

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTOROLA SOLUTIONS, INC.,
Petitioner,

v.

APPLIED CAPITAL, INC.,
Patent Owner.

IPR2023-00419
Patent 9,728,082 B2

Before LARRY J. HUME, GEORGIANNA W. BRADEN, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

HUME, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Motorola Solutions, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review (“IPR”) of all claims 1–17 (“the challenged claims”) of U.S. Patent No. 9,728,082 B2 (Ex. 1001, “the ’082 patent”). Applied Capital, Inc. (“Patent Owner”) timely filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

An *inter partes* review may not be instituted unless “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least [one] of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018); *see* 37 C.F.R. § 42.4 (2023).

Having reviewed the parties’ papers and the evidence of record, we determine that Petitioner has shown a reasonable likelihood it will prevail in establishing the unpatentability of at least one challenged claim. Therefore, we institute an *inter partes* review of all challenged claims 1 through 17 of the ’082 patent, based on the grounds raised in the Petition.

II. BACKGROUND

A. *Real Parties in Interest*

Petitioner identifies itself as the real party in interest. Pet. 1. Patent Owner identifies itself as the real party in interest. Paper 3 (Patent Owner Mandatory Notices), 1. The parties do not raise any issue about real parties in interest at this time.

B. *Related Matters*

The parties indicate that the ’082 patent and its parent (U.S. Patent No. 8,378,817, the “’817 patent”) have been asserted in various district court

lawsuits, including: *Applied Capital, Inc. v. Motorola Solutions, Inc.*, No. 6:22-cv-00304-JDK (E.D. Tex., Tyler Division) (“EDTX Proceeding”). Pet. 1; Paper 3, 2.¹

Concurrent with the filing of this Petition, a Petition for IPR was filed for the ’817 patent, i.e., IPR2023-00418 (filed by Motorola Systems, Inc.). Pet. 1. The Decision whether to institute *inter partes* review in IPR2023-00418 will be addressed separately.

C. The ’082 Patent (Exhibit 1001)

The ’082 patent is titled “Premises Monitoring System.” Ex. 1001, code (54). The ’082 patent issued August 8, 2017, from U.S. Patent Application No. 13/767,580, filed February 14, 2013, claiming benefit as a continuation application under 35 U.S.C. § 120 to U.S. Patent Application No. 12/695,373, filed January 28, 2010, now issued as U.S. Patent No. 8,378,817. *Id.* at codes (21), (22), (45), (63). The ’082 patent also claims the benefit of the filing dates of Provisional application Nos. 61/147,948, filed on January 28, 2009, and 61/228,044, filed on July 23, 2009. *Id.* at code (60).

The ’082 patent describes operations of receiving a device identifier and device condition for a remote alarm monitoring system, retrieving

¹ As a related matter, Patent Owner identified former district court proceedings involving the ’082 patent and the ’817 patent against other parties, i.e., *Applied Capital, Inc. v. The ADT Corporation and ADT LLC*, No. 1:16-cv-815-WJ-SCY (U.S. District Court for the District of New Mexico) (terminated 05/27/21, Dkt. 281). Patent Owner further identified a related IPR involving the ’817 patent, *ADT LLC and the ADT Corporation v. Applied Capital, Inc.*, IPR2017-01825 (institution denied). *See* Paper 3, 2; *see* Petition in IPR2017-01825, Ex. 1028.

enhanced information based on the device identifier, determining a communication destination based on the device identifier, and dispatching enhanced information to the communication destination. *See* Ex. 1001, Abstr. According to the '082 patent, the operations provide a premise monitoring system. *Id.*

The '082 patent further describes:

This invention relates generally to computer systems, and more specifically, to a premise monitoring system. In one embodiment, the invention includes operations of receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems; retrieving enhanced information based on the device identifier and/or the device condition; determining one or more communication methods and/or communication destinations based on the device identifier and/or the device condition; and dispatching the enhanced information to the one or more communication destinations using the one or more communication methods.

Id. at 1:22–34.

Figure 10 of the '082 patent is reproduced below as a further aid in understanding the claimed invention.

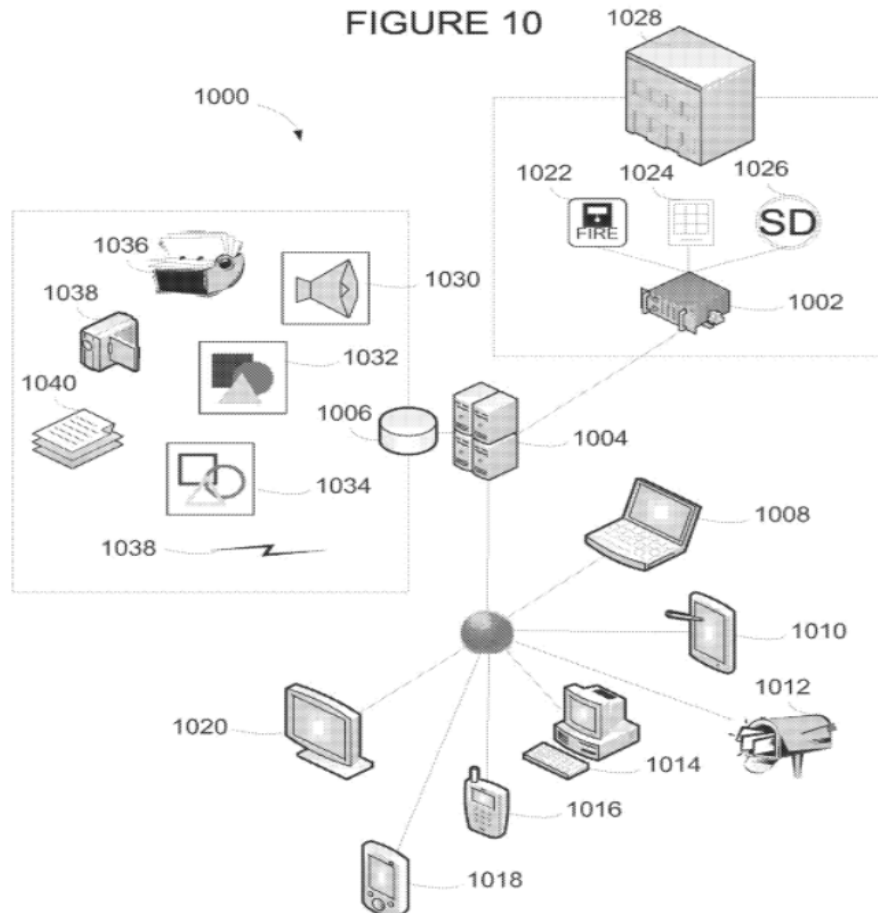


Figure 10 of the '082 patent “is a diagram of a system for implementing a premises monitoring system, in accordance with, an embodiment of the invention.” *Id.* at 1:52–54.

In some embodiments, system 1000 may include a premises 1028 associated with one or more pull stations 1022, one or more security devices 1024, one or more smoke detectors 1026, and/or one or more remote alarm monitoring systems 1002; one or more premises monitoring systems 1004 operably communicating with one or more data sources 1006 including one or more sounds 1030, one or more raster graphical images 1032, one or more vector graphical images 1034, one or more

communication links 1038, written information 1040, one or more cameras/videos 1038, and/or one or more contacts 1036; and/or one or more displays 1020, one or more personal digital assistants 1018, one or more phones 1016, one or more computers 1014, one or more mail boxes 1012, one or more tablets 1010, and/or one or more laptops 1008. In some embodiments, system 1000 may include fewer, greater, or different components.

Id. at 17:40–56.

With reference to Figure 1, the '082 patent, without providing background discussion or a description of the need for improvements in premise monitoring systems, describes an embodiment that includes

receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems at block 102; retrieving enhanced information based on the device identifier and/or the device condition at block 104; determining one or more communication methods and/or communication destinations based on the device identifier and/or the device condition at block 106; and dispatching the enhanced information to the one or more communication destinations using the one or more [sic] communication methods at block 108.

Id. at 2:7–16.

Figure 1 of the '082 patent is reproduced below as an aid in understanding the claimed invention.

FIGURE 1

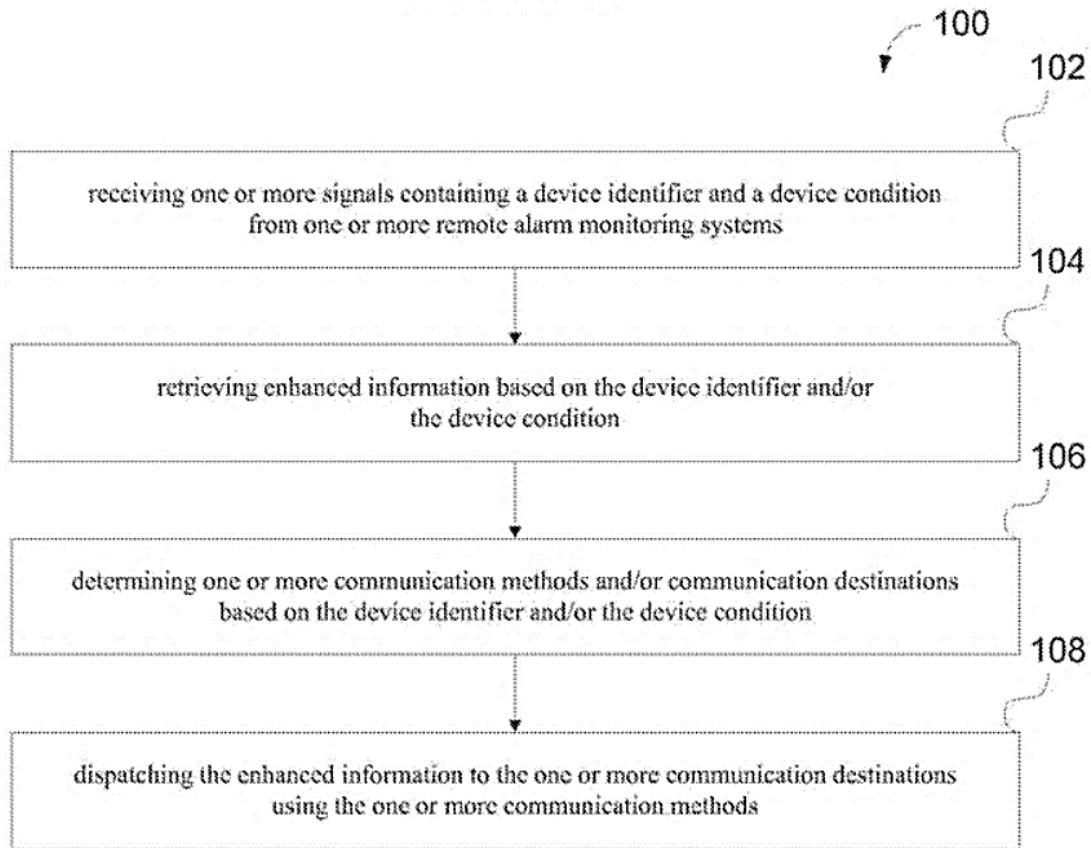


Figure 1 of the '082 patent “is a block diagram of a method performed by a premises monitoring system in accordance with an embodiment of the invention.” *Id.* at 2:4–6. In the embodiment shown in Figure 1,

method 100 may be performed by a premises monitoring system 1004 as disclosed in FIG. 10. For example, in some embodiments, method 100 may be used to supplement an existing monitoring system by providing enhanced information to more destinations in a timelier manner without requiring disruption to an existing monitoring system. A remote alarm monitoring system 1002 may be programmed to send one or more signals containing one or more device identifiers and one or more device conditions to a premises monitoring system 1004. The premises monitoring system 1004 may receive the one or more signals containing one or more device identifiers and one or more device conditions and retrieve enhanced

information based on the same (or some other criteria) from one or more data stores 1006. The premises monitoring system 1004 may determine one or more communication methods and one or more communication destinations from the one or more data stores 1006 also based on the one or more device identifiers and/or the one or more device conditions (or some other criteria). The premises monitoring system 1004 may dispatch the enhanced information to the one or more communication destinations using the one or more communication methods, such as by dispatching the enhanced information to one or more laptops 1008, one or more tablets 1010, one or more mail boxes 1012, one or more computers 1014, one or more phones 1016, one or more personal digital assistants 1018, and/or one or more displays 1020.

Ex. 1001, 2:17–44.

Premises monitoring system 1004 may “retrieve enhanced information including one or more graphical images 1032/1034, such as a map, a picture, a video 1038, a floor plan, a site plan, a personnel photo, a camera feed 1038, a heat sensor image, a sound sensor image, and/or a movement sensor image” based on “one or more device identifiers and/or one or more device conditions from a data source 1006.” *Id.* at 4:28–34. As an example, “[a] map may include a map to or of premises 1028.” *Id.* at 4:25. As another example, “[a] picture may include a real-time or previously taken picture of or within premises 1028.” *Id.* at 4:35–37. Additionally, “video 1038 may include a real-time or previously recorded video of or within premises 1028.” *Id.* at 4:37–38.

Premises monitoring system “1004 may retrieve enhanced information including one or more other graphical images 1032/1034 based on one or more device identifiers and/or one or more device conditions from a data source 1006.” *Id.* at 4:53–57. A “superimposed meaningful audio and/or visual indicator” may include

one or more icons or one or more designators superimposed on a map, picture, floor plan, and/or site plan to illustrate or instruct regarding device type, device position, condition type, hazardous material position, emergency exit position, stairwell position, pathway position, handicap safe area, extinguisher position, hydrant position, stand pipe position, utility disconnect position, and/or the like.

Ex. 1001, 5:11–19.

Premises monitoring system 1004 may also “retrieve enhanced information including one or more hierarchically organized graphical images 1032/1034 based on one or more device identifiers and/or one or more device conditions from one or more data sources 1006.” *Id.* at 5:35–39. “A hierarchically organized graphical image may include any group of graphical images arranged relative to one another and/or accessible through one another.” *Id.* at 5:39–41.

Premises monitoring system 1004 may “retrieve enhanced information including one or more vector-based graphical images 1034 allowing magnification without degradation (e.g. to approximately 6600%) based on one or more device identifiers and/or one or more device conditions.” *Id.* at 5:55–61. Premises monitoring system 1004 may also “retrieve enhanced information including one or more raster-based graphical images 1032 based on one or more device identifiers and/or one or more device conditions.” *Id.* at 5:61–65. The enhanced information may include file types such as “one or more .BMP, .RLE, .GIF, .JPG, .JPEG, .PDF, .WMF, .EMF, .CAD graphical images.” *Id.* at 5:65–6:1.

Premises monitoring system 1004 may “determine one or more communication methods of email, text message, instant message, website link, phone, and/or mail based on one or more device identifiers and/or one or more device conditions from one or more data sources 1006.”

Ex. 1001, 9:60–65. As an example, “[a]n email communication method may include sending enhanced information to one or more email accounts.” *Id.* at 9:65–67. As another example, “[a] text message communication method may include sending enhanced information to one or more phone numbers.” *Id.* at 9:67–10:2. As a further example, “[a] website link communication method may include establishing or updating a website to include enhanced information and sending a website link via email, text message, instant message, phone, and/or mail to facilitate access to the website.” *Id.* at 10:4–8.

Premises monitoring system 1004 may “dispatch enhanced information automatically without requiring operator intervention to one or more displays 1020, personal digital assistants 1018, phones 1016, computers 1014, mail boxes 1012, tablets 1010, and/or laptops 1008 using one or more communication methods of email, text message, instant message, website link, phone, and/or mail.” *Id.* at 13:37–43. “Dispatching the enhanced information automatically without requiring operator intervention may include no operator review or operator review prior to, during, or after dispatch.” *Id.* at 13:43–46.

D. The Challenged Claims

Of the challenged claims, claims 1 and 17 are independent, and for purposes of this Decision, claims 1 and 17 are illustrative of the challenged claims, and are reproduced below (with formatting added for clarity and with bracketed alphanumeric identification added for ease of reference):

Claim 1 recites:

[1(pre)] A non-volatile and non-transient computer-readable medium comprising machine-executable code comprising:

[1(a)] code receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems;

[1(b)] code retrieving enhanced information based on the device identifier and the device condition;

[1(c-1)] code determining one or more communication methods and communication destinations based on the device identifier and the device condition; and

[1(c-2)] code dispatching the enhanced information to the one or more communication destinations using the one or more communication methods; and

[1(d-1)] wherein the retrieving enhanced information based on the device identifier and the device condition comprises retrieving images based on the device identifier and the device condition, the images comprising all of the members selected from the group consisting of

[1(d-2)] superimposed visual indicators,

[1(d-3)] hierarchically organized graphical images, and

[1(d-4)] vector-based graphical images.

Id. at 19:6–25 (Petitioner’s labeling added within brackets for ease of reference); *see* Pet. (Claims Listing), 1.

Claim 17 recites:

17. A computerized system comprising
a central monitoring system

receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems,

retrieving enhanced information based on the device identifier and the device condition,

determining one or more communication methods and communication destinations based on the device identifier and the device condition, and

dispatching the enhanced information to the one or more communication destinations using the one or more communication methods,

wherein the enhanced information based on the device identifier and the device condition comprises images based on the device identifier and the device condition,

the images comprising all of the members selected from the group consisting of

superimposed visual indicators,

hierarchically organized graphical images, and

vector-based graphical images.

Id. at 20:55–21:3 (formatting added for clarity).

E. Asserted Challenges to Patentability²

Petitioner asserts challenges 1 through 4 of unpatentability as shown in Table II.E, below. Pet. 1–2, 16–80.

Table II.E

Ground	Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1	1–17	102(e)	Baier ³
2	1–17	103(a)	Baier and knowledge of a person of ordinary skill in the art (“POSITA”)
3	1–17	103(a)	Baier, Callaghan ⁴ and knowledge of a POSITA
4	1–17	103(a)	Childers ⁵ , Barker ⁶ and knowledge of a POSITA

Pet. 1–2.

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. §§ 102 and 103 effective March 16, 2013. The ’082 patent claims benefit under 35 U.S.C. § 120 to applications filed before that date, so we refer to the pre-AIA version of the statute, but our findings and analysis would be the same under the current version of the statute.

³ US 8,191,005 B2, filed Sept. 27, 2007, issued May 29, 2012, based on an application filed September 27, 2007. Ex. 1007, “Baier”.

⁴ US 2005/0108364 A1, filed Dec. 10, 2003, published May 19, 2005, based on an application filed December 10, 2003. Ex. 1008, “Callaghan”.

⁵ US 2002/0161885 A1, filed Mar. 27, 2002, published Oct. 31, 2002, based on an application filed March 27, 2002. Ex. 1009, “Childers”.

⁶ US 2002/0143934 A1, filed Apr. 3, 2001, published Oct. 3, 2002, based on an application filed April 3, 2001. Ex. 1010, “Barker”.

Petitioner asserts Baier qualifies as prior art “at least under 35 U.S.C. § 102(e),” (Pet. 10); and Callaghan, Childers, and Barker qualify as prior art “at least under 35 U.S.C. § 102(b).” Pet. 13, 15; *see* 35 U.S.C. § 102(b), (e) (2006).

At this stage of the proceeding, Patent Owner does not dispute that each reference qualifies as prior art. *See, e.g.*, Prelim. Resp. 11–18.

F. Testimonial Evidence

Petitioner supports its challenge with a declaration from Nathaniel Polish, Ph.D. Ex. 1002, “Polish Declaration.”

To support its positions, Patent Owner relies on the declaration of Jun Zheng, Ph.D. Ex. 2001, “Zheng Declaration.”

On this record, and at this stage, no challenges to the qualifications of either declarant have been made.

III. ANALYSIS

A. Legal Standards

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

1. Anticipation

“A single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation.” *Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1375–76 (Fed. Cir. 2005). 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); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1383 (Fed. Cir. 2001).

Furthermore, a “reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art.” *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002). The reference does not need to use the same terminology. *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381 (Fed. Cir. 2015) (noting that a reference anticipates if a person of skill in the art “would at once envisage the claimed arrangement or combination” (internal quotation marks and citation omitted)). But, an ambiguous reference will not anticipate a claim. *Wasica Fin. GmbH v. Cont’l Auto. Sys., Inc.*, 853 F.3d 1272, 1284 (Fed. Cir. 2017). The dispositive question for anticipation is whether one skilled in the art would reasonably understand or infer from the reference that every claim element is disclosed. *Eli Lilly & Co. v. L.A. Biomed. Research Inst. at Harbor-UCLA Med. Ctr.*, 849 F.3d 1073, 1074–75 (Fed. Cir. 2017).

We analyze the anticipation challenge according to these principles.

2. *Obviousness*

The legal 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). One seeking to establish obviousness based on more than one reference also must articulate sufficient reasoning with rational underpinnings to combine teachings. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

We analyze the obviousness challenges according to these principles.

B. *Level of Ordinary Skill in the Art*

Factors pertinent to determining the level of ordinary skill in the art include (1) the educational level of the inventor; (2) the type of problems encountered in the art; (3) prior-art solutions to those problems; (4) the rapidity with which innovations are made; (5) the sophistication of the technology; and (6) the educational level of workers active in the field. *Env’tl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696–97 (Fed. Cir. 1983). Not all factors may exist in every case, and one or more of these or other factors may predominate in a particular case. *Id.* These factors are not exhaustive, but merely a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed.

⁷ The current record does not include evidence of objective indicia of nonobviousness (secondary considerations). *See* Pet. 80–81; Ex. 1002 ¶¶ 246–247.

Cir. 2007). Moreover, the prior art itself may reflect an appropriate skill level. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

Supported by the testimony of Dr. Polish, Petitioner asserts the level of ordinary skill in the art corresponds to a person having “a bachelor’s degree in computer science, electrical engineering, or a similar field, and . . . approximately two years industry experience in networking or monitoring systems.” Pet. 9 (citing Ex. 1002 ¶ 30).

At this stage, Patent Owner does not directly address the level of ordinary skill in the art. *See generally* Prelim. Resp. However, according to Patent Owner’s expert, Dr. Jun Zheng, Ph.D.,

an ordinary artisan by January 28, 2009, would have at least (a) a bachelor’s degree in computer science or computer engineering or a related discipline coupled with at least two years of computer programming experience; at least (b) four years of computer programming experience in languages such as Java, C++, C#, Python, PHP, JavaScript, Ruby, etc.; and/or (c) equivalent work experience in computer-aided graphical design. Additional education in the fields of electrical engineering or computer science such as a masters or doctorate degree may serve as a substitute for experience in the field. A person with less education but more relevant practical experience may also meet this standard. The prior art also evidences the level of skill in the art.

Ex. 2001 ¶ 13 (“Zheng Declaration”).

Based on the current record, and for purposes of this Decision, we preliminarily adopt Petitioner’s position as to the level of ordinary skill in the art at the time of the claimed invention, as articulated above. On this record, we are satisfied that Petitioner’s proposed definition generally comports with the level of skill necessary to understand and implement the teachings of the ’082 patent and the asserted prior art. This definition also is supported by the testimony of Dr. Polish. *See* Ex. 1002 ¶¶ 26–31. We note

that our analysis would not change if we accepted Dr. Zheng’s description of an ordinarily skilled artisan.

To the extent that the level of ordinary skill in the art should become an issue at trial, we invite the parties’ further briefing on this matter as permitted under our rules.

C. *Claim Construction*

In an *inter partes* review, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b). In applying such standard, claim terms are generally given their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–13. “In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

“For this Petition, Petitioner applies each of these constructions [in the ADT Matter⁸], unless noted. . . . [and] for this Petition, Petitioner also interprets the remaining claim terms ‘in accordance with the ordinary and

⁸ See *Applied Capital, Inc. v. The ADT Corporation and ADT LLC*, Civil Action No. 1:16-cv-00815 (Memorandum and Order on Claim Construction). Ex. 1006; Ex. 2004 (“ADT Markman Order”).

customary meaning . . . as understood by one of ordinary skill in the art.”
Pet. 9–10 (citing 37 C.F.R. § 42.100(b)).

In the ADT Matter, “[t]he parties agree that the phrase ‘hierarchically organized graphical images’ should be construed as ‘a group of graphical images arranged relative to one another and/or accessible through one another.’” Ex. 1006, 8. Furthermore, “[t]he court finds Applied’s proposal should be adopted and ‘vector-based graphical images’ will be construed as ‘images that include one or more vectors.’” Prelim. Resp. 10.

Patent Owner responds, “Applied Capital assumes each term of the ’082 patent claims is given its ordinary and customary meaning. Applied Capital also acknowledges the Markman Order from the prior litigation against ADT Corporation and agrees with the construction determination by the Court therein.” *Id.* at 19 (footnote omitted).

Although Patent Owner “agrees with the construction determination by” the district court (Prelim. Resp. 19), Patent Owner asserts, different from the Markman Order in the ADT Matter, that “vector-based graphical images” are “images defined by vectors.” *Id.* at 34 (citing Zheng Declaration, Ex. 2001 ¶¶ 92–97). Dr. Zheng opines that “vector-based graphical images” are “images composed of vectors, which are instructions that define geometry features (points, lines, polygons).” Ex. 2001 ¶¶ 42, 96. We invite the parties to further address the meaning of the phrase “vector-based graphical images.”

Additionally, we note that Petitioner disagrees with the district court’s rulings regarding what certain dependent claims require. *See, e.g.*, Pet. 40, 44, 46–48, 68, 73–77; Ex. 1006, 14–16. Because Patent Owner “agrees with the construction determination by” the district court (Prelim. Resp. 19), we

invite the parties to provide additional briefing about what those dependent claims require.

At this stage of the proceeding, based on the parties’ stated positions, we do not find it necessary to address the construction of any claim terms or phrases to decide whether Petitioner satisfies the “reasonable likelihood” standard for instituting trial. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (noting that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

We further note our findings and conclusions in this Decision are preliminary, and do not preclude the parties from arguing proposed constructions of the claims during trial. Indeed, the parties are hereby given notice that claim construction, in general, is an issue to be addressed at trial. Claim construction will be determined at the close of all the evidence and after any hearing. The parties are expected to assert all their claim construction arguments and evidence in the Petition, Patent Owner’s Response, Petitioner’s Reply, Patent Owner’s Sur-reply, or otherwise during trial, as permitted by our rules.

D. Summary of Asserted Prior Art References

1. Baier (Ex. 1007)

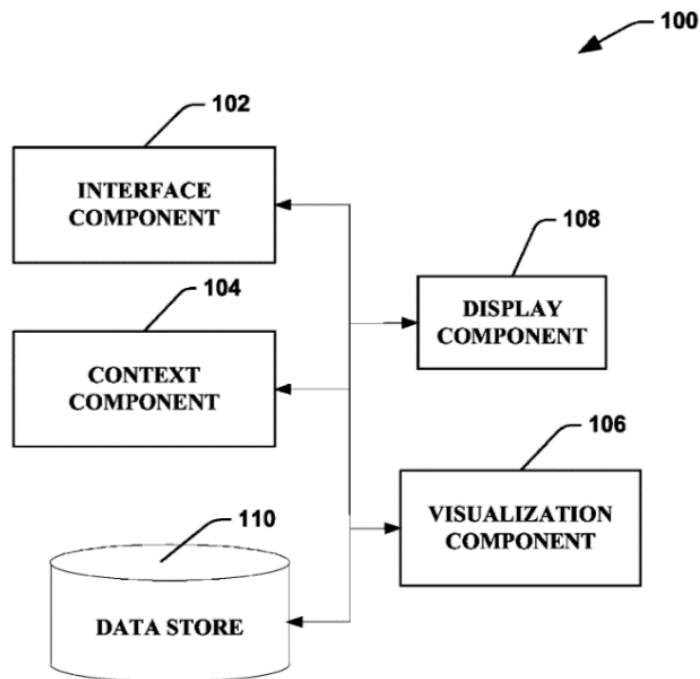
Baier describes a visualization system that generates customized visualizations in an industrial automation environment. Ex. 1007, Abstr., 1:9–14.

Generally, Baier is directed to

exploiting situation-specific data or “information of interest”, e.g., based on factors such as the user’s identity, role, location (logical or physical), current task, current view, and so forth, [a] HMI [human machine interface] can be provided to superimpose such situation-specific information upon the user’s current view of the automation control system (“base presentation”) in a manner that communicates the essence of information as well as its importance/priority/urgency without completely dominating the user’s attention or interrupting their current interaction with the system. In this manner, problems dealing with excessive navigation or obtrusive displays can be mitigated.

Id. at 2:19–29.

Baier’s Figure 1 (reproduced below) is a block diagram depicting an embodiment of a visualization system:



Baier – Fig. 1

“FIG. 1 illustrates a visualization system for generating customized visualizations in an industrial automation environment.” *Id.* at 2:56–58.

Regarding Figure 1, Baier discloses that

visualization system 100 can be employed to facilitate viewing and interaction with data related to automation control systems, devices, and/or associated equipment (collectively referred to herein as an automation device(s)) forming part of a production environment. Visualization system 100 includes interface component 102, context component 104, visualization component 106, display component 108, and data store 110.

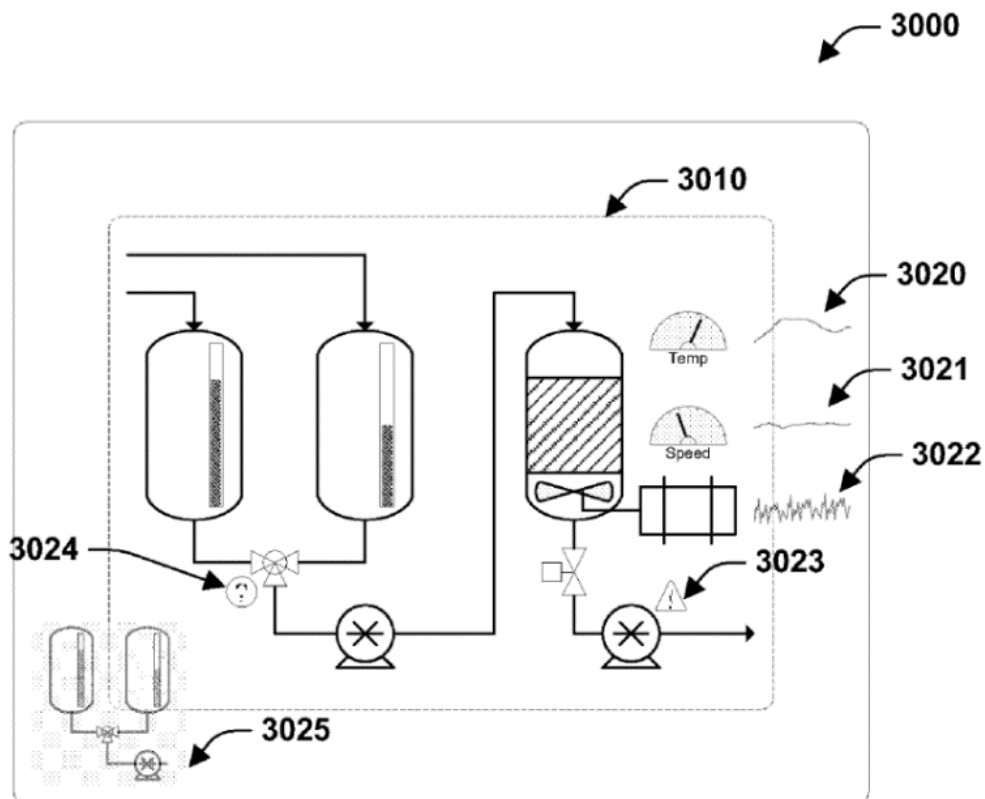
Id. at 6:62–67, 7:1–2.

Interface component 102 “receives input concerning displayed objects and information” including (1) user input concerning “object identification, selection and/or interaction therewith” and (2) input “provided by automation devices.” *Id.* at 7:3–7, 25–26, 65–67. Automation devices may provide “real-time data” including “the operating status of the device/equipment (e.g., off, on, run, . . .), the current stage or process of each device/equipment (e.g., operating, line of code being implemented, . . .).” *Id.* at 21:54–63, 7–10. Also, the system may “automatically poll and/or report device/equipment information dynamically.” *Id.* at 20:19–22.

Context component 104 may “detect, infer or determine context information” for an entity (user) or an automation device based on input received by interface component 102. *Id.* at 7:30–38; *see id.* at 7:27–29, 44–52, 24:27–35. Context information for an entity (user) includes “an entity’s identity, role, location (logical or physical), current activity, [and] similar or previous interactions with automation devices.” *Id.* at 7:30–34, 24:29–31; *see id.* at 10:15–20, 19:57–63. Context information for an automation device includes “logical/physical locations and operating status,” e.g., “on/off, healthy/faulty” and “off, on, run”; “current stage or process”;

“alarms, location, [and] type of machinery”; and “warnings, alarms, and maintenance schedule information, among other things.” *Id.* at 7:27–29, 36–38, 48–52; 10:15–17; 21:60–63; 24:20–22, 33–35, 45–49.

Baier’s “customized visualizations” “automatically locat[e] information that may be of interest/use” to a user by “matching attributes such as the user’s identity, role, location” “with other data such as device/equipment locations, device/equipment status.” *Id.* at 2:56–58, 2:30–44. Thus, Baier’s system “can automatically tune a visualization to be optimized.” *Id.* at 10:13–23. Figure 30 of Baier depicts the visualization component 106 from Figure 1. *Id.* at 20:27–28. Figure 30 is reproduced below.



Baier – Fig. 30

Figure 30 is a graphic drawing “illustrate[ing] an exemplary display that a visualization component embodiment can render.” Ex. 1007, 3:54–55.

Regarding Figure 30, Baier discloses:

Display 3000 includes a base presentation 3010 comprising two tanks connected to a first valve and a first pump as well as a mixer, motor, a second valve and a second pump. Base presentation 3010 also includes two gages associated with the motor identifying motor temperature and speed. . . . In addition to base presentation 3010, various items 3020–3025 are also displayed that provide related or situation specific information.

Id. at 20:32–42.

Baier addresses problems users might have with traditional control systems with respect to such systems either being overly intrusive or uninformative by providing systems and methods that exploit “situation-specific data” or “information of interest” that superimposes information “upon the user’s current view of the automation control system (‘base presentation’) in a manner that communicates the essence of information as well as its importance/priority/urgency without completely dominating the user’s attention or interrupting their current interaction with the system.” *Id.* at 2:16–28, 6:55–59, 15:53–57, 23:44–49. Moreover, Baier may automatically locate and automatically provide information “of interest/use in a user’s current situation by matching attributes such as the user’s identity, role, location (logical or physical), current activity, similar previous (historical) situations/activities, and so forth with other data such as device/equipment locations, device/equipment status, user/role/situation-specific reports, user-documentation, training manuals, and so forth.” *Id.* at 2:30–40.

Baier explains that a visualization system may include a graphical user interface “to interact with the various components for providing

industrial control information to users.” *Id.* at 5:57–60. Baier describes how the interactions may involve “substantially any type of application” that “sends, retrieves, processes, and/or manipulates” input data; “receives, displays, formats, and/or communicates” output data; or “facilitates operation of the enterprise.” *Id.* at 5:60–63. The graphical user interface may display various objects including “configurable icons, buttons, sliders, input boxes, selection options, menus, tabs and so forth having multiple configurable dimensions, shapes, colors, text, data and sounds to facilitate operations with the interfaces.” *Id.* at 5:66–6:4.

Baier’s Figure 6 (reproduced below) is a flowchart for generating visualizations associated with alarms:

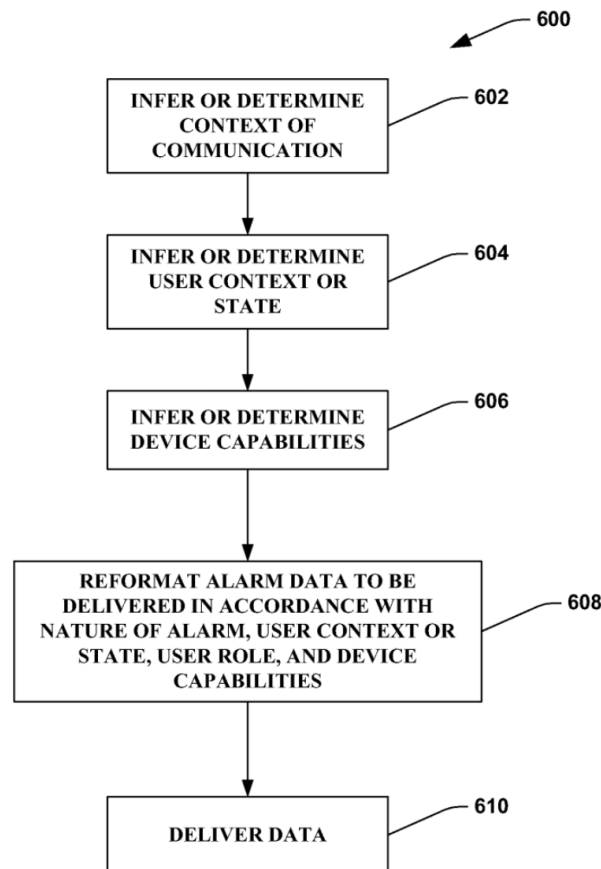


FIG. 6

“FIG. 6 illustrates one particular embodiment in connection with a methodology for generating visualizations associated with alarms.” *Id.* at 3:1–3.

At step 602, “context associated with a communication (e.g., message, session, alarm, event) is inferred or determined.” *Id.* at 11:47–49, Fig. 6. At step 604, “user context or state [is] inferred or determined.” *Id.* at 11:53–54, Fig. 6. At step 606, “device capabilities are inferred or determined.” *Id.* at 11:54–55, Fig. 6. At step 608, “alarm data is reformatted so that it can be delivered in accordance with nature of the alarm, user context or state, user role, cognitive capability, and device capability.” *Id.* at 11:55–57, Fig. 6. After reformatting to “optimize delivery and consumption thereof, the formatted data is delivered” at step 610 to a user’s rendering device. *Id.* at 11:58–60, Fig. 6; *see id.* at 11:61–63.

Baier discloses visualization systems for preserving or augmenting resolution and data associated with zooming or panning in an industrial automation environment. *See id.* at 15:42–17:52, Figs. 16–22. Baier’s visualization systems employ “sparse images (e.g., a minimalistic approach to image size)” to “maximize utilization of system resources” and “facilitate system speed or responsiveness.” *Id.* at 15:47–53, 15:58–60. In Baier, however, unlike conventional systems, sparse images are pixel-mapped to higher-resolution counterpart images. *Id.* at 15:58–60; *see id.* at 15:63–67, 17:3–4, 17:25–28.

Initially, sparse images “relating to an industrial automation environment are presented” to a user. Ex. 1007, 15:58–59; *see id.* at 16:56–61, 17:8–13, 17:23–28, Fig. 19 (step 1902), Fig. 20 (step 2002), Fig. 21. Subsequently, “as a user zooms in on an area of an image that is pixel-mapped to a higher-resolution version thereof, data corresponding to

the area under focus is streamed to the display area coincident with respect [to] pixels mapped thereto and resolution of the image area can be augmented, preserved, or enhanced.” *Id.* at 15:62–16:1; *see id.* at 16:61–65, 17:13–21, 17:34–42, Fig. 19 (steps 1904 and 1906), Fig. 20 (steps 2004 through 2010), Fig. 22. For example, a visualization component “supplements the existing image data with additional image data to create a rich view that dynamically preserves resolution of an image as a user zooms in on an area of interest.” *Id.* at 16:24–27.

Hence, “as a user zooms in on a particular region of the image, instead of the image becoming grainy, or blurry,” as in conventional systems, “the image maintains or increases resolution as a result of image data being streamed to the user to supplement the region of interest with more image data.” *Id.* at 16:5–10; *see id.* at 15:60–62.

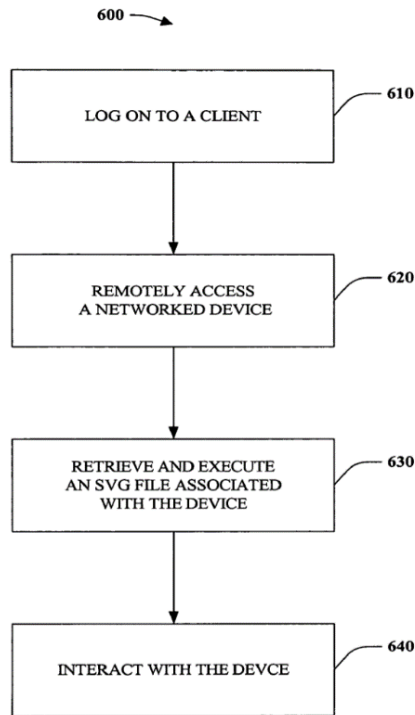
To summarize, Baier relates “to industrial control systems, and more particularly to various automated interfaces that interact with industrial control systems based in part on detected factors such as a user’s role, identity, location, and so forth.” *Id.* at 1:9–13.

2. *Callaghan (Ex. 1008)*

Callaghan is a U.S. patent application publication titled “Systems and Methods that Utilize Scalable Vector Graphics to Provide Web-Based Visualization of a Device,” filed on December 10, 2003, and published on May 19, 2005. Ex. 1008, codes (12), (22), (43), (54). Callaghan “relates to industrial control systems, and more particularly to systems and methods that provide remote visualization of an industrial device via scalable vector graphics” (*id.* ¶ 2), and describes systems and methods that employ scalable vector graphics (SVG) to view and effectuate an industrial device from a

remote Web interface. *Id.* at Abstr. “The SVG file can be executed to render an interactive graphical faceplate that can depict LEDs, alphanumeric displays, inputs/output, etc., trending mechanisms (e.g., graphs, charts, etc.), and capabilities to load parameters.” *Id.*

Figure 6 of Callaghan is a flow chart reproduced below.



Callaghan – Fig. 6

“FIG. 6 illustrates an exemplary methodology that renders graphics associated with an SVG file to provide a user a mechanism to interact with a device from a Web interface, in accordance with an aspect of the present invention.” *Id.* ¶ 21.

Regarding Figure 6, Callaghan discloses

a methodology 600 to interact with a device via information graphically rendered within a Web interface, in accordance with an aspect of [t]he present invention. At reference numeral 610, a user logs on to a client with access to a network associated with a device the user desires to interact with over the network.

The client can be virtually any microprocessor-based system (as describe in detail above). . . .

At reference numeral 630, the user can download an SVG [scalable vector graphics] file associated with the device, wherein the instructions within the SVG file can be executed to render graphical and/or textual information within the network browser.

Id. ¶¶ 55–56.

Callaghan explains that, as “the World Wide Web becomes more ubiquitous, Web-based interfaces are becoming a preferred means to remotely interact with systems and devices over networks (e.g., intranets, internets and the Internet).” Ex. 1008 ¶ 5. Callaghan also explains that “Web-based interfaces (e.g., a Web page implemented with a Web browser) have been developed to,” *inter alia*, “monitor and control entities such as security systems, video/audio entertainment centers, electromechanical equipment, etc.”; “monitor internal and/or external locations”; and “facilitate communication with industrial systems and devices.” *Id.*

Callaghan describes problems with “many conventional systems” that, among other things, “lack flexibility” and “consume processing power.” *Id.* ¶ 6. For instance, “conventional systems typically download and render one or more image files (e.g., GIF, TIF, BMP, JPEG, etc.).” *Id.* ¶ 7; *see id.* ¶ 43. However, downloading and using such image files may “consume bandwidth, processing cycles, time and memory” and “increase overhead.” *Id.* ¶¶ 7, 30. Also, such image files “generally are resolution dependent such that a specified image size is maintained” instead of scaled to conform to a viewing window, thus reducing “presentation flexibility.” *Id.* ¶ 7; *see id.* ¶ 30. Moreover, “the content within such image files typically cannot be

searched or include active [l]inks (e.g., hyperlinks) to other web sources.”

Id. ¶ 7; *see id.* ¶ 30.

Callaghan identifies advantages that SVG files have over conventional systems and techniques including “mitigating downloading image files (e.g., BMP, GIF, TIF, JPG, etc.)”; “reducing overhead and bandwidth requirements”; and “rendering graphics that are resolution independent and searchable.” *Id.* ¶ 10; *see id.* ¶¶ 9, 30, 43, 52.

Callaghan also discloses “employing a Web-based interface to remotely obtain an SVG file associated with a device of interest” and executing the SVG file to “remotely visualize” the device by generating “a graphical display illustrating various aspects” of the device. Ex. 1008 ¶¶ 13, 51; *see id.* ¶ 11. The graphical display may include “alphanumeric displays and/or other visual indications” of device status, inputs, outputs, operations, and capabilities. *Id.* ¶¶ 24, 29, 43, Abstr.; *see id.* ¶ 48, Fig. 3.

Callaghan discloses an “interface . . . based on a scalable vector graphics (SVG) XML markup language, which is supported by many known Web browsers (e.g., via an SVG plug-in).” *Id.* ¶ 9. Further, “employing SVG XML markup language can mitigate the need to download images and files with graphics and execute associated applications” and “enables a user to represent a portion of a device, for example a device’s faceplate, in an XML markup language file pursuant the SVG syntax.” *Id.* Furthermore, “SVG XML markup language provides for rendering (via basic ASCII drawing commands) resolution independent images” that may “include searchable graphics, text, labels, descriptions, etc., and links to other information” and “be scaled to conform to a viewing window.” *Id.* ¶¶ 9, 29, 43, 52, Abstr.

An SVG file “provides a mechanism” to display “two and three dimensional images” (*id.* ¶ 28) and “can be executed locally via basic ASCII drawing commands,” so that “vector images can be generated to render device-related graphics and/or text within the Web-based interface” rather than “download one or more graphics files (e.g., GIF, JPG, TIF, etc.).” *Id.* ¶¶ 13, 52; *see id.* ¶¶ 11, 24, 28, 43.

To summarize, Callaghan “relates to industrial control systems, and more particularly to systems and methods that provide remote visualization of an industrial device via scalable vector graphics.” *Id.* ¶ 2.

3. Childers (Ex. 1009)

Childers is a U.S. patent application publication titled “Methods for Displaying Physical Network Topology and Environmental Status by Location, Organization, or Responsible Party,” filed on March 27, 2002, and published on October 31, 2002. Ex. 1009, codes (12), (22), (43), (54). Childers describes a system for remote monitoring of a space and equipment. *Id.* at Abstr. Figure 1 of Childers is reproduced below.

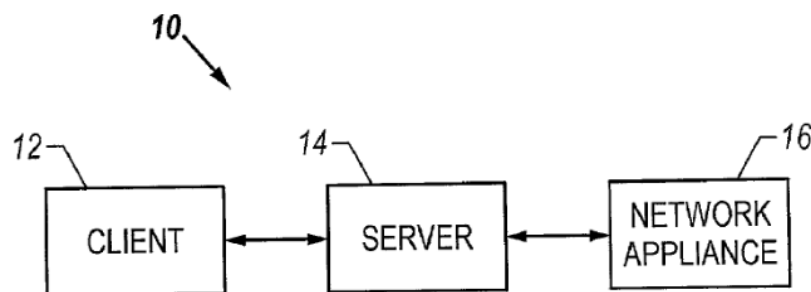


FIG. 1

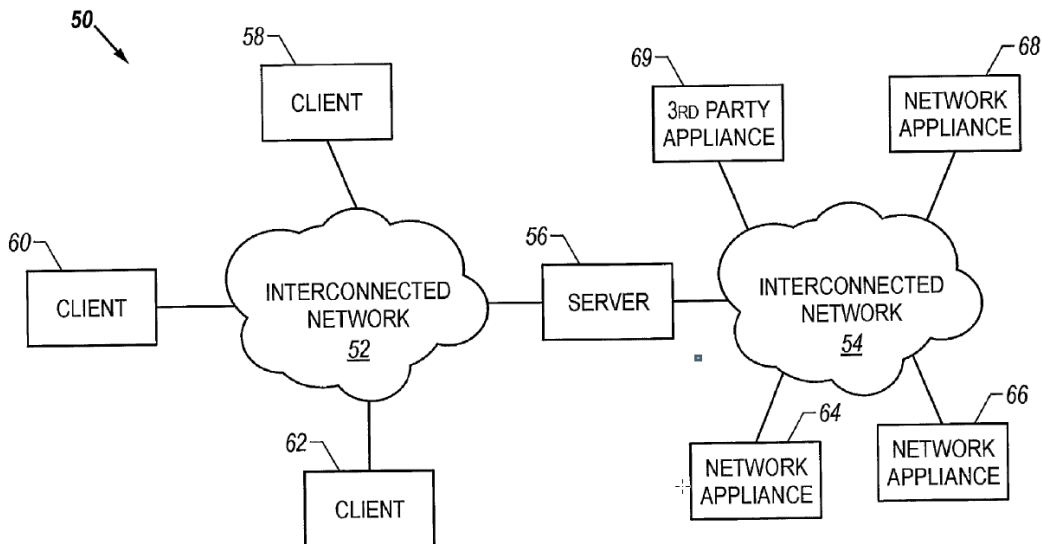
Figure 1 “is a schematic block diagram of a system, according to the invention.” *Id.* ¶ 30. Childers discloses “a system for remote monitoring of

network appliances” that seeks to overcome “deficiencies in information accessibility, organization, and presentation.” *Id.* ¶¶ 16–17; *see id.* ¶ 211. Network appliances 16 may “collect data associated with temperature, humidity, door sensors, alarms, power quality, motion detectors and cameras, among others.” *Id.* ¶ 59.

[S]ystem 10 has a server, a client 12 and a network appliance 16. The server 14 is connected to one or more network appliances 16 through an interconnected network. The server 14 may function to transfer sensor data from the network appliance 16 and transfer configuration data to the network appliances 16. The server 14 is also connected to a client machine 12. The client machine 12 may access, display and/or manipulate data stored on the server 14. In this manner, the client 12 may remotely monitor network appliances 16 and the client 12 may reconfigure the network appliances 16.

Id. ¶ 55.

Figure 2B of Childers is reproduced below.



Childers – Fig. 2B

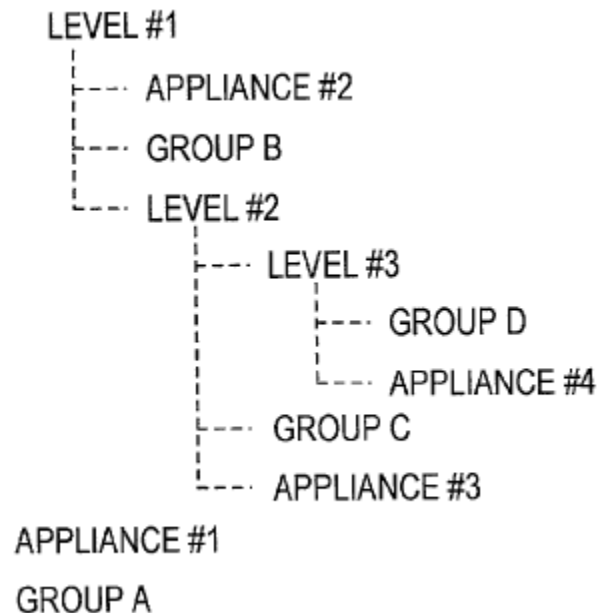
Figure 2B is “is another schematic block diagram of another exemplary embodiment of the system as seen in FIG. 1” that depicts a system for remote monitoring of network appliances. *Id.* ¶ 32.

The system has a server connected to two interconnected networks 52, 54. The interconnected network 52 also connects to client machines 58, 60, and 62. The interconnected network 54 may connect to one or more network appliances 64, 66, 68, and/or third party appliances 69. A server 56 may transfer information to and from the one or more appliances 64, 66, 68 and/or the third party appliances 69 through the interconnected network 54. This information may be sensor data, configuration data, and images, among others.

Id. ¶ 78.

The network appliances may “periodically deliver their sensor data” to the server by “‘pushing’ the data to the server instead of having the server ‘pull’ the data from the appliance.” *Id.* ¶ 61. The data from the network appliances may “indicate status” and include “information relating to alarms and alerts.” *Id.* ¶¶ 60, 123.

Figure 12 of Childers is a tree diagram reproduced below.



Childers – Fig. 12

In Figure 12,

the client machine may retrieve data associate[d] with network appliance[s] and display them in a tree. FIG. 12 is a schematic of an exemplary tree. The tree may associate appliances in various groups and give access to individual appliances on various levels of the tree structure. Moreover, a user may manipulate groups, appliances associated with the groups, user access and permissions associated with the network appliance and groups, and the tree visual characteristics, among others.

Id. ¶ 199.

The server (*see* Childers Fig. 2B, element 56, *supra*) may deliver an application to a client machine, i.e., “an application enabling the client to access the database and display image data associated with a camera enabled network appliance”; “a part of an application enabling the client to display a table of network appliances and their associated parameters such as a value of a sensor or an alarm state, among others”; “a part of an application which displays a tree of network appliances associated into groups”; and “an application and associated map configuration data.” *Id.* ¶¶ 115–116.

The delivered application and data may “enable the client to access and display a map.” *Id.* ¶ 116; *see id.* ¶¶ 21, 24. The “map may have icons superimposed on a background image,” e.g., icons representing “network appliances or groupings of network appliances” and “arranged in a manner indicative of physical location, type, capabilities, status, alarm state, . . . or responsible party, among others.” *Id.* ¶ 116; *see id.* ¶¶ 21, 24, 100, 128, 132, 134. “Moreover, the background image may be a picture, video image, graph, contour plot, and vector plot, among others.” *Id.* ¶ 116. “The map or image may change in response to events associated with the network appliances.” *Id.* ¶ 132.

Figure 7 of Childers is illustrative.

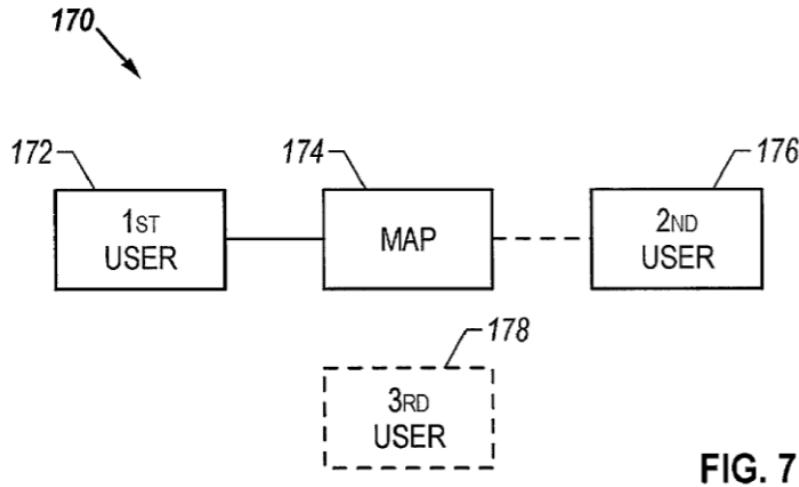


FIG. 7

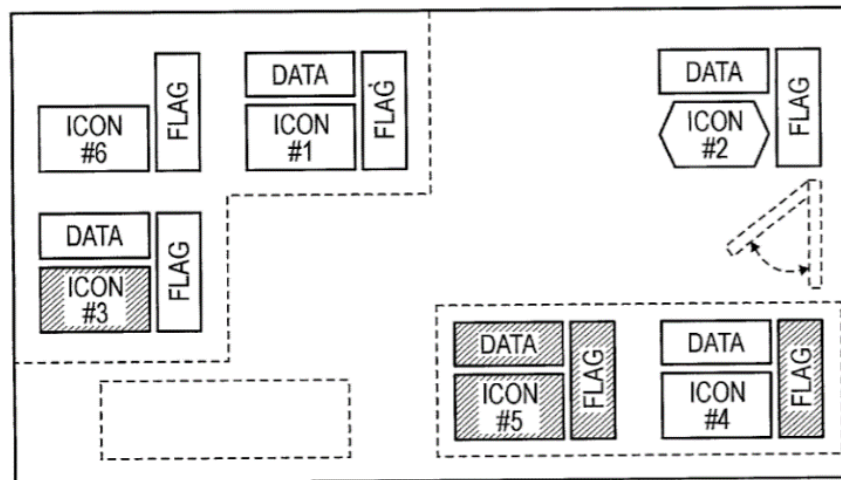
Figure 7 of Childers is “a schematic block diagram of an exemplary embodiment of a map as seen in FIG. 5.” *Id.* ¶ 39.

A first user 172 may create a mapping of icons. The icons may be associated with network appliances. These network appliances may be active or passive devices. Further, the icons may be arranged and/or superimposed on a background image. The first user may establish a permission data. The permission data may for example give a second user 176 access to the map data 174. The second user may be given permission to view or edit the map configuration data, or both. Alternately, the first user may give viewing permission or exclude another user 178.

Id. ¶ 128.

Data delivered to a client machine may include map configuration data that the client machine uses to “display data associated with the network appliances.” *Id.* ¶ 21. The displayed data may include icons “organized in a manner that represents physical location, status, and function, among others,” and “superimposed on . . . a map, an image, or a plot, among others.” *Id.* ¶¶ 21, 24. Thus, “the background may depict a map of a physical location over which icons are displayed representing the physical location of an associated network appliance.” *Id.* ¶ 24.

Figure 8C of Childers is reproduced below illustrating an embodiment of a map.



Childers – Fig. 8C

Figure 8C “is a schematic block diagram of a further exemplary embodiment of the map as seen in FIG. 7.” *Id.* ¶ 42.

Childers describes that

icons may be arranged according to physical location as shown in FIG. 8C. For example, the location may be a location within a room, geography, or server rack. Further, the icons may be superimposed on a map or image indicative of the location. The map or image may change in response to events associated with the network appliances. For example an image representing a room may be replaced with a similar image indicating an open door.

Id. ¶ 132.

To summarize, Childers “relates in general to a system and method for monitoring network equipment. More specifically, the invention relates to a system and method of monitoring network-enabled sensor equipment from a remote location.” *Id.* ¶ 4.

4. *Barker (Ex. 1010)*

Barker is a U.S. patent application publication titled “System and Method for Providing Configurable Security Monitoring Utilizing an Integrated Information System,” filed on April 3, 2001, and published on October 3, 2002. Ex. 1010, codes (12), (22), (43), (54). Barker describes a “system and method for implementing an integrated information system.” Ex. 1010, Abstr. Barker “generally to a security monitoring network and, in particular, to a system and method for providing variable, remote monitoring of a locally detected event utilizing an integrated information system.” *Id.* ¶ 2.

Figure 2 of Barker is reproduced below, depicting an integrated information system.

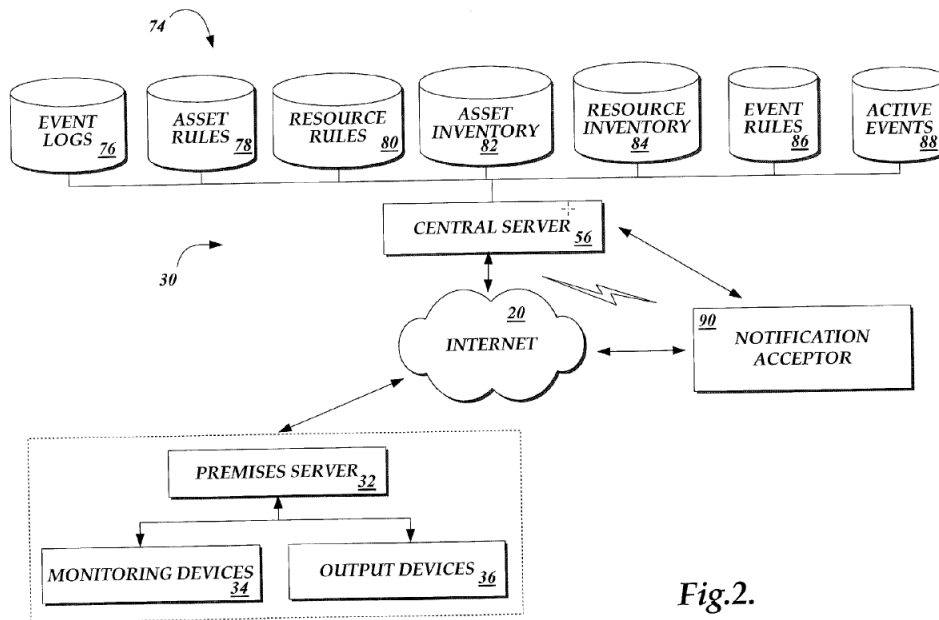


Fig.2.

“FIG. 2 is a block diagram of an integrated information system in accordance with the present invention[.]” *Id.* ¶ 19. “[I]ntegrated information system 30 includes a premises server 32 located on a premises. The premises server 32 communicates with one or more monitoring

devices 34. As illustrated in FIG. 2, the premises server 32 communicates with the monitoring devices 34 via a network connection.” *Id.* ¶ 32. “[T]he monitoring devices 34 can include smoke, fire and carbon monoxide detectors. The monitoring devices 34 can also include door and window access detectors, glass break detectors, motion detectors, audio detectors and/or infrared detectors.” *Id.* ¶ 33.

Premises server 32 obtains monitoring device data and transmits the data to central server 56. *Id.* ¶ 48; *see id.* ¶ 13, Abstr. Central server 56 “receives the monitoring device data and processes the data according to a rules-based decision support logic.” *Id.* ¶ 48; *see id.* ¶¶ 13, 50, Abstr., Fig. 5. Because “the monitoring device data is potentially applicable to more than one authorized user, multiple rules may be applied to the same monitoring device data.” *Id.* ¶ 48.

If processing “indicates that action is required,” central server 56 “generates one or more outputs associated with the rules.” *Id.* ¶ 49; *see id.* ¶¶ 13, 54–55, Abstr., Fig. 6. “The outputs include communication with indicated notification acceptors 90 according to the monitoring device data rules.” *Id.* ¶ 49. For instance, “an authorized user may indicate a hierarchy of communication mediums (such as pager, mobile telephone, land-line telephone) that should be utilized in attempting to contact the user.” *Id.* “The rules may also indicate contingency contacts in the event the authorized user cannot be contacted.” *Id.*

Central server 56 “communicates with the notification acceptors 90 utilizing various communication devices and communication mediums,” such as “electronic messaging,” “short message services,” and “audio transmission.” *Id.* ¶ 46. The receiving devices “include personal computers,

hand-held computing devices, wireless application protocol enabled wireless devices, cellular or digital telephones, digital pagers, and the like.” *Id.*

Figure 5 of Barker is a flow diagram reproduced below.

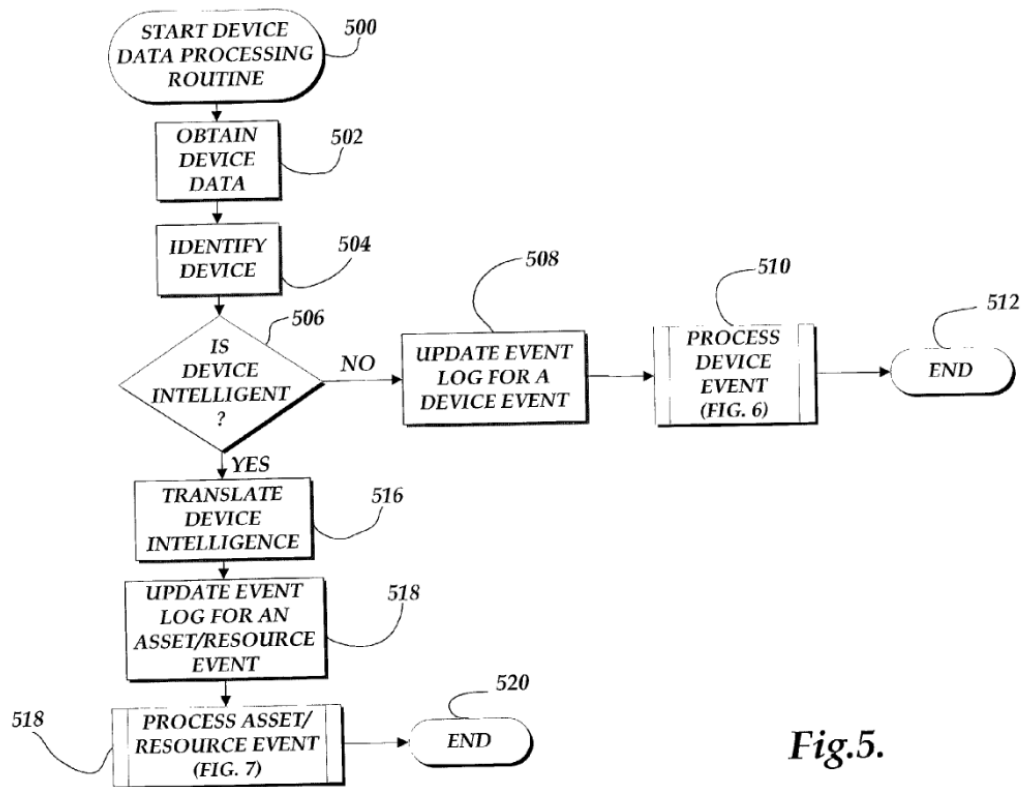


Fig.5.

Figure 5 of Barker “is a flow diagram illustrative of a monitoring device data processing routine in accordance with the” disclosed invention.

Id. ¶ 22. Specifically, Figure 5 illustrates

a flow diagram illustrative of a device decision support process support routine 500 for processing the monitoring device data in accordance with the present invention. At block 502, the central server 56 obtains an input from a monitoring device. In an actual embodiment of the present invention, the input is obtained from the premises server 32. Alternatively, the input may be received directly from the monitoring device 34 or the central server 56 may poll individual devices (or the premises server 32) for an input. At block 504, the central server 56 identifies the device processing the data. The identification may be accomplished by determining a network address from which

the input originated and which is assigned to the specific devices, or by reading other identification data that can be included with the data input.

At decision block 506, a test is performed to determine whether the device data includes intelligence data. In an actual embodiment of the present invention, the intelligence data includes data that characterizes the data as asset data or resource data, because the data contains information identifying the object. In contrast, data that does not contain any information identifying an object and is not considered intelligent. If the device is not determined to be intelligent or if the device cannot be identified, at block 508, an event log database 76 is updated to reflect the input data. At block 510, the central server 56 processes the data according to a process device event subroutine. The routine 500 terminates at block 512.

Id. ¶¶ 50–51.

Barker's Figure 6 (reproduced below) is a flow diagram depicting a process device event subroutine:

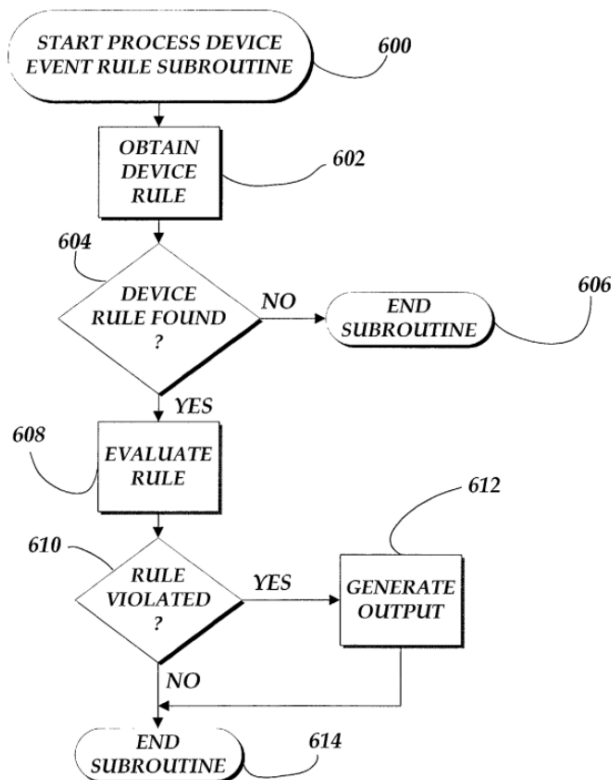


Fig.6.

Figure 6 illustrates “process device event subroutine 600” including blocks 602 through 614. *Id.* ¶ 52, Fig. 6; *see id.* ¶ 23.

At block 602, central server 56 “obtains the monitoring device rules,” e.g., from event rules database 86. *Id.* ¶ 52, Fig. 6. “The rules contain data indicating one or more ranges for determining a rule violation.” *Id.* ¶ 52. A rule violation indicates “an event occurrence for which a notification is required.” *Id.* For example, “if a monitoring device 34 is capable of only two stages (e.g., on or off), the rule may indicate that existence of one stage, e.g. ‘on’, is a violation.” *Id.*

At decision block 604, “a test is performed to determine whether a device rule is found.” *Id.* ¶ 53, Fig. 6. “If no rule is found, the process terminates at block 606.” *Id.* “If, however, a device rule is found, at block 608 the central server 56 evaluates the rule according to the data received from the monitoring device 34.” *Id.*

At decision block 610, “a test is performed to determine whether the device rule is violated.” *Id.* ¶ 54, Fig. 6. “If the rule is violated, at block 612, the central server 56 creates a rule violation output.” *Id.* ¶ 54, Fig. 6. Rule violation output instructions include “a list of the authorized users to notify in the event of a rule violation and a hierarchy of which communication medium and devices should be utilized to contact each authorized user.” *Id.* ¶ 54. For example, “the output may include the generation of a call to the premises owner’s mobile device, the paging of an on-site monitor and a land-line telephone call to the public authorities.” *Id.*

“Once the central server 56 has generated the rules violation output at block 612 or if the event rule is not violated at block 610, the subroutine 600 terminates at block 614.” *Id.* ¶ 56, Fig. 6.

To summarize, Barker “relates generally to a security monitoring network and, in particular, to a system and method for providing variable, remote monitoring of a locally detected event utilizing an integrated information system.” *Id.* ¶ 2.

*E. Alleged Anticipation of Claims 1–17
by Baier Under § 102(e)*⁹

Petitioner contends the subject matter of challenged claims 1–17 is anticipated by Baier. Pet. 16–19, 21–28, 30–36. Patent Owner argues that Petitioner’s showing is insufficient. Prelim. Resp. 2–24.

We have considered the parties’ arguments and the evidence presented at this stage, and we address them in the context of representative claim 1. For the reasons explained below, including Patent Owner’s arguments, we determine that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that the subject matter of claims 1 and 17 is anticipated by Baier.

*1. Independent Claim 1*¹⁰

a) [1(pre)]: “A non-volatile and non-transient computer-readable medium comprising machine-executable code comprising:”

Petitioner contends Baier discloses the preamble. Pet. 16. According to Petitioner, “[t]o the extent the preamble is limiting, Baier discloses a

⁹ See Pet. 10 (stating that Baier is prior art at least under 35 U.S.C. § 102(e)). Patent Owner does not take issue with Petitioner’s general statement that Baier qualifies as prior art to the ’082 patent under § 102(e). See generally, Prelim. Resp.

¹⁰ Parenthetical numbering of claim limitations in claim 1 is that adopted by Petitioner. See Pet. (Claims Listing, 1). Bracketing added by PTAB panel.

‘non-volatile and non-transient computer readable medium comprising machine-executable code,’ for example, ‘computer-readable medium having computer-executable instructions for performing’ the acts, events, and methods of Baier’s visualization system.” *Id.* (citing Ex. 1007, 1:9–14; 36:24–28; Ex. 1002 ¶ 101).

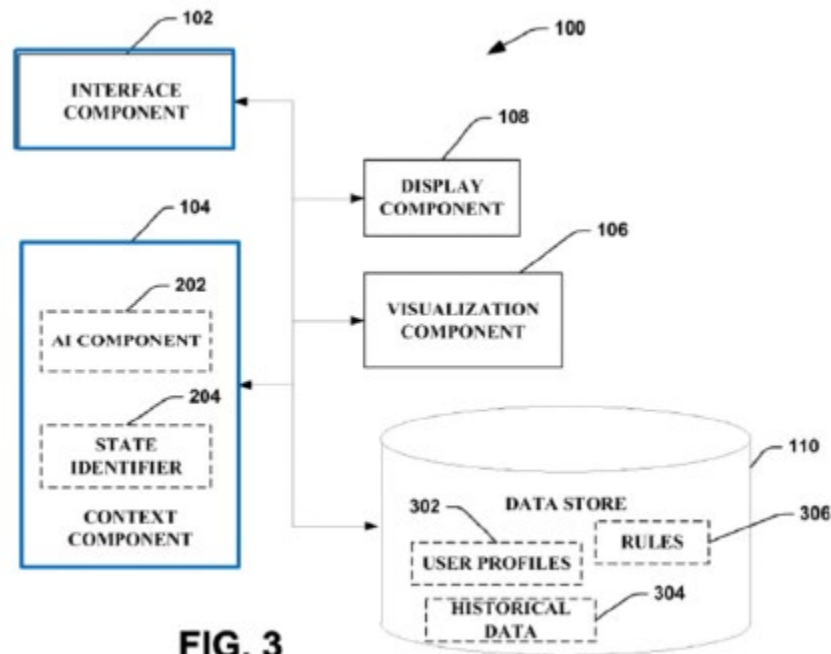
At this stage, Patent Owner does not allege any deficiencies in this aspect of Petitioner’s showing. *See* Prelim. Resp. 21 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Petitioner’s assertions and explanations are consistent with and supported by the evidence cited by Petitioner. On this record, Petitioner has shown sufficiently that Baier discloses the claim’s preamble.¹¹

b) [1(a)]: “code receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems”

Next, addressing the limitations recited in the body of the claim, Petitioner contends Baier discloses limitation [1(a)]. Pet. 16–21 (citing Ex. 1002 ¶¶ 102–108. According to Petitioner, Baier in Figure 3 discloses visualization system 100 receiving signals from a remote alarm monitoring system such as from networked automation devices including “control systems, devices, and/or associated equipment” in an industrial or asset management environment. Pet. 16–17 (citing Ex. 1007, 6:62–67, 29:24–40, 29:26–32, 2:14–44).

¹¹ We need not determine whether the preamble is limiting because Petitioner has sufficiently shown that Baier discloses this aspect of the claim and Patent Owner does not rebut this assertion. *See Vivid Techs.*, 200 F.3d at 803; *see generally* Prelim. Resp. 20 *et seq.*

Baier's Figure 3 is a block diagram replicated below, as annotated by Petitioner. Pet. 17.



Baier-Fig. 3 (Annotated)

“FIG.3 illustrates an embodiment where a data store stores information and programs that facilitate generating rich visualizations in accordance with aspects described herein.” Ex. 1007, 2:61–63. This annotated version of Figure 3 includes blue boxes outlining interface component 102 and context component 104. In Figure 3, visualization system 100 includes interface component 102 that receives input provided by automation devices. Pet. 17 (citing Ex. 1007, 7:3–4, 7:25–29). Context component 104 receives information from interface component 102 and “can detect, infer or determine” “context data pertaining to automation devices including control systems, devices and associated equipment.” Ex. 1007, 7:30–38.

Figure 32 of Baier, as annotated by Petitioner (Pet. 18), is a graphical block diagram reproduced below to illustrate an application of Baier's

visualization system in an industrial automation environment. In this figure, information retrieval component 3202 performs operations of interface component 102 and context component 104 (see Fig. 3, *supra*) to receive real-time data from devices (1 to T) in Figure 32. Pet. 18 (citing Ex. 1007, 21:54–63).

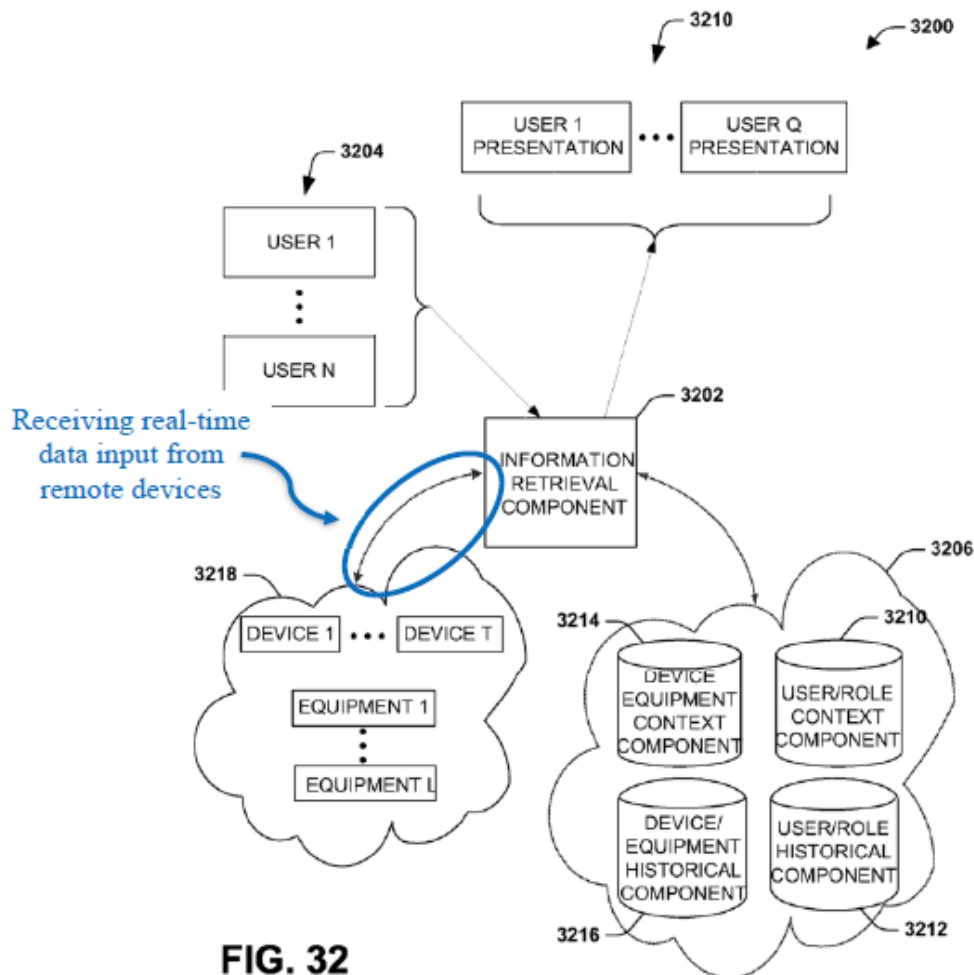


FIG. 32

“FIG.32 depicts an embodiment for dynamically presenting information of interest to one or more users in an industrial automation environment.” Ex. 1007, 3:56–58; *see* Pet. 18. This annotated version of Figure 32 includes the annotation “[r]eceiving real-time data input from remote device” and an arrow identifying the connection between real-time data 3218 and information retrieval component 3202.

[I]nput received by interface component 102 and inferred by context component 104 includes “context data pertaining to automation devices.” [] The “[d]evice context data” includes “logical/physical locations and operating status (e.g., on/off, healthy/faulty. . . .)” as well as “warnings, alarms, and maintenance schedule information,” [] “[L]ogical/physical locations” or “maintenance schedule information,” for example, identify a device, and an operating status or alarm provide the device’s *condition*. . . . As another example, Baier describes the signals from the remote devices in FIG.32 (e.g., Device 1 or Equipment L) as including “operating status of the device/equipment (e.g., off, on, run, . . .), the current stage or process of each device/equipment (e.g., operating, line of code being implemented, . . .).” [] The signals thus include both a device *identifier* (e.g., Device 1 or Equipment L) and a device condition (e.g., operating status, current stage or process).

Pet. 18–19 (citing Ex. 1007, 7:25–38, 21:54–63, 24:23–40, 30:32–37, 31:37–40; Ex. 1002 ¶ 106) (internal citations omitted).

At this stage, Patent Owner does not allege any deficiencies in this aspect of Petitioner’s showing. *See* Prelim. Resp. 20 *et. seq.* Nonetheless, we remind the parties that the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Accordingly, at this stage of the proceeding, on this record, we find Petitioner’s unrebutted assertions and explanations (Pet. 16–21) are consistent with and supported by the evidence cited by Petitioner with respect to limitation [1(a)], i.e., “receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems.” On this record, for purposes of this Decision, Petitioner has shown sufficiently that Baier discloses limitation [1(a)].

c) [1(b)]: “code retrieving enhanced information based on the device identifier and the device condition;”

Petitioner contends Baier’s visualization system, after device signals are received and analyzed, retrieves enhanced information responsive to the device identifier and device condition in the form of graphical representations of an environment that includes objects representing information pertaining to devices such as gages and thermometers. Pet. 21 (citing Ex. 1007, 8:1–39). Such enhanced information includes “retrieved graphical elements can include thumbnails, icons, widgets, among other things” so that Baier’s visualization system can graphically present automation devices ‘in an easily comprehensible manner’ as ‘graphics, animations, audio, and video.’” Ex. 1002 ¶ 110 (citing Ex. 1007, 8:1–39).

At this stage, Patent Owner does not allege any deficiencies in this aspect of Petitioner’s showing. *See* Prelim. Resp. 20 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Accordingly, at this stage of the proceeding, on this record, we find Petitioner’s unrebutted assertions and explanations (Pet. 21–24) are consistent with and supported by the evidence cited by Petitioner with respect to limitation [1(b)], i.e., “retrieving enhanced information based on the device identifier and the device condition.” On this record, for purposes of this Decision, Petitioner has shown sufficiently that Baier discloses limitation [1(b)].

d) [1(c-1)]: “code determining one or more communication methods and communication destinations based on the device identifier and the device condition”

Petitioner contends Baier’s visualization system determines methods and recipients of communication based on a device identifier and condition. Pet. 24 (citing Ex. 1002 ¶¶ 115–122). Petitioner argues Baier’s system determines a communication *destination* such as a user with a display device including “a monitor, television, computer, mobile device, web browser, or the like” for the enhanced information. Pet. 25 (quoting Ex. 1007, 7:56–61). In addition, “[f]or each destination, Baier’s system also determines a communication *method*, including a communication format (e.g., resolution) and a communication protocol (e.g., ‘text message,’ ‘multi-screen computer system with a broadband connection,’ ‘email[],’ or ‘integrat[ion] with calendars or tasks’).” *Id.* (citing Ex. 1007, 11:63–12:10, 30:23–26, 31:36–52, 8:62–9:39).

In Baier,

visualization component 106 receives the device identifier and condition and “create[s] mappings/linkages” between (1) device/equipment “logical/physical locations” (device identifiers) and “operating status” (device conditions) and (2) the user’s “identity,” “roles and responsibilities,” and “areas or regions of interest/responsibility.” [] The system “match[es]” each user’s “location, context, and/or role with the location and/or status of device/equipment/system monitored.” [] Information about that device can be provided automatically “without prompting or requesting such interest information from the user(s)” based on matching the location and status of device/equipment being monitored to the user.

Id. (citing Ex. 1007, 7:48–55, 11:7–13, 19:57–66, 20:6–12, 21:4–13, 24:41–52, Figs. 4, 32, 42) (internal citations omitted).

At this stage, Patent Owner does not allege any deficiencies in this aspect of Petitioner's showing. *See* Prelim. Resp. 20 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Petitioner's unrebutted assertions and explanations (Pet. 24–30) are consistent with and supported by the evidence cited by Petitioner. On this record, Petitioner has shown sufficiently that Baier discloses limitation [1(c-1)], i.e., “determining one or more communication methods and communication destinations based on the device identifier and the device condition.”

e) [1(c-2)]: “*code dispatching the enhanced information to the one or more communication destinations using the one or more communication methods*”

Petitioner contends, with reference to block 610 in Figure 6 of Baier, *supra*, Baier's visualization system delivers or “dispatches” retrieved and reformatted enhanced information, including a base presentation and graphical elements, to a user's display device. Pet. 30 (citing Ex. 1007, Fig. 6, 10:5–45, 7:38–43, 24:35–40, 4:35–37, 7:56–67; Ex 1002 ¶ 124).

Information is delivered in Baier using the determined communication device and method “without prompting or requesting such interest information from the user(s)” based on matching the location and status of the system or device being monitored to the user. Pet. 31 (citing Ex. 1007, 19:57–65, 20:6–12, 21:4–13). In addition, Baier discloses that alarm data is analyzed/reformatted in an effort to optimize delivery of alarm information to a user and the particular device employed. Ex. 1007, 10:5–45, 11:61–63; Figs. 5–6, 20.

At this stage, Patent Owner does not allege any deficiencies in this aspect of Petitioner's showing. *See* Prelim. Resp. 20 *et seq.* Nonetheless,

the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378. Petitioner’s unrebutted assertions and explanations (Pet. 30–32) are consistent with and supported by the evidence cited by Petitioner. On this record, Petitioner has shown sufficiently that Baier discloses limitation [1(c-2)].

f) [1(d-1)]: “wherein the retrieving enhanced information based on the device identifier and the device condition comprises retrieving images based on the device identifier and the device condition”

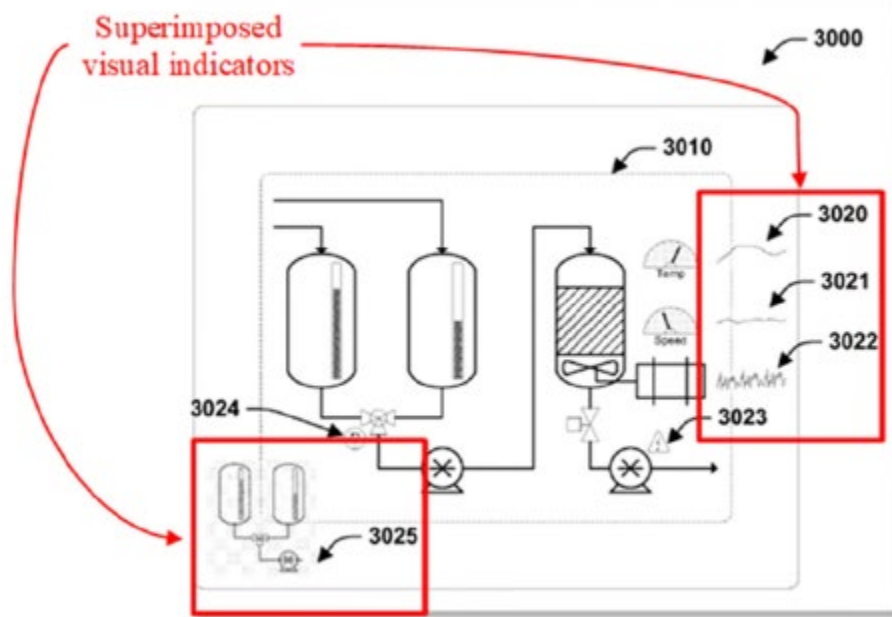
Petitioner contends Baier discloses limitation [1(d-1)] “[f]or the same reasons stated for limitation 1[b] . . . because the enhanced information includes ‘images’ such as a ‘base presentation’ and other graphical elements . . . [and because] the images in Baier comprise all the members of the claimed group as addressed below.” Pet. 32 (citing Pet. § IX.A3, Ex. 1002 ¶ 127).

Patent Owner does not specifically argue against Petitioner’s general proposition that Baier discloses retrieving images based on the device identifier and the device condition. Patent Owner’s rebuttal centers on Baier’s alleged deficiencies with respect to disclosing the specific type of image recited in limitation [1(d-4)], i.e., “vector-based graphical images,” discussed, *infra*. Prelim. Resp. 20–22. This argument is not persuasive, because we preliminarily find that in Baier’s visualization system, “automation devices can be presented graphically in an easily comprehensible manner” as “graphics, automations, audio, and video,” which appears to encompass enhanced information and images based on the device identifier as required by this limitation. *See* Ex. 1007, 7:59–62.

Accordingly, at this stage of the proceeding, on this record, we find Petitioner’s assertions and explanations are consistent with and supported by the evidence cited by Petitioner. On this record, for purposes of this Decision, Petitioner has shown sufficiently that Baier discloses limitation [1(d-1)], i.e., “wherein the retrieving enhanced information based on the device identifier and the device condition comprises retrieving images based on the device identifier and the device condition,” notwithstanding Patent Owner’s arguments to the contrary.

g) [1(d-2)]: *“the images comprising . . . superimposed visual indicators”*

Petitioner contends “Baier discloses ‘[v]arious display items can be dynamically superimposed on the base presentation component’ The superimposed information is ‘situation-specific’ based on the user’s interest and displayed on ‘the user’s current view of the automation control system (‘base presentation’).” Pet. 32–33 (citing Ex 1007, 2:19–28; 4:27–30; 8:12–36; 13:59–61; 20:32–39, 47–56; 20:32–39; 20:60–21:3; 24:64–25:24; Ex 1002 ¶ 129). Baier’s Figure 30, as annotated by Petitioner (Pet. 33), is a graphical illustration provided below:

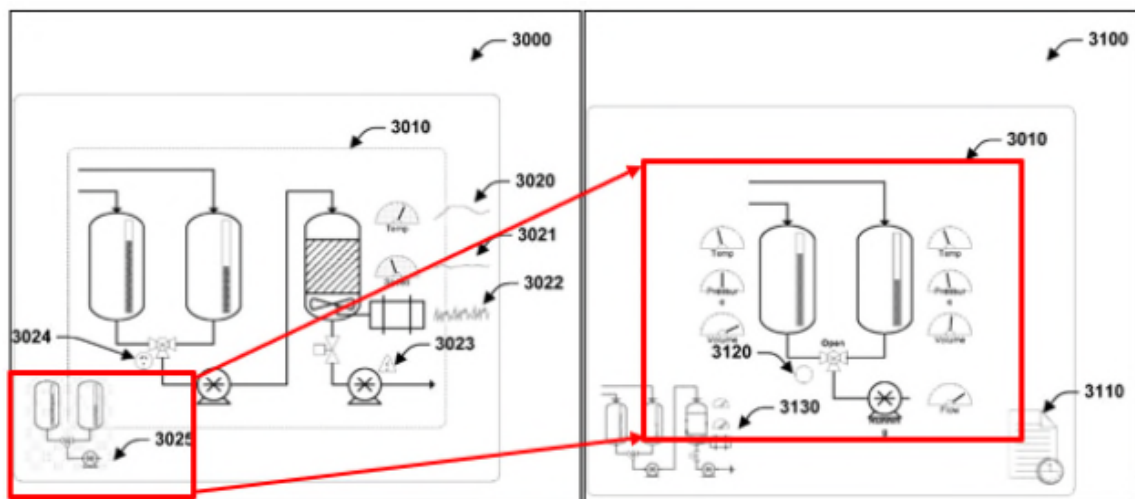


“FIG[. 30[] illustrate[s] an exemplary display that a visualization component embodiment can render.” Ex. 1007, 354–55. Annotated Figure 30, above, “shows ‘[i]tems 3020, 3021, 3022, and 3025’ ‘superimposed on the display’ formatted so as not to ‘obscure information provided by the base presentation 3010,’ and ‘items 3023 and 3024 are superimposed entirely over base presentation 3010.’” Pet. 33 (citing Ex 1007, 20:49–56; Figs. 30–31, 33–34; 20:32–39, 20:60–1:3; Ex 1002 ¶ 130).

Petitioner’s unrebutted assertions and explanations (Pet. 32–33) are consistent with and supported by the evidence cited by Petitioner. On this record, Petitioner has shown sufficiently that Baier discloses limitation [1(d-2)], i.e., the displayed images include “superimposed visual indicators.” At this stage, Patent Owner does not allege any deficiencies in this particular aspect of Petitioner’s showing. *See* Prelim. Resp. 20 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

h) [1(d-3)]: “the images comprising . . . hierarchically organized graphical images”

Petitioner contends Baier discloses accessing graphical images through each other for quick access to additional information by “drilling down” into a subset of data. Pet. 34. In support of this contention, Petitioner offers a side-by-side comparison of annotated Figures 30 and 31. *Id.*



Baier Fig. 30 (annotated)

Baier Fig. 31 (annotated)

“FIGS. 30–31 illustrate an exemplary display that a visualization component embodiment can render.” Ex. 1007, 3:54–55.

“Baier also generally discloses that ‘as a user selects, or hovers over a particular view’ a display object corresponding to that view is ‘displayed in greater detail.’” Pet. 34 (citing Ex. 1007, 22:35–37, 8:40–52, 25:25–37).

In Figure 30,

[d]isplay 3000 includes a base presentation 3010 comprising two tanks connected to a first valve and a first pump as well as a mixer, motor, a second value and a second pump. Base presentation 3010 also includes two gages associated with the motor identifying motor temperature and speed. As shown, the base presentation 3010 does not occupy they [sic] entire display

rather it is centered in the middle providing a border of free space.

Ex. 1007, 20:32–39. In Figure 31, “[a] user can interact with any of the display objects which may cause the display to change. For instance, if a user selects or otherwise identifies item 3025 the display 3100 of FIG. 31 could result. As illustrated by FIG. 31, the interface system updates the base presentation 3110 to show the selected information and automatically superimposes new, situation-specific information that is related to the updated display 3100. In particular, items 3110, 3120 and 3130 are displayed.” *Id.* at 20:57–64.

Petitioner’s un rebutted assertions and explanations are consistent with and supported by the evidence cited by Petitioner. On this record, Petitioner has shown sufficiently that Baier discloses limitation [1(d-3)], i.e., the images include “hierarchically organized graphical images.” At this stage, Patent Owner does not allege any deficiencies in this particular aspect of Petitioner’s showing. *See* Prelim. Resp. 20 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

i) [1(d-4)]: “the images comprising . . . vector-based graphical images”

Claim 1 requires “retrieving images” including, *inter alia*, “vector-based graphical images.” Ex. 1001, 19:22–25.

Petitioner contends Baier discloses limitation [1(d-4)] because Baier discloses that “as a user zooms in on an area of an image that is pixel-mapped to a higher-resolution version thereof, data corresponding to the area under focus is streamed to the display area coincident with respect [to] pixels mapped thereto and resolution of the image area can be augmented,

preserved, or enhanced.” Pet. 35 (alteration by Petitioner) (quoting Ex. 1007, 15:63–16:1). Petitioner also contends Baier discloses a reference component 1602 that “determines or infers focus of attention of the user, or level and rate of zoom into or out of a display area” and generates “reference information”; and a resolution component 1604 that determines additional image data needed to “increase resolution of the area of interest.” *Id.* (citing Ex. 1007, 16:11–21).

Petitioner asserts the process of generating “reference information” determines a “vector,” i.e., “a quantity with a magnitude and direction.” Pet. 36 (citing Ex. 1002 ¶ 137). According to Petitioner, Baier’s visualization system “determines the level (magnitude) of ‘zooming in or out’ or ‘panning across’ (direction) input by a user and then streams images using this vector to preserve image resolution.” *Id.* (emphases omitted) (citing Ex. 1002 ¶ 137; Ex. 1007, 15:45–47, 16:61–67, 17:13–21).

Patent Owner disputes that Baier discloses limitation [1(d-4)]. *See* Prelim. Resp. 21–23; Ex. 2001 ¶¶ 77–79. Specifically, Patent Owner asserts Baier discloses streaming or downloading *resolution-dependent images* containing “additional pixel data” when a user zooms in on an area of an image. Prelim. Resp. 17–18, 20–23; *see id.* at 23, 22 n.38 (“The claim in paragraph 133 of Dr. Polish’s declaration [(Ex. 1002)] that ‘Baier discloses ‘vector-based graphical images’ is misleading. The images Dr. Polish points to [(Ex. 1002 ¶ 138)] are still raster images. A person of skill in the art ‘would understand this because Baier is still concerned here with pixel-mapping the detailed image to the sparse image.’”); *see* Ex. 2001 ¶¶ 71–72, 79; Ex. 1007, 17:22–40. Through its declarant, Dr. Zheng, Patent Owner responds to Petitioner’s argument:

Baier does not mention vector-based graphical images, but only pixels. Indeed, Baier references mapping and comparing pixels at least fourteen separate times. [e.g., EX1007 at 15:62-16:1, 16:55-65, 17:3-6, 17:11-17]. Baier does not discuss retrieving graphical information based on a device identifier and device condition, but instead retrieves additional pixels from a remote server based on a user's point of reference in the sparse image.

As Baier focuses on retrieving pixel mapped images based on the pixels the user is focusing on in a sparse image, Baier fails to disclose (1) retrieving, based on the device identifier and device condition, “images comprising all [of] the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, *and vector-based graphical images*”; and (2) “dispatching” this retrieved collection of image types to a communication destination using a communication method after “determining” the destination and method “based on the device identifier and the device condition.”

Ex. 2001 ¶¶ 77–78 (emphasis added).

Based on the current record, we disagree with Petitioner that Baier discloses “retrieving images” including “vector-based graphical images” according to limitation [1(d-4)]. See Pet. 34–36; Ex. 1002 ¶¶ 133–138; Ex. 2001 ¶¶ 41–43, 71, 77–79. The '082 patent distinguishes between “raster-based graphical images” and “vector-based graphical images.” See Ex. 1001, 5:55–65, 17:19–21, Fig. 10. For instance, Figure 10 of the '082 patent illustrates “one or more raster-based graphical images 1032” and “one or more vector-based graphical images 1034” in data store 1006 that premises monitoring system 1004 may retrieve separately. *Id.* at 5:55–65, Fig. 10; see *id.* at 17:19–21.

Based on the current record, raster-based images are resolution dependent and “characterized by the width and height of the image as pixels

and the number of bits per pixel.” Ex. 2001 ¶ 41. “The resolution is typically described as ppi (number of pixels per inch of an image) or dpi (number of dots per inch of an image).” *Id.* Raster-image formats store “information for every pixel of the graphic.” Ex. 2008, 33–34.

Moreover, on this record, vector-based images are resolution independent and “defined by mathematical equations” with image data “stored as discrete geometric locations (x, y values) known as vertices that define the shape of geometric objects such as lines and curves.” Ex. 2001 ¶ 42; *see id.* ¶ 96; Ex. 2008, 33–34. Vector-image formats store “instructions that define geometry features (points, lines, polygons)” instead of “information for every pixel of the graphic.” Ex. 2001 ¶ 43.

Baier discloses that “as a user zooms in on an area of an image that is pixel-mapped to a higher-resolution version thereof, data corresponding to the area under focus is streamed to” the user’s device, the higher-resolution version comprises pixel data for a raster-based image just as the lower-resolution version comprises pixel data for a raster-based image. *See* Ex. 1007, 15:58–16:10, 16:55–17:40, Figs. 19–22; Ex. 2001 ¶¶ 71–72, 79. As Baier explains, “image data” is “pixel-mapped to corresponding image data” to correlate the lower-resolution version and the higher-resolution version. Ex. 1007, 17:3–4; *see id.* at 15:58–60, 15:63–67, 17:25–28.

Although Petitioner asserts Baier’s visualization system determines a user’s zoom level (magnitude) and pan position (direction) is used to select a suitable raster-based image to stream to the user’s device, that does not mean that the selected image, e.g., a lower-resolution version or a higher-resolution version, includes a vector. *See* Ex. 1007, 15:58–16:10, 16:61–67, 17:13–21; Ex. 2001 ¶¶ 41–43, 71, 79, 96; Pet. 36.

At this stage of the proceeding, we preliminarily find Petitioner's assertions and explanations are inconsistent with and unsupported by the evidence cited by Petitioner. On this record, Petitioner has not shown sufficiently that Baier discloses limitation [1(d-4)]. At this stage, Patent Owner alleges deficiencies in this particular aspect of Petitioner's showing and, on this record, we agree, as discussed above.

j) Preliminary Conclusion for Anticipation of Claim 1 by Baier

For the reasons provided above, Petitioner has not sufficiently shown that Baier anticipates independent claim 1. We have considered Patent Owner's arguments that Petitioner's arguments are insufficient with respect to limitation [1(d-4)] and, at this stage, on this record, we agree.

Accordingly, we are persuaded that Petitioner has not shown a reasonable likelihood that it would prevail in establishing that the subject matter of claim 1 is anticipated by Baier.

2. Dependent Claims 2–16

Claims 2–16 depend directly or indirectly from claim 1. Ex. 1001, 18:64–20:49. Hence, claims 2–16 incorporate all of claim 1's limitations. *See* 35 U.S.C. § 112 ¶ 4.

Petitioner also contends the subject matter of dependent claims 2 through 16 are anticipated by Baier. *See* Pet. 40–51. Although Petitioner provides analysis addressing each claim limitation and identifying evidence allegedly supporting its position, we preliminarily find Petitioner's analysis of the dependent claims is deficient by relying on its analysis of claim 1, as discussed above with respect to limitation [1(d-4)].

Other than its arguments presented regarding claim 1, Patent Owner does not, at this stage, otherwise dispute Petitioner's additional arguments, analysis, or evidence for dependent claims 2–16. *See* Prelim. Resp. 23–24 (“Because Baier does not disclose all the elements of claim 1, dependent claims 2–16 also do not disclose all the elements of independent claim 1. Thus, for all the reasons set forth above, [Petitioner] fails to show any reasonable likelihood that it will prevail on ground 1.”). Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

On this record, we are not persuaded that Petitioner sufficiently demonstrates a reasonable likelihood of succeeding in its challenges to claims 2–16 as anticipated by Baier under Ground 1.

3. *Independent Claim 17*

Petitioner also contends the subject matter of independent claim 17 is anticipated by Baier. *See* Pet. 51.

Claim 17 is similar in scope to claim 1, but instead recites “[a] computerized system comprising a central monitoring system” *that carries out various method steps*, i.e., “*receiving* one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems”; “*retrieving* enhanced information based on the device identifier and the device condition”; “*determining* one or more communication methods and communication destinations based on the device identifier and the device condition”; and “*dispatching* the enhanced information to the one or more communication destinations using the one or

more communication methods.” Ex. 1001, 20:55–64 (*italics added*).¹²

Claim 17 also requires that “the enhanced information based on the device identifier and the device condition comprises images based on the device identifier and the device condition,” in which the images include “all of the members selected from the group consisting of superimposed visual indicators, hierarchically organized graphical images, and vector-based graphical images.” *Id.* at 20:64–21:3.

Petitioner alleges “[c]laim 17 is nearly identical to claim 1. The only difference is that claim 17 recites ‘a computerized system’ with a ‘central monitoring system’ performing the same steps as the ‘code’ in claim 1. . . . Baier’s visualization system is a computerized system with a central monitoring system for performing these steps.” Pet. 51 (citing Ex. 1001, claims 1, 17) (*emphasis omitted*). “[F]or for all of the same reasons described for claim 1, incorporated here, Baier also invalidates claim 17.” *Id.* (citing Ex. 1002 ¶ 180).

Patent Owner disputes Petitioner’s arguments, analysis, and evidence for independent claim 17. *See* Prelim. Resp. 20–23. Patent Owner argues independent claim 17 is not anticipated for reasons commensurate with arguments presented with respect to independent claim 1, particularly because “Baier does not disclose retrieving and sending an SVG file based on an event (device condition and device identifier) occurring at a monitored

¹² Although not before us in this proceeding, we note a claim that recites both a system (or apparatus) and a method of using that system (or apparatus) is indefinite under 35 U.S.C. § 112, second paragraph. *See IPXL Holdings, LLC v. Amazon.com, Inc.*, 430 F.3d 1377, 1383–84 (Fed. Cir. 2005) (holding that a claim that recites both a system and the method for using that system does not apprise a person of ordinary skill in the art of its scope).

premises but instead discloses ‘streaming additional pixel data to address the resolution problem’ based on actions occurring at a user’s device (i.e. a user changing their level of zoom or pan in a sparse image).”¹³ Prelim. Resp. 21.

On this record, and for the same reasons discussed above (*see* § II.E.1) with respect to limitation [1(d-4)] in claim 1, we are not persuaded that Petitioner sufficiently demonstrates a reasonable likelihood of succeeding in its challenge to claim 17 as anticipated by Baier.

F. Alleged Obviousness of Claims 1–17 Under § 103(a) over Baier Alone

1. Independent Claim 1

a) Limitations [1(a)], [1(b)], [1(c-1)], [1(c-2)], [1(d-1)], [1(d-2)], and [1(d-3)]

For the reasons discussed above, Petitioner establishes sufficiently that Baier discloses limitations [1(a)], [1(b)], [1(c-1)], [1(c-2)], [1(d-1)], [1(d-2)], and [1(d-3)]. *See* Pet. 16–34; Ex. 1002 ¶¶ 102–107, 109–113, 115–121, 123–125, 127–132; §§ III.E.1.b)–III.E.1.h), *supra*.

b) Limitation [1(d-4)]

Claim 1 requires “retrieving images” including, *inter alia*, “vector-based graphical images.” Ex. 1001, 19:22–25.

As discussed above, Petitioner does not establish sufficiently that Baier discloses limitation [1(d-4)]. *See* Pet. 34–36; Ex. 1001, 5:55–65, 17:19–21, Fig. 10; Ex. 1002 ¶¶ 133–138; Ex. 2001 ¶¶ 41–43, 71, 77–79; § III.E.1.i), *supra*. An obviousness analysis may consider an ordinarily

¹³ This argument is commensurate with Patent Owner’s position that Baier does not disclose limitation [1(d-4)] in claim 1, reciting “images comprising . . . vector-based graphical images.” *See* § III.E.1.i), *supra*.

skilled artisan’s knowledge when evaluating the differences between the claimed invention and the prior art. *See, e.g., Koninklijke Philips N.V. v. Google LLC*, 948 F.3d 1330, 1337–38 (Fed. Cir. 2020). A party must, however, “provide adequately developed explanations when relying on background knowledge based on cited art.” *Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F.3d 1359, 1366 (Fed. Cir. 2015).

Regarding limitation [1(d-4)]’s absence from Baier, Petitioner does not attempt to explain why an ordinarily skilled artisan would have been motivated to modify Baier’s visualization system to include limitation [1(d-4)] based on Baier’s teachings or the skilled artisan’s knowledge. *See* Pet. 35–36; Ex. 1002 ¶¶ 133–138. Hence, based on the current record, Petitioner does not establish sufficiently for the Baier-only obviousness challenge that claim 1’s subject matter would have been obvious.

*c) Preliminary Conclusion for Obviousness of Claim 1
in view of Baier Alone*

For the reasons discussed above, Petitioner does not establish sufficiently that Baier discloses “retrieving images” including “vector-based graphical images” according to limitation [1(d-4)] or that an ordinarily skilled artisan would have been motivated to modify Baier’s visualization system to include that feature based on Baier’s teachings or the skilled artisan’s knowledge. *See* Pet. 35–36; Ex. 1001, 5:55–65, 17:19–21, Fig. 10; Ex. 1002 ¶¶ 133–138; Ex. 2001 ¶¶ 41–43, 71, 77–79; §§ III.E.1.i), III.F.1.b), *supra*. Hence, Petitioner does not establish sufficiently that claim 1 would have been obvious over Baier alone.

2. *Dependent Claims 2–16*

Claims 2–16 depend directly or indirectly from claim 1. Ex. 1001, 18:64–20:49. Accordingly, claims 2–16 incorporate all of claim 1’s limitations. *See* 35 U.S.C. § 112 ¶ 4.

Because Petitioner does not establish sufficiently that claim 1 would have been obvious over Baier alone, Petitioner does not establish sufficiently that claims 2–16 would have been obvious over Baier. *See* § III.F.1.c), *supra*.

3. *Independent Claim 17*

Claim 17 is similar in scope to claim 1, but instead recites “[a] computerized system comprising a central monitoring system” that carries out various method steps. Ex, 1001, 20:55–21:3.

Because Petitioner does not establish sufficiently that claim 1 would have been obvious over Baier alone, Petitioner does not establish sufficiently that claim 17 would have been obvious over Baier alone in light of the recitation in claim 17 of “images comprising . . . vector-based graphical images,” which is commensurate in scope to limitation [1(d-4)], which we preliminarily found to not be taught or suggested by Baier. *See* §§ III.E.1.i), III.E.3, *supra*.

G. *Alleged Obviousness of Claims 1–17 Under § 103(a) over Baier and Callaghan*

Petitioner contends claims 1–17 are unpatentable under § 103(a) as obvious over Baier and Callaghan. *See* Pet. 1, 16–36, 36–39, 51. Patent Owner disputes Petitioner’s contentions. *See* Prelim. Resp. 15–18, 30–33, 36–39. An overview of Baier and Callaghan is provided above. *See*

§§ III.D.1–III.D.2, *supra*. As explained below, Petitioner establishes sufficiently for purposes of institution that the combined disclosures of Baier and Callaghan teach or suggest the subject matter of claims 1–17.

1. Independent Claim 1

a) Limitations [1(a)], [1(b)], [1(c-1)], [1(c-2)], [1(d-1)], [1(d-2)], and [1(d-3)]

For the reasons discussed above, Petitioner establishes sufficiently that Baier discloses limitations [1(a)], [1(b)], [1(c-1)], [1(c-2)], [1(d-1)], [1(d-2)], and [1(d-3)]. *See* Pet. 16–34; Ex. 1002 ¶¶ 102–107, 109–113, 115–121, 123–125, 127–132; §§ III.E.1.b)–III.E.1.h), *supra*.

b) Limitation [1(d-4)]

Claim 1 requires “retrieving images” including, *inter alia*, “vector-based graphical images.” Ex. 1001, 19:22–25.

Petitioner contends Callaghan teaches limitation [1(d-4)] because Callaghan discloses “using vector-based graphical images including vector image files, such as a ‘scalable vector graphics’ (SVG) file”; “using SVG files in an industrial environment to ‘represent a portion of a device’ such that a ‘user can interact with the graphical representation’ of the device to ‘monitor a device’s performance’”; and “SVG files provide small-sized ‘vector images’ ‘to render device-related graphics and/or text.’” Pet. 14, 38 (emphasis omitted) (citing Ex. 1008 (Callaghan) ¶¶ 9–10). Petitioner also contends “[w]hen a user wishes to view a particular device, the user can download the SVG file for display.” *Id.* at 37–39 (citing Ex. 1008 ¶ 13).

Patent Owner admits Callaghan discloses “a scalable vector graphics (SVG) XML markup language file representing a user interface for an

industrial device.” Prelim. Resp. 30 (citing Ex. 2001 ¶¶ 62–63; Ex. 1008 at Abstr.). However, Patent Owner asserts Callaghan does not disclose “retrieving the SVG file ‘based on the device identifier **and device condition**’”; or “‘dispatching’ the SVG file to a communication destination using a communication method after ‘determining’ the destination and method ‘based on the device identifier **and the device condition**.’” *Id.* (citing Ex. 1008 ¶¶ 9–10, 24, 29, 43; Ex. 2001 ¶¶ 62–63, 65).

Based on the current record, Petitioner establishes sufficiently that Callaghan teaches limitation [1(d-4)]. *See* Pet. 13, 36–39; Ex. 1002 ¶¶ 93, 139–146. Specifically, Callaghan discloses “employing a Web-based interface to remotely obtain an SVG file associated with a device of interest” and executing the SVG file to “remotely visualize” the device by generating “a graphical display illustrating various aspects” of the device. Ex. 1008 ¶¶ 13, 51; *see id.* ¶ 11; Ex. 1002 ¶¶ 93, 140; Ex. 2001 ¶ 59. The graphical display may include “alphanumeric displays and/or other visual indications” of device status, inputs, outputs, operations, and capabilities. Ex. 1008 ¶¶ 24, 29, 43, Abstr.; Ex. 1002 ¶ 93.

An “SVG file can be executed locally via basic ASCII drawing commands,” and “vector images can be generated to render device-related graphics and/or text within the Web-based interface” rather than “download one or more graphics files (e.g., GIF, JPG, TIF, etc.).” Ex. 1008 ¶¶ 13, 52; *see id.* ¶¶ 11, 24, 28, 43; Ex. 1002 ¶ 140; Ex. 2001 ¶¶ 60–61.

Patent Owner’s assertion that Callaghan does not disclose “retrieving” the SVG file or “dispatching” the SVG file according to claim 1 does not respond to the proposed combination. *See* Pet. 21–24, 30–32, 36–39; Prelim. Resp. 30. Petitioner cites Baier’s visualization system for disclosing “retrieving” images and “dispatching” images according to claim 1. *See*

Pet. 21–24, 30–32; Ex. 1002 ¶¶ 109–113, 123–125. Petitioner cites Callaghan for teaching that the images may include “vector-based graphical images.” *See* Pet. 13, 36–39; Ex. 1002 ¶¶ 93, 139–140. Where, as here, an obviousness challenge rests on the combined disclosures in multiple references, a patentee cannot show nonobviousness by attacking the references individually. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

c) Alleged Reasons for Combining the Teachings of the References

Petitioner identifies reasons that would have prompted an ordinarily skilled artisan to combine Callaghan’s teachings with Baier’s teachings in the way Petitioner proposes. *See* Pet. 37–39. Additionally, Petitioner explains that an ordinarily skilled artisan would have had a “reasonable expectation of success” in combining the teachings of the references. *Id.* at 39. Dr. Polish’s testimony supports Petitioner’s positions. *See* Ex. 1002 ¶¶ 140–147.

For instance, Dr. Polish testifies that “Baier describes using ‘substantially any type of application’ for displaying images to a user.” Ex. 1002 ¶ 145 (emphasis omitted) (citing Ex. 1007, 5:57–66). For image files used to display information to users, he explains that the “selection of one option or the other would have been a simple matter of design choice” for an ordinarily skilled artisan depending on (1) “the application,” (2) “the availability of memory to store varying resolutions,” and (3) “the computational resources.” *Id.* ¶ 58. He also explains that Callaghan’s SVG files “would have been an obvious design choice in any bandwidth-limited environment.” *Id.* ¶ 143.

Dr. Polish also opines that Baier and Callaghan “acknowledge that increasing resolution of graphical images,” e.g., when a user zooms in on an area of an image, “requires a balance of ‘system resources,’ including ‘processing resources’ and ‘bandwidth’ and must ‘facilitate system speed or responsiveness’”; and they also “solve the problems of bandwidth and memory usage without compromising functionality.” Ex. 1002 ¶¶ 142–143 (citing Ex. 1007, 15:47–53; Ex. 1008 ¶ 30). He explains that Baier solves these problems by “streaming additional pixel data over a network to the display area ‘as a user zooms in’ and thus ‘providing high-resolution images while judiciously utilizing system resources.’” *Id.* ¶ 142 (citing Ex. 1007, 15:45–16:10, Figs. 16, 19). Dr. Polish further explains that Callaghan solves these problems by using SVG files that “reduc[e] overhead and bandwidth requirements” and “render[] graphics that are resolution independent and searchable.” *Id.* (citing Ex. 1008 ¶¶ 9–10, 24).

Dr. Polish further testifies that an ordinarily skilled artisan would have been motivated to modify Baier’s visualization system to include Callaghan’s SVG files to “reduce[] storage and bandwidth consumption while allowing a user to zoom in on particular images.” Ex. 1002 ¶¶ 140–141, 143. He explains that Callaghan’s SVG files “are only retrieved when necessary and are small-sized and can be magnified.” *Id.* ¶ 140; *see id.* ¶ 93.

Patent Owner disputes that an ordinarily skilled artisan would have been motivated to modify Baier’s visualization system to include Callaghan’s SVG files. *See* Prelim. Resp. 7–8, 15–16, 17, 21–23, 24–26; Ex. 2001 ¶¶ 82–86. In particular, Patent Owner argues that an ordinarily skilled artisan “would not have been motivated to combine Baier with Callaghan or any other teaching knowledge of using vector graphics to

render graphical user interfaces” because Baier and Callaghan each teach away from the claimed invention. Prelim. Resp. 31.

Patent Owner asserts Baier teaches away from the claimed invention because an ordinarily skilled artisan would have been discouraged from “retrieving Callaghan’s SVG file, which does not store data for each pixel and does not contain the pixels needed to augment or increase resolution on the user device.” Prelim. Resp. 31–32 (citing Ex. 1007, 15:42–18:30; Ex. 2001 ¶¶ 72, 82). Patent Owner asserts Callaghan teaches away from resolution-dependent images such as those found in Baier “in favor of SVG XML markup language files that can be executed on the client-side to allow for rendering ‘resolution-independent’ graphics.” *Id.* at 15 (citing Ex. 2001 ¶¶ 60–64; Ex. 1008 ¶¶ 7, 10, 30, 43).

Additionally, Patent Owner contends “any attempt to use Callaghan’s resolution independent SVG file in Baier’s resolution dependent user interface would require a fundamental redesign of Baier.” Prelim. Resp. 32.

Based on the current record, Petitioner establishes sufficiently that an ordinarily skilled artisan would have had reasons to combine Callaghan’s teachings with Baier’s teachings in the way Petitioner proposes. *See* Pet. 37–39; Ex. 1002 ¶¶ 140–147. As Dr. Polish testifies, an ordinarily skilled artisan would have been motivated to modify Baier’s visualization system to include Callaghan’s SVG files to “reduce[] storage and bandwidth consumption while allowing a user to zoom in on particular images.” Ex. 1002 ¶¶ 140–141, 143. The “reduce[d] storage and bandwidth consumption” addresses Baier’s concern about a system remaining “fast, not computationally expensive, and thus robust.” *See* Ex. 1007, 6:52–55, 23:41–44.

Consistent with Dr. Polish’s testimony, Callaghan explains that SVG files have advantages over conventional systems and techniques, including “mitigating downloading image files (e.g., BMP, GIF, TIF, JPG, etc.)”; “reducing overhead and bandwidth requirements”; and “rendering graphics that are resolution independent and searchable.” Ex. 1008 ¶ 10; *see id.* ¶¶ 9, 30, 43, 52.

Also consistent with Dr. Polish’s testimony, Dr. Zheng testifies that “vector-based images can be scaled to any size without sacrificing image quality” while “still maintaining a small file size, which enables low-cost data transmission.” Ex. 2001 ¶ 45. He explains “[t]his is especially important when wireless communication is used in the system and one wants to keep packet size at a minimum.” *Id.* Dr. Zheng also explains that raster-based images are “large to store and large to transmit.” *Id.*

Any “need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining” references. *KSR*, 550 U.S. at 420. At this stage of the proceeding, we are persuaded that “reduc[ing] storage and bandwidth consumption” in Baier’s visualization system “while allowing a user to zoom in on particular images” suffices as a reason for combining Callaghan’s teachings with Baier’s teachings. *See* Ex. 1002 ¶¶ 140–141, 143; Ex. 2001 ¶ 45. The “desire to enhance commercial opportunities by improving a product or process is universal” *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006).

A motivation to combine “can be found explicitly or implicitly in the prior art references themselves, in market forces, in design incentives, or in ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent.’” *Forest Labs., LLC v. Sigmapharm Labs.*,

LLC, 918 F.3d 928, 934 (Fed. Cir. 2019) (quoting *Arctic Cat Inc. v. Bombardier Recreational Prods. Inc.*, 876 F.3d 1350, 1359 (Fed. Cir. 2017)). Here, Petitioner identifies a motivation to combine “in the prior art references themselves,” i.e., in Baier’s disclosures and Callaghan’s disclosures. *See, e.g.*, Pet. 37–39 (citing Ex. 1007, 10:29–32, 10:46–61, 15:45–16:10, Figs. 16, 19; Ex. 1008 ¶¶ 9–10, 24, 30); Ex. 1002 ¶¶ 142–143.

Moreover, “[t]here is a motivation to combine when a known technique ‘has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way,’ using the ‘prior art elements according to their established functions.’” *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380–81 (Fed. Cir. 2023) (citations omitted) (quoting *KSR*, 550 U.S. at 417; *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 799–800 (Fed. Cir. 2021)). Here, Petitioner proposes using Callaghan’s SVG files according to their established functions, i.e., to “render[] graphics that are resolution independent and searchable.” *See* Pet. 38; Ex. 1002 ¶¶ 141–144; Ex. 1008 ¶¶ 10, 24, 43, 52.

We disagree with Patent Owner that Baier and Callaghan each teach away from the claimed invention. *See* Prelim. Resp. 15, 25–26, 29, 31–33. A “reference does not teach away” if “it merely expresses a general preference for an alternative invention but does not ‘criticize, discredit, or otherwise discourage’ investigation into the invention claimed.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (quoting *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004)).

Baier does not “criticize, discredit, or otherwise discourage” using “vector-based graphical images” to display information to users. *See, e.g.*, Ex. 1007, 5:57–66, 15:43–18:30. Instead, Baier explains that a visualization

system may include a graphical user interface “to interact with the various components for providing industrial control information to users.” *Id.* at 5:57–60. Baier also explains that the interactions may involve “substantially any type of application” that (1) “sends, retrieves, processes, and/or manipulates” input data, (2) “receives, displays, formats, and/or communicates” output data, or (3) “facilitates operation of the enterprise.” *Id.* at 5:60–63; *see* Ex. 1002 ¶ 145. An SVG file “displays, formats, and/or communicates” output data. *See* Ex. 1002 ¶ 93; Ex. 1008 ¶ 10; Ex. 2001 ¶¶ 43, 63; Ex. 2008, 33–34.

Petitioner cites Baier’s disclosure about using “substantially any type of application” for displaying images to a user. Pet. 39 (citing Ex. 1007, 5:57–66) (emphasis omitted); *see* Ex. 1002 ¶ 145 (citing Ex. 1007, 5:57–66). But Patent Owner does not address that disclosure. *See, e.g.*, Prelim. Resp. 30–33; Ex. 2001 ¶¶ 71–72, 78–79, 82–83.

Moreover, Baier discloses simulating a “three-dimensional environment on the user’s display.” Ex. 1007, 30:45–49; *see id.* at 30:59–64, 30:67–31:3. An SVG file “provides a mechanism” to display “two and three dimensional images.” Ex. 1008 ¶ 28.

Patent Owner’s assertion that Callaghan teaches away from resolution-dependent images “in favor of” SVG files that permit rendering resolution-independent graphics actually seems to support Petitioner’s arguments about modifying Baier’s visualization system to include Callaghan’s SVG files, e.g., to replace higher-resolution and lower-resolution versions of raster-based images with smaller SVG files. *See* Pet. 36–39; Prelim. Resp. 15–16; Ex. 2001 ¶¶ 45, 64. As Dr. Zheng explains, raster-based images are “large to store and large to transmit.” Ex. 2001 ¶ 45.

Additionally, based on the current record, we disagree with Patent Owner that “any attempt to use Callaghan’s resolution independent SVG file in Baier’s resolution dependent user interface would require a fundamental redesign of Baier.” *See* Prelim. Resp. 32. “[A]ll modern displays are raster-oriented.” Ex. 2008, 34. The “difference between raster-only and vector graphics comes down to where they are rasterized,” i.e., “client side in the case of vector graphics, as opposed to already rasterized on the server.” *Id.* And typically, “vector formats can also integrate raster images and can combine them with vector information.” *Id.* Moreover, SVG files are “supported by many known Web browsers (e.g., via an SVG plug-in).” Ex. 1008 ¶ 9; *see id.* ¶ 24. Hence, contrary to Patent Owner’s contention, modifying Baier’s visualization system to include Callaghan’s SVG files would not require “a fundamental redesign of Baier.” *See* Prelim. Resp. 32.

*d) Preliminary Conclusion for Obviousness of Claim 1
in view of Baier and Callaghan*

As discussed above, Petitioner’s analysis addresses how the combined disclosures in Baier and Callaghan teach claim 1’s subject matter. *See supra* §§ III.E.1.a)–III.E.1.h), III.G.1.b). Additionally, Petitioner provides a reason with rational underpinning as to why an ordinarily skilled artisan would have been motivated to combine Callaghan’s teachings with Baier’s teachings in the way Petitioner proposes and would have had a reasonable expectation of success. *See* § III.G.1.c), *supra*. Hence, on this record, we preliminarily conclude that Petitioner demonstrates a reasonable likelihood of prevailing in proving that claim 1 would have been obvious over Baier and Callaghan. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

2. *Dependent Claims 2–16*

Claims 2–16 depend directly or indirectly from claim 1. Ex. 1001, 19:26–20:54.

For claims 2–16, Petitioner provides an analysis supported by Dr. Polish’s testimony about how the combined disclosures in Baier and Callaghan teach or suggest the claimed subject matter. *See* Pet. 40–51; Ex. 1002 ¶¶ 148–179.

At this stage of the proceeding, Patent Owner makes no arguments specific to claims 2–16. *See, e.g.*, Prelim. Resp. 20 *et seq.*

Based on the current record and for the reasons advanced by Petitioner and supported by Dr. Polish’s testimony, Petitioner establishes sufficiently that the combined disclosures in Baier and Callaghan teach or suggest the subject matter in claims 2–16. *See* Pet. 41–53; Ex. 1002 ¶¶ 148–179. Hence, Petitioner demonstrates a reasonable likelihood of prevailing in proving that claims 2–16 would have been obvious over Baier and Callaghan. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

3. *Independent Claim 17*

Petitioner fails to advance *any* arguments in connection with independent claim 17 regarding obviousness over Baier and Callaghan that relies upon Callaghan. *See* Pet. 51 (“Claim 17 is nearly identical to claim 1. The only difference is that claim 17 recites ‘a computerized system’ with a ‘central monitoring system’ performing the same steps as the ‘code’ in claim 1. . . . Thus, for all of the same reasons described for claim 1, incorporated here, Baier also invalidates claim 17.”).

On the current record, lacking any arguments directed to Callaghan in connection with claim 17, we are not persuaded that Petitioner sufficiently demonstrates a reasonable likelihood of succeeding in its challenge to independent claim 17 as obvious over the combination of Baier and Callaghan.

*H. Alleged Obviousness of Claims 1–17 Under § 103(a)
over Childers and Barker*

Petitioner contends that claims 1–17 are unpatentable under § 103(a) as obvious over Childers and Barker. *See* Pet. 2, 53–81. Patent Owner disputes Petitioner’s contentions. *See* Prelim. Resp. 6–7, 30–33, 34–36.

Above, we provided overviews of Childers and Barker. Below, we consider the obviousness issues. As explained below, Petitioner establishes sufficiently for purposes of institution that the combined disclosures in Childers and Barker teach the subject matter in claims 1–16.

1. Independent Claim 1

a) [1(pre)]: “A non-volatile and non-transient computer-readable medium comprising machine-executable code comprising:”

Claim 1 recites “[a] . . . computer-readable medium comprising machine-executable code comprising.” Ex. 1001, 19:6–7.

Petitioner contends that Childers teaches claim 1’s preamble because “Childers’ central server includes memory storing instructions for performing its functions.” Pet. 57 (citing Ex. 1009 ¶ 110; *see id.* ¶ 96; Ex. 1002 ¶ 192).

Petitioner’s assertions and explanations are consistent with and supported by the evidence cited by Petitioner. On this record, Petitioner has

shown sufficiently that Childers discloses the claim’s preamble.¹⁴ At this stage, Patent Owner does not allege any deficiencies in this aspect of Petitioner’s showing. *See* Prelim. Resp. 33 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

b) [1(a)]: “code receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems”

Claim 1 recites “code receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems.” Ex. 1001, 19:8–10.

Petitioner contends Childers teaches limitation [1(a)] because Childers discloses a “server that *receives signals* from remote network appliances in a *remote alarm monitoring system*.” Pet. 58 (citing Ex. 1002 ¶ 194; Ex. 1009 ¶¶ 60, 211). Petitioner asserts that the received signals contain a device identifier because Childers discloses that the server may communicate with the network appliances through the hypertext transfer protocol (HTTP) using the transmission control protocol/internet protocol (TCP/IP); and “HTTP communications that use TCP/IP provide unique addresses for each appliance.” Pet. 58–59 (citing Ex. 1002 ¶¶ 194–195; Ex. 1009 ¶¶ 59–61, 66, 123, 159–197; Ex. 1019 § 3.1; Ex. 1021 §§ 2.7, 3.1; Ex. 1024, 11). Petitioner asserts that the received signals contain a device condition because Childers discloses a network appliance may send “information

¹⁴ We need not determine whether the preamble is limiting because Petitioner has sufficiently shown that Childers discloses this aspect of the claim. *See Vivid Techs.*, 200 F.3d at 803; *see generally* Prelim. Resp. 33 *et seq.*

relating to alarms and alerts” to the server; and “[w]ith the communication, the network appliance may . . . indicate status,’ such as ‘temperature, humidity, door sensors, alarms, power quality, motion detectors and cameras, among others.’” Pet. 59 (quoting Ex. 1009 ¶¶ 60–61; *see id.* ¶¶ 59, 123, 125, 138, 197; Ex. 1002 ¶ 197).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation [1(a)]. *See, e.g.*, Prelim. Resp. 33 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record and for the reasons advanced by Petitioner and supported by Dr. Polish’s testimony, Petitioner establishes sufficiently that Childers teaches limitation [1(a)]. *See* Pet. 58–60; Ex. 1002 ¶¶ 193–198, 196 nn.10–11.

c) [1(b)]: “*code retrieving enhanced information based on the device identifier and the device condition;*”

Claim 1 recites “code retrieving enhanced information based on the device identifier and the device condition.” Ex. 1001, 19:11–12.

Petitioner contends the combined disclosures in Childers and Barker teach limitation [1(b)]. *See* Pet. 60–62. Specifically, Petitioner asserts Childers’ server stores image and configuration data (e.g., data for maps or plots with superimposed icons) in memory; retrieves the stored data if “there is an event associated with the network appliance”; and transfers the retrieved data to a client machine for display. Pet. 60–61 (citing Ex. 1002 ¶¶ 199–201; Ex. 1009 ¶¶ 21–22, 60, 74–75, 79, 84, 105, 132, Fig. 5). Additionally, Petitioner asserts Barker discloses software routines (“Barker’s Rule-Based Software”) that execute on a central server and process device

identifiers and device conditions to generate outputs. *Id.* at 61 (citing Ex. 1002 ¶¶ 200–201; Ex. 1010 ¶¶ 15, 47, 49–50, 52, 54).

Petitioner further asserts “Childers/Barker discloses code ‘retrieving [e.g., by Childers’ central server implementing Barker’s Rule-Based Software] enhanced information [e.g., Childers’ maps and icons] based on the device identifier and the device condition [e.g., a network appliance identifier and an alarm in Childers’ system].” *Id.* at 60 (citing Ex. 1002 ¶¶ 199–201) (emphasis omitted, bracketing in original). Petitioner explains that in the proposed combination the server would receive “an alarm condition and device identifier, e.g., via an HTTP communication.” *Id.* at 61. Petitioner also explains that after receiving the alarm condition and device identifier, the server would use “Barker’s Rule-Based Software, which is already set up to process the network appliance’s ‘network address’ and device state, to determine an output based on the alarm condition and device identifier, specifically the particular enhanced information to dispatch” as the output. *Id.* at 61–62 (citing Ex. 1002 ¶ 200; Ex. 1010 ¶¶ 47, 50).

Patent Owner disputes that the combined disclosures of Childers and Barker teach limitation [1(b)]. *See* Prelim. Resp. 33–34; Ex. 2001 ¶¶ 88–99. Specifically, Patent Owner asserts that Petitioner “does not even allege that either Barker or Childers discloses retrieving images based on a device identifier and device condition.” Prelim. Resp. 33.

Based on the current record, Petitioner establishes sufficiently that the combined disclosures in Childers and Barker teach limitation [1(b)]. *See* Pet. 52–53, 60–62; Ex. 1002 ¶¶ 182–183, 199–201. Specifically, Childers discloses a monitoring system including a server communicating with network appliances and client machines. Ex. 1009 ¶¶ 17–20; *see* Ex. 1002

¶¶ 96, 193. The server may “download information from the network appliances associated with sensor data.” Ex. 1009 ¶ 20; *see id.* ¶ 123; Ex. 1002 ¶¶ 96, 193. Also, the network appliances may “periodically deliver their sensor data” to the server. Ex. 1009 ¶ 61; *see* Ex. 1002 ¶ 193. The data from the network appliances may “indicate status” and include “information relating to alarms and alerts.” Ex. 1009 ¶¶ 60, 123; *see* Ex. 1002 ¶ 196.

Additionally, the server may deliver to a client machine software applications and data that enable the client machine to “retrieve, display, and/or manipulate data.” Ex. 1009 ¶¶ 20, 113; *see* Ex. 1002 ¶¶ 96, 199. For instance, the server may “deliver an application and associated map configuration data” that “enable the client to access and display a map.” Ex. 1009 ¶ 116; *see id.* ¶¶ 21, 24; Ex. 1002 ¶¶ 97, 199. The “map may have icons superimposed on a background image,” e.g., icons representing “network appliances or groupings of network appliances” and “arranged in a manner indicative of physical location, type, capabilities, status, alarm state, . . . or responsible party, among others.” Ex. 1009 ¶ 116; *see id.* ¶¶ 21, 24, 100, 128, 132, 134; Ex. 1002 ¶¶ 97, 199. The information for the background image and superimposed icons constitutes “enhanced information” according to limitation [1(b)] that the server retrieves before delivering to a client machine. *See* Ex. 1002 ¶¶ 198–199, 206.

As Petitioner asserts, Barker discloses software routines that execute on a central server and process device identifiers and device conditions to generate outputs. Pet. 61 (citing Ex. 1010 ¶¶ 15, 47, 49–50, 52, 54); *see* Ex. 1002 ¶ 201. Specifically, Barker discloses a central server that “receives the monitoring device data and processes the data according to a rules-based decision support logic.” Ex. 1010 ¶ 48; *see id.* ¶¶ 13, 50, Abstr., Figs. 5–6; Ex. 1002 ¶¶ 183–184. The central server identifies the monitoring device

that provided the data, e.g., “by determining a network address” assigned to the monitoring device or “by reading other identification data that can be included with the data input.” Ex. 1010 ¶ 50, Fig. 5; *see* Ex. 1002 ¶ 184. The data input may indicate a device condition, e.g., “on or off.” Ex. 1010 ¶ 52; *see* Ex. 1002 ¶ 183.

If processing “indicates that action is required,” the central server “generates one or more outputs associated with the rules.” Ex. 1010, ¶ 49; *see id.* ¶¶ 13, 54–55, Abstr., Fig. 6; Ex. 1002 ¶ 184. “The outputs include communication with indicated” authorized users “according to the monitoring device data rules.” Ex. 1010 ¶ 49; *see id.* ¶ 54; Ex. 1002 ¶ 184. For instance, “an authorized user may indicate a hierarchy of communication mediums (such as pager, mobile telephone, land-line telephone) that should be utilized in attempting to contact the user.” Ex. 1010 ¶ 49; *see id.* ¶ 54; Ex. 1002 ¶ 184.

As for Patent Owner’s assertion that Petitioner “does not even allege that either Barker or Childers discloses retrieving images based on a device identifier and device condition,” we are unpersuaded. *See* Prelim. Resp. 33. Rather, we are persuaded by Petitioner’s assertion that Childers teaches “retrieving enhanced information based on the device identifier and the device condition,” e.g., “enhanced information” including maps and icons. Pet. 60–61. Petitioner further asserts Barker teaches retrieving particular output information “based on the device identifier and the device condition.” *Id.* at 53, 61–62.

d) [1(c-1)]: “code determining one or more communication methods and communication destinations based on the device identifier and the device condition”

Claim 1 recites “code determining one or more communication methods and communication destinations based on the device identifier and the device condition.” Ex. 1001, 19:13–15.

Petitioner contends the combined disclosures in Childers and Barker teach limitation [1(c-1)]. See Pet. 62–64. Specifically, Petitioner asserts Childers’ server “stores ‘email lists,’ ‘alert lists,’ ‘notification lists,’ ‘responsibility lists,’ and ‘communication protocols’ that correspond to specific network appliances”; and communicates with various types of client machines, “including PCs and handheld devices, using different types of communication methods, such as ‘ethernet, wireless ethernet, TCP/IP, HTTP, FTP, SNMP, Blue Tooth’ as well as ‘email.’” *Id.* at 62 (citing Ex. 1009 ¶¶ 56, 72, 81, 90–98, 102–105, 141–142; Figs. 4, 9A–9B) (emphasis omitted). Petitioner contends that “the communication method and destination in Barker are based on the alarming device’s identifier and condition, as encoded in Barker’s rules associated with that device.” *Id.* at 64 (citing Ex. 1002 ¶ 206).

Petitioner explains that in the proposed combination the server would receive “an alarm condition and device identifier, e.g., via an HTTP communication.” Pet. 63. Petitioner also explains that, after receiving the alarm condition and device identifier, the server would use “Barker’s Rule-Based Software, which is already set up to process the network appliance’s ‘network address’ and device state, to ‘evaluat[e]’ a rule based on the identified device and condition to determine a communication destination

and method.” *Id.* (citing Ex. 1002 ¶ 204; Ex. 1010 ¶¶ 13–14, 47–53, Figs. 5–6).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation [1(c-1)]. *See, e.g.*, Prelim. Resp. 33 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record and for the reasons advanced by Petitioner and supported by Dr. Polish’s testimony, Petitioner establishes sufficiently that the combined disclosures in Childers and Barker teach limitation [1(c-1)]. *See* Pet. 62–64; Ex. 1002 ¶¶ 201–205.

e) [1(c-2)]: “*code dispatching the enhanced information to the one or more communication destinations using the one or more communication methods*”

Claim 1 recites “code dispatching the enhanced information to the one or more communication destinations using the one or more communication methods.” Ex. 1001, 19:16–18.

Petitioner contends the combined disclosures in Childers and Barker teach limitation [1(c-2)]. *See* Pet. 64–65. Citing its contentions concerning limitations [1(b)] and [1(c-1)], Petitioner asserts that “it would have been obvious to implement” Barker’s Rule-Based Software in Childers’ server to “retrieve enhanced information and generate an output and a destination and communication method for the output.” *Id.* at 65. Petitioner also asserts Childers’ server implementing Barker’s Rule-Based Software would dispatch the enhanced information, for example, by pushing data to a client machine such that “[t]he client may wait and acquire data updates as they occur.” *Id.* (quoting Ex. 1009 ¶ 87) (citing Ex. 1002 ¶ 208; Ex. 1009 ¶¶ 21, 75, 78–79, 87; Ex. 1010 ¶¶ 54, 66).

Patent Owner disputes that the combined disclosures in Childers and Barker teach limitation [1(c-2)]. *See* Prelim. Resp. 33–36, 39–40; Ex. 2001 ¶¶ 87–91. Specifically, Patent Owner asserts Petitioner does not “allege that either reference discloses dispatching images using a communication method determined based on the device identifier and device condition.” Prelim. Resp. 33; *see id.* at 39.

Based on the current record, Petitioner establishes sufficiently that the combined disclosures in Childers and Barker teach limitation [1(c-2)]. *See* Pet. 64–65; Ex. 1002 ¶¶ 206–207. For the reasons discussed above, Petitioner establishes sufficiently that the combined disclosures teach the “retrieving” recited in limitation [1(b)] and the “determining” recited in limitation [1(c-1)] “based on the device identifier and the device condition.” *See* Pet. 57, 64–65; Ex. 1002 ¶¶ 182–183, 198–205; §§ III.H.1.c)–1.d), *supra*. Additionally, Childers discloses a server delivering (“dispatching”) to a client machine software applications and data that enable the client machine to “retrieve, display, and/or manipulate data,” e.g., data for a background image and superimposed icons. Ex. 1009 ¶¶ 20–21, 24, 100, 113, 116; *see* Ex. 1002 ¶¶ 96–97, 199. The client machine “may connect to the server” and “may wait and acquire data updates as they occur.” Ex. 1009 ¶ 87; *see* Ex. 1002 ¶ 207.

As for Patent Owner’s assertion that Petitioner does not “allege that either reference discloses dispatching images using a communication method determined based on the device identifier and device condition,” Petitioner relies on the combined disclosures in Childers and Barker to teach limitation [1(c-2)]. *See* Pet. 64–65; Prelim. Resp. 33–36.

f) [1(d-1)]: “wherein the retrieving enhanced information based on the device identifier and the device condition comprises retrieving images based on the device identifier and the device condition”

Claim 1 recites “wherein the retrieving enhanced information based on the device identifier and the device condition comprises retrieving images based on the device identifier and the device condition, the images comprising all of the members selected from the group consisting of.”
Ex. 1001 19:19–22.

Petitioner contends the combined disclosures in Childers and Barker teach limitation [1(d-1)] for the same reasons that the combined disclosures teach limitation [1(b)]. Pet. 65.¹⁵ Petitioner also contends “Childers describes all the members of the claimed group.” *Id.* (citing Ex. 1002 ¶ 209).

Patent Owner contends that the combined disclosures in Childers and Barker fail to teach limitation [1(d-1)] for the same reasons that the combined disclosures fail to teach limitation [1(b)]. *See* Prelim. Resp. 33–34.

Based on the current record and for the reasons advanced by Petitioner and supported by Dr. Polish’s testimony, and for the reasons discussed above for limitation [1(b)], Petitioner establishes sufficiently that the combined disclosures in Childers and Barker teach limitation [1(d-1)]. *See* Pet. 65; Ex. 1002 ¶¶ 198–200, 208–214.

¹⁵ We note a typographical error in the Petition in Petitioner’s statement that “Childers/Barker discloses limitation 1[e-1] . . .” Pet. 65. There is no identified limitation 1[e-1].

g) [1(d-2)]: “*the images comprising . . . superimposed visual indicators*”

Claim 1 requires “retrieving images” including “superimposed visual indicators.” Ex. 1001, 19:23–24.

Petitioner contends Childers teaches limitation [1(d-2)] because Childers discloses storing and dispatching a map with icons superimposed on the map. Pet. 66 (citing Ex. 1002 ¶ 210; Ex. 1009 ¶¶ 21, 24, 100, 128, 132, Figs. 8A–8D).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation [1(d-2)]. See, e.g., Prelim. Resp. 33 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. See *Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record and for the reasons advanced by Petitioner and supported by Dr. Polish’s testimony, Petitioner establishes sufficiently that Childers teaches limitation [1(d-2)]. See Pet. 66; Ex. 1002 ¶¶ 209–210.

h) [1(d-3)]: “*the images comprising . . . hierarchically organized graphical images*”

Claim 1 requires “retrieving images” including “hierarchically organized graphical images.” Ex. 1001, 19:24–25.

Petitioner contends Childers teaches limitation [1(d-3)] because Childers discloses “icons may link to present or historical values of the network appliances associated with the icons”; “*an action such as clicking an icon may initiate another display such as another map, table, or graph*”; and the icons may be arranged relative to each other, for example, “in a manner indicative of physical location, type, capabilities, status, alarm state” Pet. 67 (citing Ex. 1002 ¶ 213; Ex. 1009 ¶¶ 116, 121, 131).

At this stage of the proceeding, Patent Owner makes no arguments specific to limitation [1(d-3)]. *See, e.g.*, Prelim. Resp. 33 *et seq.* Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record and for the reasons advanced by Petitioner and supported by Dr. Polish’s testimony, Petitioner establishes sufficiently that Childers teaches limitation [1(d-3)]. *See* Pet. 66–67; Ex. 1002 ¶¶ 211–212.

i) [1(d-4)]: “the images comprising . . . vector-based graphical images”

Claim 1 requires “retrieving images” including “vector-based graphical images.” Ex. 1001, 19:25.

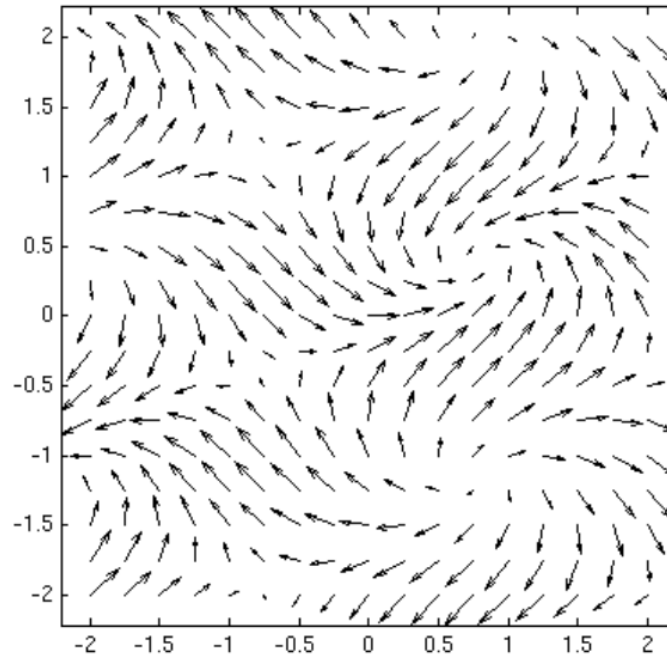
Petitioner contends Childers teaches limitation [1(d-4)] because Childers discloses displaying on a client machine a map including “icons superimposed on a background image, where [the] background image ‘may be a . . . vector plot.’” Pet. 67 (quoting Ex. 1009 ¶ 116).

To support Petitioner’s contention, Dr. Polish testifies that a “vector plot” is “a representation of an image using vectors, such as vector graphics stored in various known file formats, including, for example, an SVG file.” Ex. 1002 ¶ 215; *see id.* ¶ 56. He also testifies that “[v]ector plots were used frequently by 2009 for representing a map.” *Id.* ¶ 57; *see id.* ¶ 55. Additionally, he identifies U.S. Patent No. 7,180,420 B2 (issued February 20, 2007) as disclosing “a vector floor plan” and using “a vector graphics displayer” such that “even huge floor plans in multibuilding sites can be zoomed in upon to see extensive detail,” and “even room labels can be read on surrounding rooms.” *Id.* ¶ 57 (quoting Ex. 1018, 3:39–42, 10:55–56).

Patent Owner disputes that Childers teaches limitation [1(d-4)]. *See* Prelim. Resp. 13–15, 33–34. Specifically, Patent Owner asserts that an ordinarily skilled artisan would not have understood vector plots to be “vector-based graphical images,” i.e., “images defined by vectors.” *Id.* at 34. Patent Owner also asserts “Childers describes using only raster image formats like BMP and JPEG in its map view and graph views, and never describes image formats in which vectors define geometric shapes likes [sic] lines and curves.” *Id.* (citing Ex. 1009 ¶¶ 133, 203, 205; Ex. 2001 ¶¶ 92–97); *see id.* at 12–13 (citing Ex. 1009 ¶¶ 133, 205; Ex. 2001 ¶¶ 55–56).

To support Patent Owner’s assertions, Dr. Zheng testifies that “vector-based graphical images” are “images composed of vectors, which are instructions that define geometry features (points, lines, polygons).” Ex. 2001 ¶ 96; *see id.* ¶ 42. He also testifies that a “vector plot” is “a diagram where information is represented as arrows in the 2D plane.” *Id.* ¶ 94. He explains that a “vector plot” indicates “what is displayed in the image” and “says nothing about the format of the image.” *Id.* ¶¶ 93–94.

Dr. Zheng provides the following figure showing an example 2D vector plot (Ex. 2001 ¶ 94):



The figure above shows multiple arrows having different magnitudes and different directions plotted at different positions in an area with an X axis from -2 to 2 and a Y axis from -2 to 2.¹⁶ See Ex. 2001 ¶ 94.

Dr. Zheng further testifies that an ordinarily skilled artisan would have understood that “the phrase ‘vector plot’ as used in Childers does not suggest or indicate the use of images that contain data in the form of vector instructions or vectors.” Ex. 2001 ¶ 97; *see id.* ¶ 55.

Based on the current record, Petitioner establishes sufficiently that Childers teaches limitation [1(d-4)]. See Pet. 67; Ex. 1002 ¶¶ 55–57, 97, 199, 214. Specifically, Childers discloses using a background image to “depict a map of a physical location” and superimposing icons on the background image to represent physical locations of associated network

¹⁶ A website with the same figure describes it as plot of “the 2D vector field $F = (\cos(x+2*y), \sin(x-2*y))$ for x, y in $[-2, 2]$.” See <https://www.math.umd.edu/~petersd/241/html/ex27b.html>.

appliances. Ex. 1009 ¶¶ 21, 24, 100, 113, 116, 128, 132, 134, Fig. 8C; *see* Ex. 1002 ¶¶ 97, 199.

Childers explains that a server may deliver to a client machine software applications and data that enable the client machine to “retrieve, display, and/or manipulate data.” Ex. 1009 ¶¶ 20, 113; *see* Ex. 1002 ¶¶ 96, 199. For instance, the server may “deliver an application and associated map configuration data” that “enable the client to access and display a map.” Ex. 1009 ¶ 116; *see id.* ¶¶ 21, 24; Ex. 1002 ¶¶ 97, 199. The “map may have icons superimposed on a background image,” e.g., icons representing “network appliances or groupings of network appliances” and “arranged in a manner indicative of physical location, type, capabilities, status, alarm state, . . . or responsible party, among others.” Ex. 1009 ¶ 116; *see id.* ¶¶ 21, 24, 100, 128, 132, 134; Ex. 1002 ¶¶ 97, 199. “Moreover, the background image may be a picture, video image, graph, contour plot, and vector plot, among others.” Ex. 1009 ¶ 116; *see* Ex. 1002 ¶ 214. Thus, “the background may depict a map of a physical location over which icons are displayed representing the physical location of an associated network appliance.” Ex. 1009 ¶ 24; *see* Ex. 1002 ¶ 97.

Based on the current record, Dr. Polish’s testimony about a “vector plot” aligns more closely with Childers’ disclosure about using a background image to “depict a map of a physical location” than Dr. Zheng’s testimony about a “vector plot.” *See* Ex. 1002 ¶¶ 55–57, 214–215; Ex. 1009, ¶¶ 21, 24, 100, 113, 116, 128, 132, 134, Fig. 8C; Ex. 2001 ¶¶ 55, 93–97. Specifically, Dr. Polish’s testimony that a “vector plot” is “a representation of an image using vectors” and “used frequently by 2009 for representing a map” comports with Childers’ disclosure that a “vector plot” may “depict a map of a physical location,” e.g., “location within a room.” *See* Ex. 1002

¶¶ 57, 214–215; Ex. 1009 ¶¶ 24, 116, 132. Dr. Zheng’s testimony that a “vector plot” is “a diagram where information is represented as arrows in the 2D plane” does not indicate how the “arrows in the 2D plane” could “depict a map of a physical location,” e.g., “location within a room.” *See* Ex. 2001 ¶ 94; Ex. 1009 ¶¶ 24, 116, 132.

This issue, i.e., whether Childers teaches or suggests “vector-based graphical images” and the extent to which vector plots were known in the art to represent “vector-based graphical images,” is better resolved at trial on a more developed record.

j) Alleged Reasons for Combining the Teachings of the References

Petitioner identifies reasons that would have prompted an ordinarily skilled artisan to combine Barker’s teachings with Childers’ teachings in the way Petitioner proposes. *See* Pet. 52–57. Also, Petitioner asserts that implementing Barker’s Rule-Based Software in Childers’ server “would have been a simple, predictable combination reasonably expected to succeed.” *Id.* at 55. Dr. Polish’s testimony supports Petitioner’s positions. *See* Ex. 1002 ¶¶ 181–190.

For instance, Dr. Polish testifies that an ordinarily skilled artisan would have been motivated to combine Barker’s Rule-Based Software with Childers’ server because Childers “does not disclose details regarding how the central server processes the disclosed inputs to obtain the disclosed outputs.” Ex. 1002 ¶¶ 182–183. He explains that an ordinarily skilled artisan “would have been motivated to fill in these details” with Barker’s Rule-Based Software since “Barker simply provides implementation details for the same architecture already disclosed in Childers, and no design changes thereto would have been required.” *Id.* ¶¶ 182, 186.

Dr. Polish identifies similarities between Childers and Barker, including “Barker and Childers are in the same field of art,” i.e., “remote monitoring networks,” and “describe systems which help to create and distribute information containing alarm sensor data”; “Childers and Barker are directed to similar problems,” e.g., problems “of relying on human security personnel to monitor devices on premises” and problems “in accessing, organizing, and presenting information for a user”; and “Childers and Barker solve these problems in similar ways.” Ex. 1002 ¶¶ 187–190 (citing Ex. 1009, ¶¶ 4, 7–13, 15–16, 211; Ex. 1010, ¶¶ 2, 7, 12).

Patent Owner disputes that an ordinarily skilled artisan would have been motivated to combine Barker’s teachings with Childers’ teachings. *See* Prelim. Resp. 36. Specifically, Patent Owner asserts that nothing “in these references suggests” the proposed combination and that “there is no documentary basis” for the proposed combination. *Id.* at 33. Patent Owner also asserts that using “Childers’ map view would destroy Barker’s purpose, utility, and preferred data presentation format and would be contrary to Barker’s goal of simply monitoring underlying device activity over time.” *Id.* at 36 (citing Ex. 2009, 19–20).

Based on the current record, Petitioner establishes sufficiently that an ordinarily skilled artisan would have had reasons to combine Barker’s teachings with Childers’ teachings in the way Petitioner proposes. *See* Pet. 52–57, 67; Ex. 1002 ¶¶ 181–190. As Dr. Polish testifies, an ordinarily skilled artisan would have been motivated to combine Barker’s Rule-Based Software with Childers’ server because Childers “does not disclose details regarding how the central server processes the disclosed inputs to obtain the disclosed outputs” and Barker’s Rule-Based Software supplies these “implementation details.” Ex. 1002 ¶¶ 182–183, 185–186.

A motivation to combine “can be found explicitly or implicitly in the prior art references themselves, in market forces, in design incentives, or in ‘any need or problem known in the field of endeavor at the time of invention and addressed by the patent.’” *Forest Labs.*, 918 F.3d at 934. Here, Petitioner identifies a motivation to combine “[in] design incentives,” i.e., in “implementation details” for Childers’ server supplied by Barker’s teachings. *See* Pet. 52–57; Ex. 1002 ¶¶ 182–189.

“In *KSR*, the Supreme Court criticized a rigid approach to determining obviousness based on the disclosures of individual prior-art references, with little recourse to the knowledge, creativity, and common sense that an ordinarily skilled artisan would have brought to bear when considering combinations or modifications.” *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (citing *KSR*, 550 U.S. at 415–22). Hence, Patent Owner’s assertion that “there is no documentary basis” for the proposed combination does not refute Petitioner’s reasoned explanation why an ordinarily skilled artisan would have combined Barker’s teachings with Childers’ teachings. *See* Pet. 52–57; Prelim. Resp. 33; Ex. 1002 ¶¶ 181–190. Additionally, that assertion disregards the identification of disclosures in both Childers and Barker supporting the proposed combination. *See* Pet. 52–57 (citing Ex. 1002 ¶¶ 181–189; Ex. 1009 ¶¶ 4, 7–13, 15–17, 21–22, 56, 59–61, 72, 74, 79, 81, 98, 102, 105–113, 132, 141–142, 197, 211, Figs. 9A–9B; Ex. 1010 ¶¶ 2, 7, 12–15, 31, 39, 41–42, 45, 47, 49–52, 54, Figs. 5–6); Ex. 1002 ¶¶ 181–190.

Patent Owner’s assertion that using “Childers’ map view would destroy Barker’s purpose, utility, and preferred data presentation format and would be contrary to Barker’s goal of simply monitoring underlying device activity over time” does not respond to the proposed combination. *See*

Pet. 52–57; Prelim. Resp. 36. Petitioner does not propose using “Childers’ map view” to display information in Barker’s integrated-information system. *See* Pet. 52–57; Ex. 1002 ¶¶ 181–190. Instead, we understand that Petitioner proposes implementing Barker’s Rule-Based Software in Childers’ server. *See, e.g.*, Pet. 52–57; Ex. 1002 ¶¶ 182–186.

*k) Preliminary Conclusion for Obviousness of Claim 1
in view of Childers and Barker*

As discussed above, Petitioner’s analysis addresses how the combined disclosures in Childers and Barker teach claim 1’s subject matter. *See* §§ III.H.1.a)–III.H.1.i), *supra*. Additionally, Petitioner provides a reason with rational underpinning as to why an ordinarily skilled artisan would have been motivated to combine Barker’s teachings with Childers’ teachings in the way Petitioner proposes and would have had a reasonable expectation of success. *See* § III.H.1.j), *supra*. Hence, Petitioner demonstrates a reasonable likelihood of prevailing in proving that claim 1 would have been obvious over Childers and Barker.

2. Dependent Claims 2–16

Claims 2–16 depend directly or indirectly from claim 1. Ex. 1001, 19:26–20:54.

For claims 2–16, Petitioner provides an analysis supported by Dr. Polish’s testimony about how the combined disclosures in Childers and Barker teach the claimed subject matter. *See* Pet. 69–81; Ex. 1002 ¶¶ 215–243.

At this stage of the proceeding, Patent Owner makes no arguments specific to claims 2–16. *See, e.g.*, Prelim. Resp. 30–33, 36. Nonetheless, the

burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware*, 800 F.3d at 1378.

Based on the current record and for the reasons advanced by Petitioner and supported by Dr. Polish’s testimony, Petitioner establishes sufficiently that the combined disclosures in Childers and Barker teach the subject matter in claims 2–16. *See* Pet. 68–80; Ex. 1002 ¶¶ 215–243. Hence, Petitioner demonstrates a reasonable likelihood of prevailing in proving that claims 2–16 would have been obvious over Childers and Barker.

3. *Independent Claim 17*

Petitioner also contends the subject matter of independent claim 17 is obvious over the combination of Childers and Barker. *See* Pet. 80.

Claim 17 is similar in scope to claim 1, but instead recites “[a] computerized system comprising a central monitoring system” *that carries out various method steps*, i.e., “*receiving one or more signals containing a device identifier and a device condition from one or more remote alarm monitoring systems*”; “*retrieving enhanced information based on the device identifier and the device condition*”; “*determining one or more communication methods and communication destinations based on the device identifier and the device condition*”; and “*dispatching the enhanced information to the one or more communication destinations using the one or more communication methods.*” Ex. 1001, 20:55–64 (italics added).

Claim 17 also requires that “the enhanced information based on the device identifier and the device condition comprises images based on the device identifier and the device condition,” in which the images include “all of the members selected from the group consisting of superimposed visual

indicators, hierarchically organized graphical images, and vector-based graphical images.” *Id.* at 20:64–21:3.

Petitioner alleges “[c]laim 17 is nearly identical to claim 1. The only difference is that claim 17 recites ‘a computerized system’ with a ‘central monitoring system’ performing the same steps as the ‘code’ in claim 1 Pet. 51. Childers/Barker teaches *a computerized system with a central monitoring system.*” *Id.* at 80 (citing Ex. 1009, 5:60–64, Fig. 1; Ex. 1002 ¶ 245). “As described for limitation 1[a], Childers’ central server receives device information from monitored network appliances.” *Id.*

According to Petitioner, “for all of the same reasons described for claim 1, incorporated here, Childers also invalidates claim 17.” *Id.* (citing Ex. 1002 ¶ 245).

Patent Owner does not explicitly dispute Petitioner’s arguments, analysis, and evidence for independent claim 17. *See* Prelim. Resp. 33 *et seq.*

On this record, and for the same reasons discussed above (*see* § II.H.1) with respect to limitation [1(d-4)] in claim 1, we are persuaded that Petitioner sufficiently demonstrates a reasonable likelihood of succeeding in its challenge to claim 17 as obvious over Childers and Barker.

IV. CONCLUSION

As explained above, we determine that Petitioner has established a reasonable likelihood of prevailing in its challenge to at least one claim of the ’082 patent. Hence, we institute an *inter partes* review of all challenged claims on all challenges included in the Petition. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (noting that the language of 35 U.S.C. § 314(b) “indicates a binary choice—either institute review or don’t”); *see also PGS*

Geophysical AS v. Iancu, 891 F.3d 1354, 1360 (Fed. Cir. 2018) (interpreting the statute as requiring “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”).

Our factual findings, conclusions of law, and determinations at this stage of the proceeding are preliminary, and based on the evidentiary record developed thus far. Our final decision as to the patentability of challenged claims will be based on the record developed during trial, including any response timely filed by Patent Owner. Any arguments not raised by Patent Owner in a timely filed response may be deemed waived.

V. ORDER

It is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted on all of the challenged claims, i.e., claims 1–17 of the ’082 patent, on all corresponding grounds of unpatentability as specified in the Petition and identified in the Table in Section II.E. of this Decision; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), *inter partes* review of the ’082 patent shall commence on the entry date of this Decision, and notice is hereby given of the institution of a trial.

IPR2023-00419
Patent 9,728,082 B2

FOR PETITIONER:

Eliot D. William
Robert Maier
Katharine Burke
Michael Knierim
Amy E. Bergeron
Matthew Thompson
BAKER BOTTS L.L.P.
Eliot.williams@bakerbotts.com
Robert.maier@bakerbotts.com
katharine.burke@bakerbotts.com
Michael.knierim@bakerbotts.com
Amy.bergeron@bakerbotts.com
Matthew.thompson@bakerbotts.com

FOR PATENT OWNER:

Luis M. Ortiz
Kermit D. Lopez
ORTIZ & LOPEZ, PLLC
lortiz@olpatentlaw.com
klopez@olpatentlaw.com