159 patent.” PO Resp. 39, 43. Mr. Parker simply states, without explanation: “It would have been obvious to one of skill, however, to install Jin at a home, an area of a home, or a shop. These are obvious locations for a security system like the one disclosed in Jin.” Ex. 1013 ¶ 41.

We agree that Mr. Parker’s testimony regarding Jin alone and claim 4 is conclusory and entitled to little weight. However, Petitioner need not rely on the testimony of Mr. Parker to prevail on the assertion of obviousness of claim 4 over Jin alone. Jin in its Background Section already states “both personal security and corporate security are becoming increasingly important” and “entrances are generally controlled by receptionists or guards who are stationed there, but typically these employees are not able to remember everyone who has come and gone.” Ex. 1007 ¶¶ 2–4. This disclosure sufficiently supports Petitioner’s assertion that a home, an area of a home, or a shop, is an obvious location for placement of a security surveillance system, in the absence of any contrary assertion by Patent Owner or Patent Owner’s expert, Dr. Kramer. Thus, even without considering the testimony of Mr. Parker, we are persuaded that Jin

reasonably would have suggested installing its system in a home or in a shop.

Petitioner alternatively contends:

If not obvious in view of Jin alone, claim 4 would have been obvious over Jin in view of Monroe. As discussed above in [the ground based on anticipation by Monroe], Monroe states that his system can be used at both shops and residences. (Ex. 1005 at [0013], [0236], and [0258].) It would have been obvious to one of skill implementing Jin in view of Monroe to install Jin at a residence or shop, as suggested in Monroe. (Ex. 1013, at ¶ 42.)

Pet. 41. Mr. Parker testifies: “Monroe states that his system can be used at both shops and residences. (Ex. 1005 at [0013], [0236], and [0258].) It would have been obvious to one of skill implementing Jin in view of Monroe to install Jin at a residence or shop, as suggested in Monroe.”

Ex. 1013 ¶ 42. The testimony is rational and supported by the cited evidence because Monroe specifically refers to “business facilities, housing complexes, residences and the like.” Ex. 1005 ¶ 13.

Mr. Parker cites to the pertinent disclosures of Monroe as support and, therefore, his testimony on this particular issue is not conclusory in that regard. Further, Patent Owner’s expert, Dr. Kramer, has not provided contrary testimony to the effect that one with ordinary skill in the art would not have motivation to install Jin’s system in either a home or a shop. We are persuaded that Jin and Monroe reasonably would have suggested installing Jin’s system in a home or in a shop.

For the foregoing reasons, Petitioner has proven by a preponderance of the evidence that claim 4 would have been obvious over Jin alone and also over Jin and Monroe.

5. *Dependent Claim 8*

Claim 8 depends from claim 1 and further recites: “further comprising classifying a type of the entity based at least in part on the image of the entity captured by a camera, wherein recognizing the entity is based at least in part on the type of the entity.” Ex. 1001, 12:30–34. Petitioner explains:

As discussed above, in its Infringement Contentions in the Utah Litigation, Patent Owner contends that human facial recognition satisfies the “classifying” limitation of claim 8 since it necessarily determines that the entity is a human. (*See* Ex. 1010 at 022–023.) Jin does not expressly disclose that its “facial detection” is detecting “human” faces. However, it would have been obvious to one of [ordinary] skill in the art, applying Jin, to configure its facial recognition for human faces, since Jin is focuses on “intrusion detection” (Ex. 1007 at ¶ [0009]). (Ex. 1013 at ¶ 43.)

Pet. 41–42. The assertions are rational and supported by the cited evidence. Patent Owner does not present argument to the contrary, either with regard to treating human facial recognition as classifying a type of the entity or with regard to obviousness of applying Jin’s system to perform human facial recognition.

Patent Owner argues that Petitioner relies on Mr. Parker’s testimony and that Mr. Parker “does not cite to any evidence to support his opinions regarding how a [person of ordinary skill in the art] would have understood the Challenged Claims and the Asserted Prior Art at the time of the invention of the ’159 patent.” PO Resp. 39, 43. But as noted and discussed above, Mr. Parker cites to pertinent disclosures of Monroe as support and provides corresponding reasoning. Ex. 1013 ¶ 43. Mr. Parker’s testimony is not conclusory in that regard. Further, Patent Owner’s expert, Dr. Kramer, has not provided contrary testimony.

We are persuaded that it would have been obvious to one with ordinary skill in the art to apply Jin’s system to perform human facial recognition, and we also find reasonable to regard performing human facial recognition as classifying a type of the entity, human type, based at least in part on the image of the entity captured by a camera.

Petitioner has proven by a preponderance of the evidence that claim 8 would have been obvious over Jin alone and also over Jin and Monroe.

6. *Independent Claim 9*

Petitioner explains: “Claim 9 is similar to claim 1, except that it is an apparatus claim, and recites a processor, memory, and instructions stored in the memory that cause the apparatus to perform the steps of the claim. Elements [9a] through [9g] are substantively identical to elements [1a] through [1g].” Pet. 23. Petitioner further explains:

As discussed above with respect to claim 1, Jin’s central processing module, facial recognition module, and alarm module perform the detecting, comparing, matching, recognizing, determining, and notification functions of claims 1 and 9.

Jin further includes a data storage module 102:

Said data storage module 102 stores the facial features of predefined users in a database, the telephone numbers of predefined users, and real-time images captured by said image acquisition module 104. It can be in software form as a database, linked list or rack, or it can be in hardware form as a hard disk, hard disk array or flash storage device.

(*Id.* at [0026].) The data storage module is necessarily “in electronic communication with the processor,” since the central processing module and face recognition module both send data to, or receive data from, the storage module. (*See id.* at [0028]–[0029].) (Ex. 1013, at ¶ 37–38.)

Jin does not expressly disclose “instructions stored in the memory” that cause the processor to perform the described functionality, but this disclosure is inherent. One of skill in the art would have understood that the central processing module 106, facial recognition module 108, and alarm module 110 would necessarily be performed by one or more processors running software, and that the software would be stored in memory (either memory module 102 or other memory). (Ex. 1013, at ¶ 39.)

At the least, it would have at least been obvious to one of skill in the art to include software to instruct the processors and to store that software in memory, since the system could not perform the described functionality without it. (Ex. 1013, at ¶ 40.)

Pet. 38–39.

Petitioner’s contentions are rational and supported by the cited evidence. Patent Owner relies on the same arguments it asserts for claim 1 to rebut Petitioner’s explanation and supporting evidence for claim 9, which are already discussed above in the context of claim 1. They are unavailing for Patent Owner. One point, however, requires additional discussion for the stored instruction in memory aspect of claim 9. It is Patent Owner’s assertion that Mr. Parker “does not cite to any evidence to support his opinions regarding how a POSITA would have understood the Challenged Claims and the Asserted Prior Art at the time of the invention of the ’159 patent.” PO Resp. 39. For reasons discussed below, the argument is without merit and unavailing.

For claim 9, Petitioner relies on the testimony in paragraph 39 of Mr. Parker’s declaration (Ex. 1013) to assert:

Jin does not expressly disclose “instructions stored in the memory” that cause the processor to perform the described functionality, but this disclosure is inherent. One of skill in the art would have understood that the central processing module

106, facial recognition module 108, and alarm module 110 would necessarily be performed by one or more processors running software, and that the software would be stored in memory (either memory module 102 or other memory). (Ex. 1013, at ¶ 39.)

Pet. 39. Paragraph 39 of Mr. Parker’s declaration is reproduced below:

39. Jin does not expressly disclose “instructions stored in the memory” that cause the processor to perform the described functionality, but this disclosure is inherent. One of skill in the art would have understood that the central processing module 106, facial recognition module 108, and alarm module 110 would necessarily be performed by one or more processors running software, and that the software would be stored in memory (either memory module 102 or other memory).

Ex. 1013 ¶ 39.

The above-quoted testimony is conclusory. However, the testimony in the next paragraph of Mr. Parker’s declaration provides additional explanation that is not conclusory. *Id.* ¶ 40. There, Mr. Parker explains that “the system could not perform the described functionality” without including “software to instruct the processors and to store that software in memory.” *Id.* Petitioner also relies on the same explanation to support a motivation for one with ordinary skill in the art to include in Jin’s system software to instruct the processors and to store that software in memory. Pet. 39.

Petitioner has proven by a preponderance of the evidence that claim 9 would have been obvious over Jin alone and also over Jin and Monroe.

7. *Dependent Claim 10*

Claim 10 depends from claim 9 and further recites: “wherein the feature of the entity is a facial feature, an audio feature, or a device identifier of a mobile device associated with the entity.” Ex. 1001, 12:59–61.

Petitioner asserts: “In Jin, the feature of the entity is a facial feature. (*See, e.g.,* Ex. 1007 at [0029].)” Pet. 40. Petitioner’s assertion is rational and

supported by the cited evidence. Patent Owner does not present arguments to the contrary.

Rather, Patent Owner argues that, because Petitioner does not cite to any testimony of Mr. Parker to support its assertions with respect to claim 10, Petitioner's assertions are merely attorney argument not supported by any evidence. PO Resp. 43. We disagree. Petitioner cites to specific disclosures of Jin, which do constitute supporting evidence. Further, Patent Owner's expert, Dr. Kramer, has not provided any testimony that contradicts Petitioner's reading of Jin with respect to the added limitation of claim 10. We find that Jin discloses the additional limitation recited in claim 10. We are persuaded that Jin's disclosed feature of the entity is a facial feature.

Petitioner has proven by a preponderance of the evidence that claim 10 would have been obvious over Jin alone and also over Jin and Monroe.

8. *Independent Claim 12*

Petitioner explains:

Claim 12 is identical to claim 9, except that the preamble recites a non-transitory computer readable medium storing code, rather than reciting an apparatus that comprises a processor, memory, and instructions stored in the memory. The steps [12a] through [12g] performed by the code are identical to the steps [9a] through [9g] in claim 9.

Pet. 25–26. Petitioner further explains:

As discussed with respect to claim 9, Jin inherently discloses code stored in a non-transitory computer readable medium, the code comprising instructions causing the processor to perform the functionality disclosed in Jin. (Ex. 1013, at ¶¶ 37–39.) At the least, including such code would have been obvious to one of skill. (Ex. 1013, at ¶ 40.) Claim 12, therefore, like claim 9, is inherently anticipated by Jin under 35 U.S.C. § 102(b), or at the least, is rendered obvious by Jin under 35 U.S.C. § 103.

Id. at 40.

We regard the reference in the above-quoted text to anticipation of claims 9 and 12 by Jin as an inadvertent mistake, because Petitioner has not alleged anticipation of any claim by Jin. Indeed, Petitioner's analysis of claims 9 and 12 stem from its analysis of claim 1, and Petitioner has not alleged that Jin describes every limitation of claim 1.⁹

With regard to the obviousness assertion, Petitioner's assertions are rational and also supported by the cited evidence. Patent Owner does not separately argue claims 9 and 12. All of the arguments have been addressed above in the context of claim 9. For the same reasons discussed above, they are unavailing for Patent Owner.

Petitioner has proven by a preponderance of the evidence that claim 12 would have been obvious over Jin alone and also over Jin and Monroe.

III. CONCLUSION

The outcome for challenged claims 1, 2, 4, 8–10, and 12 of the '159 patent is set forth in the table below:¹⁰

⁹ Petitioner acknowledges that Jin does not expressly disclose determining an identifier that was assigned to the entity at a previous time, but asserts that such a determination would have been obvious to one with ordinary skill in the art either in view of Jin alone or in view of the combination of Jin and Monroe. Pet. 35.

¹⁰ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. §§ 42.8(a)(3), (b)(2).

Claims	35 U.S.C. §	Reference(s)/ Basis	Claims Shown Unpatentable	Claims Not Shown Unpatentable
1, 2, 4, 8–10, 12	102(a)(1)	Monroe	1, 2, 4, 8–10, 12	
1, 2, 4, 8–10, 12	103	Monroe alone or Monroe and Fadell	1, 2, 4, 8–10, 12	
1, 2, 4, 8–10, 12	103	Jin alone or Jin and Monroe	1, 2, 4, 8–10, 12	
Overall Outcome			1, 2, 4, 8–10, 12	

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has proven by a preponderance of the evidence that claims 1, 2, 4, 8–10, and 12 of the '159 patent are unpatentable; and

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

IPR2022-00071
Patent 10,325,159 B1

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