

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PROTECT ANIMALS WITH SATELLITES,
Petitioner,

v.

ONPOINT SYSTEMS, LLC,
Patent Owner.

IPR2021-01483
Patent 9,848,295 B1

Before LYNNE H. BROWNE, DANIEL J. GALLIGAN, and
MICHAEL T. CYGAN, *Administrative Patent Judges*.

CYGAN, *Administrative Patent Judge*.

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

I. BACKGROUND

A. Background and Summary

On September 2, 2021, Protect Animals With Satellites, LLC (“Petitioner”) filed a Petition for *inter partes* review (“IPR”) of claims 1–18 of U.S. Patent No. 9,848,295 B1 (Ex. 1001, “the ’295 patent”). Paper 1 (“Pet.”). On December 16, 2021, Patent Owner, OnPoint Systems, LLC (“Patent Owner”), filed a Preliminary Response. Paper 10 (“Prelim. Resp.”). Institution of an *inter partes* review is authorized by statute when “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 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). An *inter partes* review may not be instituted on fewer than all claims challenged in the Petition. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

Having considered the Petition and the Preliminary Response, we conclude that the information presented in the Petition establishes that there is a reasonable likelihood that Petitioner would prevail in challenging at least one of claims 1–18 of the ’295 patent as unpatentable under 35 U.S.C.

§ 103. Pursuant to § 314, we institute an *inter partes* review as to claims 1–18 of the ’295 patent on all grounds raised in the Petition.

B. Real Party in Interest

Petitioner identifies itself as the sole real party in interest to this IPR petition. Pet. 96. Patent Owner identifies itself as the real party in interest. Paper 8, 2.

C. Related Matters

The parties indicate that the '295 patent is involved in a patent infringement lawsuit, *OnPoint Systems, LLC v. Protect Animals With Satellites, LLC*, C.A. 4-20-cv-00657, currently pending in the Eastern District of Texas, Sherman Division. OnPoint also asserted United States Patent Numbers 9,538,329 (added to the case on April 6, 2021), 9,922,522 and 9,924,314 (the '522 and '314 patents were added on July 26, 2021) in the above case. Pet. 97; Paper 8, 2.

D. The '295 Patent

The '295 patent (Ex. 1001) generally relates to tracking a subject or object, such as an animal, human, or vehicle, using satellite positioning data. Ex. 1001, 1:7–9. According to the '295 patent, wireless pet containment systems using Global Positioning System (GPS) in combination with a collar and a base was available on the market at the time the '295 patent application was filed. *Id.* at 2:16–23. However, such systems may be subject to sources of error that impact location accuracy. *Id.* at 2:57–67. The '295 patent discloses casting a ray from the position of the subject toward the containment perimeter and determining the number of line segments of the containment perimeter that are intersected by that ray. *Id.* at 3:36–41. From that number, the subject is determined to be inside or outside the perimeter. *Id.* at 41–44.

Figure 13 is reproduced below.

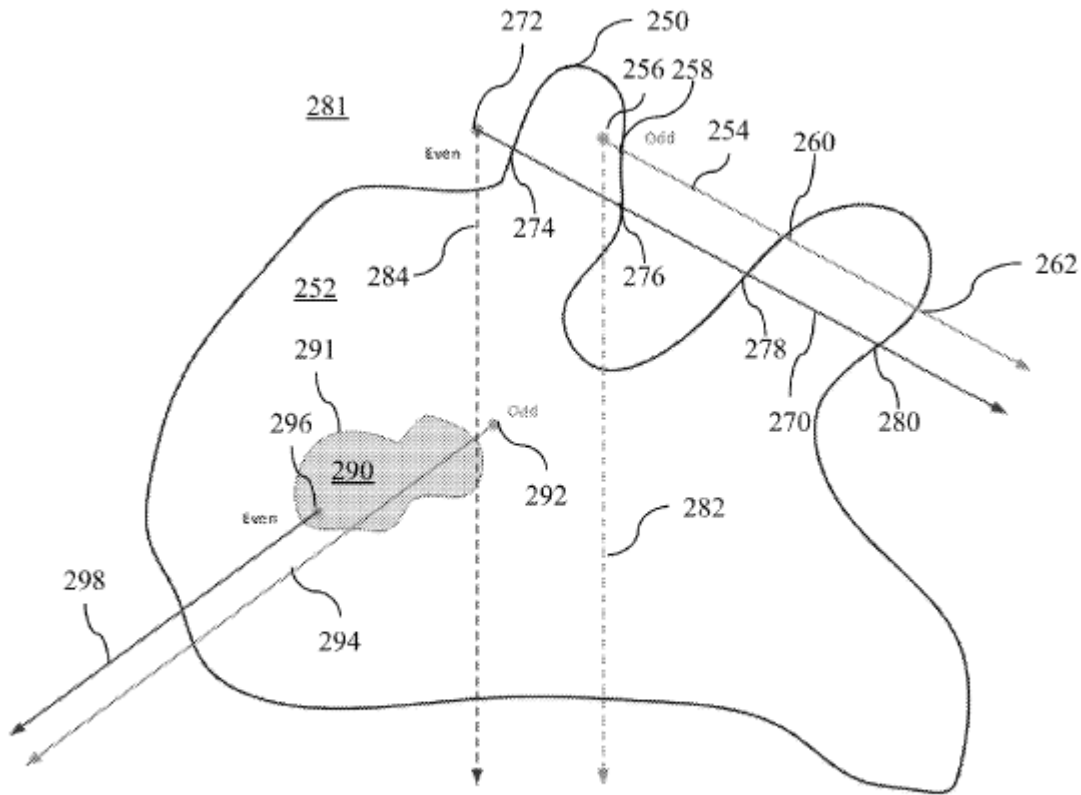


Fig. 13

Figure 13 shows a containment perimeter 250 forming a safe zone 252, and a second perimeter 291 forming an out-of-bounds zone 290 within perimeter 250, and including pets at locations 256, 272, 296, and 292. Ex. 1001, 15:38–67. Pets at locations 256 and 292 are within the safe zone, and the rays 254 and 294 cast from these locations intersect the perimeter(s) an odd number of times, indicating that the pets are within the safe zone. *Id.* Pets at locations 272 and 296 are outside of the safe zone, and the rays 270 and 298 cast from these locations intersect the perimeters an even number of times, indicating that the pets are not within the safe zone. *Id.*

E. Challenged Claims

Petitioner challenges claims 1–18 of the '295 patent. Claim 10, reproduced below (with bracketed identifying labels added), is a representative independent claim:

10. [10.Preamble] A method for determining whether a subject wearing a device is inside or outside of a containment zone defined by a containment perimeter, the method comprising:

[10.A] [g]enerating position data corresponding to the position of the subject; the position data including satellite positioning data;

[1.B] [r]eceiving data from a memory representing a plurality of line segments forming the containment perimeter;

[1.C] [m]athematically casting a ray from the position of the subject toward a line segment of the plurality of line segments representing the containment perimeter;

[1.D] [m]athematically determining the number of line segments of the plurality of line segments that are intersected by the ray; and

[1.G] [d]etermining, from the number of line segments of the plurality of line segments intersected by the ray, whether the subject is inside the containment zone or outside of the containment zone.

Ex. 1001, 20:22–39; Ex. 1020, 4–5. Independent claim 1 recites a system having similar limitations, and dependent claims 2–9 and 11–18 recite further limitations of their respective independent claims. Ex. 1001, 19:26–21:16; Ex. 1020 at 1–7.

F. Prior Art Relied Upon

Petitioner relies upon the prior art references listed below. Pet. 1–2.

Reference [or Declaration]	Date	Exhibit No.
“PNPOLY – Point Inclusion in Polygon Test,” W. Randolph Franklin, available at https://web.archive.org/web/20050518083531/http://www.ecse.rpi.edu/Homepages/wrf/Research/Short_Notes/pnpoly.html	May 18, 2005	1007
<i>Chapter 9 – Raycasting Polygonal Models</i> , Donald H. House, https://web.archive.org/web/20131228085233/http://people.cs.clemson.edu/~dhouse/courses/405/notes/raypolygon.pdf	December 28, 2013	1008
“Wireless Pet Containment System,” Jonathan Chang, et al., available online at: https://web.archive.org/web/20160619051742/https://www.ece.rutgers.edu/Capstone2016	April 26, 2016	1010
“How to check if a given point lies inside or outside a polygon?” Geeks for Geeks, available at https://web.archive.org/web/20130715200034/http://www.geeksforgeeks.org/how-to-check-if-a-given-point-lies-inside-a-polygon	July 11, 2013	1011
“Geolocation and monitoring platform for extensive farming in mountain pastures,” Alvaro Llaría, et al	June 18, 2015	1012
“How reliable are practical point-in-polygon strategies?” S. Schirra, 16 th European Symposium on Algorithms (ESA), 744–755	2008	1013
Berntsen, U.S. Patent No. 8,939,111 B2	Jan. 27, 2015	1014

Guinta, U.S. Patent No. 8,448,607 B2	May 28, 2013	1015
Trenkle, U.S. Patent No. 9,173,380 B2	Nov. 3, 2015	1016
Rich, U.S. Patent Application Number 20110298615 A1	Dec. 8, 2011	1017
“When is a Point Inside a Polygon?”, Vivek Shah, available at: https://web.archive.org/web/20130517010213/http://cgatglance.blogspot.com/	May 17, 2013	1018
“Collision Course II: Ray-Polygon-Intersection,” available at https://web.archive.org/web/20161021075420/http://phys.ik.cx/	April 8, 2016	1019
Declaration of Vijay Madiseti.	September 2, 2021	1006

Based on the current record, we determine Petitioner has made a threshold showing that these references are prior art patents or printed publications under 35 U.S.C. § 102. *See* Pet. 16, 21, 48–49; Ex. 1004, codes (22), (43); Ex. 1005, codes (22), (45); Ex. 1006, codes (22), (45); Ex. 1007, 3.

G. Asserted Grounds of Unpatentability

Petitioner challenges the patentability of claims 1–18 of the ’295 patent on the following grounds:

Claim(s) Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1, 2, 8–11, 17, 18	102	Chang

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), revised 35 U.S.C. §§ 102 and 103, effective March 16, 2013. Because the application from which the ’295 patent issued was filed after this date with no claims to priority before this date, the AIA versions of §§ 102 and 103 apply.

1, 2, 8–11, 17, 18	103	Chang, Geeks
10, 11, 17, 18	102	Llaria
10, 11, 17, 18	103	Llaria, Schirra
1–18	103	Llaria, Chang, Geeks, Rich, House, Franklin, Shah, Claus ²
1–18	103	Berntsen, Chang, Geeks, Rich, House, Franklin, Shah, Claus
1–18	103	Giunta, Chang, Geeks, Rich, House, Franklin, Shah, Claus
1–18	103	Trenkle, Chang, Geeks, Rich, House, Franklin, Shah, Claus

In the last four grounds listed in this table above, Petitioner relies on certain passages in the '295 patent that Petitioner contends are Applicant Admitted Prior Art (“AAPA”). *See* Pet. 14 (citing the following as AAPA: Ex. 1001, 1:15–18, 1:23–27, 1:53–59, 2:15–23, 2:26–27, 2:60–62), 51–96 (relying on alleged AAPA). On August 18, 2020, the Director of the United States Patent and Trademark Office issued a Memorandum (available at https://www.uspto.gov/sites/default/files/documents/signed_aapa_guidance_memo.pdf) setting forth binding guidance for the PTAB on challenges involving AAPA from the challenged patent. The Memorandum states that AAPA is not “prior art consisting of patents or printed publications” as set forth in 35 U.S.C. § 311(b), and, therefore, AAPA “standing alone cannot be used as the basis for instituting an IPR, under either § 102 or § 103.”

² Llaria is combined with either Chang and Geeks, or Rich, or House, or Franklin, or Shah, or Claus. Pet. 51. The grounds based on Berntsen, Giunta, and Trenkle are similarly presented in those alternative combinations.

Memorandum, 4. The Memorandum further states that AAPA may be used to show the knowledge of a person of ordinary skill in the art and can be used in conjunction with prior art patents or printed publication to allege obviousness. Memorandum, 4, 9.

The Federal Circuit, considering this guidance, held that AAPA in the challenged patent cannot “be the basis of a ground in an *inter partes* review, because it is not contained in a document that is a prior art patent or prior art printed publication.” *Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1375 (Fed. Cir. Feb. 1, 2022). The Federal Circuit, however, stated that this does not mean that “AAPA is categorically excluded from an *inter partes* review.” *Id.* Rather, “a petitioner may rely on evidence beyond prior art documents in an *inter partes* review, even if such evidence itself may not qualify as the ‘basis’ for a ground set forth in a petition.” *Id.* The Federal Circuit also noted that “a patentee’s admissions about the scope and content of the prior art provide a factual foundation as to what a skilled artisan would have known at the time of invention” and, therefore, that “AAPA may be used in similar ways in an *inter partes* review.” *Id.* at 1376; *see also id.* at 1375 n.11 (“[O]ur precedent treats AAPA as binding on the patentee”). We address Petitioner’s usage of AAPA as part of our analysis of the merits of individual grounds.³

³ For reasons discussed, *infra* at Sections II(G), III, we do not reach all of Petitioner’s grounds in this decision.

II. DISCUSSION

A. Discretionary Denial Under 35 U.S.C. § 314(a)

Institution of an *inter partes* review is discretionary. Section 314(a) of title 35 of the United States Code provides that “[t]he Director may not authorize an inter partes review to be instituted unless the Director determines that 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 1 of the claims challenged in the petition.” The U.S. Supreme Court has explained that because § 314 includes no mandate to institute review, “the agency’s decision to deny a petition is a matter committed to the Patent Office’s discretion.” *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016); *see also Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (explaining that under § 314(a), “the PTO is permitted, but never compelled, to institute an IPR proceeding”). The Director has delegated this authority under § 314(a) to the Board. 37 C.F.R. § 42.4(a) (“The Board institutes the trial on behalf of the Director.”).

In this proceeding, Patent Owner argues that we should exercise discretion to deny institution under § 314(a) because the factors identified in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”), weigh in favor of denying institution. Prelim. Resp. 5–6.

In *Fintiv*, the Board ordered supplemental briefing on a nonexclusive list of factors for consideration in analyzing whether the circumstances of a parallel district court action are a basis for discretionary denial of trial institution under *NHK Spring Co. v. Intrix-Plex Techs., Inc.*, IPR2018-00752,

Paper 8 (PTAB Sept. 12, 2018) (precedential). *Fintiv*, Paper 11 at 5–16.

Those factors include:

1. whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;
2. proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision;
3. investment in the parallel proceeding by the court and the parties;
4. overlap between issues raised in the petition and in the parallel proceeding;
5. whether the petitioner and the defendant in the parallel proceeding are the same party; and
6. other circumstances that impact the Board’s exercise of discretion, including the merits.

Id. at 5–6. Here, we consider these factors to determine whether we should exercise discretion to deny institution. In evaluating the factors, we take a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review. *Id.* at 6.

Factor 1: whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted

Patent Owner argues that this factor favors discretionary denial because Petitioner has not asked for a stay pending *inter partes* review, and presents reasoning why the district court judge might deny such a stay. Prelim. Resp. 7–10.

In *Fintiv*, the panel stated, “[a] district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts.” *Fintiv*, Paper 11 at 6. On the record before us, Petitioner has not produced evidence that a stay of the instant *inter partes*

review has been requested, and we would be merely speculating, at this stage, about what the court would do if one were requested.

Accordingly, we find that this factor is neutral; i.e., it does not weigh for or against exercising our discretion to deny institution. *See Sand Revolution II, LLC v. Cont'l Intermodal Grp. – Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June 16, 2020) (informative) (“In the absence of specific evidence, we will not attempt to predict how the district court in the related district court litigation will proceed because the court may determine whether or not to stay any individual case, including the related one, based on a variety of circumstances and facts beyond our control and to which the Board is not privy.”); *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 15 at 12 (PTAB May 13, 2020) (informative) (“We decline to infer, based on actions taken in different cases with different facts, how the District Court would rule should a stay be requested by the parties in the parallel case here. This factor does not weigh for or against discretionary denial in this case.”).

Factor 2: proximity of the court’s trial date to the Board’s projected statutory deadline for a final written decision

Petitioner argues that the trial schedule has been delayed because Patent Owner asserted additional patents in the district court case. Pet. 97. Petitioner argues, “the trial date has been delayed into at least Q1 2023 and the claim construction process has been delayed.” *Id.*

Patent Owner argues that the district court’s trial date was set as January 30, 2023, “with full knowledge that the Petition had been filed,” and that both parties agreed to that date. Resp. 11–12. Based on the maximum statutory periods for instituting an inter partes review (three months from

Patent Owner’s preliminary response), and for issuing a final written decision (one year from institution), Patent Owner projects that the district court litigation will resolve the issues approximately two months before the statutory deadline for a final written decision. *Id.* at 11. 35 U.S.C.

§ 314(b)(1); 35 U.S.C. § 316(a)(11). Our institution decision is issued on March 4, 2022, setting the statutory deadline for a final written decision on March 4, 2023. Thus, we determine that this factor is neutral.

Factor 3: investment in the parallel proceeding by the court and the parties

Petitioner argues that resolution of issues in the IPR proceeding would “serve to significantly streamline but not supplant the associated district court proceedings.” Pet. 97. Petitioner points out that the district court case has been expanded by Patent Owner, on April 6, 2021, and again on July 26, 2021, to include additional asserted patents such that the claim construction process has been delayed. *Id.*

Patent Owner argues that Petitioner’s delay in filing the petition imposes unfair costs to the Patent Owner. Prelim. Resp. 13 (citing *Fintiv*, Paper 11 at 11). Patent Owner argues that its infringement contentions served on March 18, 2021, identified all of the claims of the ’295 patent to be asserted in the litigation, and that Petitioner served its invalidity contentions for the ’295 patent on April 30, 2021. *Id.* at 13–14 (citing Exs. 2016, 2017). Patent Owner argues that these invalidity contentions “included all of the same arguments Petitioner advances in the Petition and substantially the same art.” *Id.* at 14. Patent Owner notes that Petitioner filed Second Amended Invalidity Contentions on September 23, 2021 that included an additional prior art patent to “Trenkle.” *Id.* at 14 n.6. Patent

Owner argues that Petitioner's delay until September 2, 2021, "the second to last day possible," to file the Petition, and the lack of any explanation for such delay, "is the type of tactic *Fintiv* cautions against." *Id.* at 15–17. Patent Owner argues that Petitioner obtained an unfair tactical advantage by causing its claim construction position to be filed prior to filing of the Petition. *Id.* at 19–20.

Further, Patent Owner points to the following activities as indicating significant investment in the parallel litigation: setting of a trial schedule; Patent Owner's service of Disclosure of Asserted Claims and Infringement Contentions; Petitioner's service of Invalidity Contentions and accompanying document production; entry of a Protective Order and an Order Regarding Electronically Stored Information; exchange of Initial Mandatory Disclosures; exchange of proposed terms for construction; exchange of Privilege Logs; exchange of proposed claim constructions and extrinsic evidence; filing of a Joint Claim Construction and Prehearing Statement; service of expert reports for claim construction; completed claim construction discovery; completion of claim construction briefing; submission of technology synopsis/tutorial; filing of claim construction chart for *Markman* hearing; and total production of over 80,000[] of documents. *Id.* at 17–19. Patent Owner argues that the claim construction hearing is set for March 28, 2022, mere days after the deadline for the institution decision. *Id.* at 20.

Based on the present record, we are persuaded by Petitioner's showing that the district court and the parties have not invested substantially in the merits of the invalidity positions. The *Markman* hearing has not yet occurred, and although there has been exchange of validity-related

documents between the parties, the investment is at an early stage of the validity determination. There is no indication in the record that the parties have completed significant discovery on the merits. Although the parties and the court have invested some effort, a significant portion of work remains to be done in the district court proceeding—e.g., the completion of fact and expert discovery and dispositive motions. Such investment is not demonstratively greater than that discussed in *Sand Revolution II*, in which the district court and the parties had exchanged infringement and invalidity contentions, and the district court had conducted a *Markman* hearing and entered a related Order, repeatedly set and amended the case’s schedule, granted several *pro hac vice* motions, heard and denied a motion to dismiss, and transferred the case from one judge to another, but had not invested substantially in the merits of the invalidity positions. *Sand Revolution II*, Paper 24, 10–11.

With respect to the timing of the September 2, 2021, filing of the Petition, we note that Patent Owner continued to amend the litigation to include U.S. Patent No. 9,538,329, in April 2021, and to include additional patents until at least July 26, 2021. *See* Pet. 97. Further, Petitioner continued to amend its invalidity contentions until at least September 23, 2021. Ex. 2018. Further, we note that the joint claim construction statement of the parties includes certain terms common to both the ’295 patent and to the 9,538,329 patent at issue in the litigation. Ex. 1040 (filed July 23, 2021), 1–2. In view of the evolving nature of the case established by the above-referenced facts, we do not find notable the timing of the filing of the Petition.

Therefore, weighing the facts in this particular case, including the time invested by the parties and the district court in the parallel litigation, the extent to which the investment in the district court proceeding relates to issues of patent validity, and the timing of the filing of the Petition, we find that this factor weighs marginally against exercising discretion to deny institution.

Factor 4: overlap between issues raised in the petition and in the parallel proceeding

Patent Owner argues that there is complete overlap in the asserted claims, that the litigation includes all five base references in the Petition as base references in the litigation, and includes all secondary references in the Petition except for Shah as secondary references in the litigation. Prelim. Resp. 22. Patent Owner argues, “by the statutory deadline for the Board to issue a written decision, every single argument currently before the Board will already have been presented and decided by the Texas Court.” *Id.* Patent Owner argues that the additional Shah reference is merely interchangeable with the other references presented. *Id.* at 22–24. Patent Owner further argues that Petitioner intends to litigate the same art and arguments simultaneously in the Texas litigation and at the PTAB. *Id.* at 24–25 (noting that no stipulation has been filed).

We agree with Patent Owner’s characterization of the overlap. We additionally note that many additional references and grounds are at issue in the Texas litigation. *See, e.g.*, Ex. 2018. In view of these facts, we determine that this factor weighs slightly in favor of exercising discretion to deny institution.

Factor 5: whether the petitioner and the defendant in the parallel proceeding are the same party

It is undisputed that Petitioner is a defendant in the parallel litigation. Patent Owner argues that this favors denying institution. Prelim. Resp. 25.

As the Board explained in *Fintiv*, “[i]f a petitioner is unrelated to a defendant in an earlier court proceeding, the Board has weighed this fact against exercising discretion to deny institution under *NHK*.” *Fintiv*, Paper 11 at 13–14 (emphasis added). The Board determined in *Sand Revolution* that “[a]lthough it is far from an unusual circumstance that a petitioner in *inter partes* review and a defendant in a parallel district court proceeding are the same, or where a district court is scheduled to go to trial before the Board’s final decision would be due in a related *inter partes* review, this factor weighs in favor of discretionary denial.” *Sand Revolution II*, Paper 24 at 12–13. Here, although it is undisputed that Petitioner is a defendant in the parallel litigation, there will be approximately one month between the date set for trial and the last possible statutory date for a final written decision in the *inter partes* review. Thus, we determine this factor to be neutral.

Factor 6: other circumstances that impact the Board’s exercise of discretion, including the merits.

The final *Fintiv* factor is a catch-all that takes into account any other relevant circumstances. The decision whether to exercise discretion to deny institution is based on “a balanced assessment of all relevant circumstances in the case, including the merits.” Consolidated Trial Practice Guide 58, available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>. “For example, if the merits of a ground raised in the petition seem

particularly strong on the preliminary record, . . . the institution of a trial may serve the interest of overall system efficiency and integrity because it allows the proceeding to continue in the event that the parallel proceeding settles or fails to resolve the patentability question presented in the PTAB proceeding.” *Fintiv*, Paper 11 at 14–15. A full merits analysis is not necessary as part of deciding whether to exercise discretion not to institute, but rather the parties may point out, as part of the factor-based analysis, particular “strengths or weaknesses” to aid the Board in deciding whether the merits tip the balance one way or another. *Id.* at 15–16.

Patent Owner argues that the grounds are not strong because there are “readily apparent” flaws. Prelim. Resp. 26. Patent Owner further argues that the use of multiple “X or Y or Z”- type grounds results in a “choose-your-own-adventure style argument” that increases the burden on Patent Owner and the Board. *Id.* at 28 (citing *Adaptics Limited v. Perfect Co.*, No. IPR2018-01596, 2019 WL 1084284 (PTAB Mar. 6, 2019) (finding “thousands” of prior art combinations to result in “voluminous and excessive grounds” that merits exercising the Boards discretion to deny institution)).

We take into consideration the number of grounds advanced in the Petition. However, the burden on Patent Owner and PTAB is reduced because the alternative combinations are used to teach the same limitation; i.e., the mathematical ray-crossing, odd/even determination. Pet. 62–61, 69, 79, 90. Thus, we determine that the additional burden is minimal.

Further, we have reviewed Patent Owner’s alleged flaws, and disagree that they represent any missing teachings of claim limitations or reasons to combine references. *See infra* at II(E), (F). We have reviewed Petitioner’s arguments and supporting evidence. As discussed below, on this record, we

determine that Petitioner has demonstrated sufficiently for purposes of this Decision that the challenged claims of the '295 patent are unpatentable on multiple grounds. For purposes of this factor, the presence of multiple grounds teaching each claim limitation, and having secondary references that are explicitly referenced in the corresponding primary reference for the relied-upon teachings missing in the primary references, indicates that the grounds are particularly strong. We find this factor weighs against exercising our discretion to deny institution.

Conclusion on Discretionary Denial Under § 314(a)

As noted in *Fintiv*, we consider the above six factors when taking “a holistic view of whether efficiency and integrity of the system are best served by denying or instituting review.” *Fintiv*, Paper 11 at 6.

Accordingly, under the particular circumstances of this case, we are not persuaded that the interests of efficiency and integrity of the system would be best served by invoking our authority under § 314(a) to deny institution of a potentially meritorious Petition.

B. Legal Standards

1. § 102

A claim is unpatentable under 35 U.S.C. § 102 “if each and every [claim] limitation is found either expressly or inherently in a single prior art reference.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 851 F.3d 1270, 1273 (Fed. Cir. 2017) (citation omitted). “A claim limitation is inherent in the prior art if it is necessarily present in the prior art, not merely probably or possibly present.” *Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc.*, 344 F.3d 1186, 1192 (Fed. Cir. 2003) (citing *Rosco, Inc. v. Mirror Lite, Co.*, 304 F.3d 1373, 1380 (Fed. Cir. 2002)). We analyze

the asserted grounds based on anticipation with these principles in mind.

2. § 103

A claim is unpatentable under § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art and (4) when in evidence, objective indicia of non-obviousness (i.e., secondary considerations).⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). We analyze the asserted grounds based on obviousness with these principles in mind.

C. Level of Skill in the Art

Petitioner offers an assessment as to the level of skill in the art as of the time the ’295 patent was filed; i.e., “bachelor’s degree in Electrical or Computer Engineering, Computer Science, or a related field and . . . three or more years of experience in the field.” Pet. 10–11 (citing Ex. 1006 (Madisetti Decl.) ¶¶ 33–38).

Here, Patent Owner has not provided an assessment of the level of ordinary skill in the art. *See generally* Prelim. Resp. We note, however, that the Chang reference is an undergraduate work project, and indicates that the

⁴ Patent Owner does not identify any secondary considerations to be considered. Accordingly, we do not consider this aspect of the obviousness analysis at this stage of the proceeding.

level of ordinary skill set forth by Petitioner may be in excess of the minimum necessary. Ex. 1010, 1. To the extent necessary, and for purposes of this Decision, we accept the assessment offered by Petitioner as it is supported by the Madisetti Declaration and is consistent with the '295 patent and the majority of the asserted prior art except that we exclude “or more” to eliminate vagueness as to the amount of experience. The qualifier expands the range indefinitely without an upper bound, and thus precludes a meaningful indication of the level of ordinary skill in the art.

D. Claim Construction

Petitioner asserts that the parties have reached agreement on certain constructions. Pet. 6. The parties have agreed that the preambles are limiting. *Id.* The parties have agreed that “attitude and reference data” should be construed as “data indicating the subject’s orientation or motion relative to a known point or state.” *Id.* The parties have agreed that “plurality of satellite constellations” should be construed as “two or more systems of associated satellites, including but not limited to GPS (NAVSTAR), GALILEO or GLONASS.” *Id.*

Petitioner asserts that the term “mathematically cast/casting a ray from the position of the subject toward a line segment of the plurality of line segments representing the containment perimeter” should be construed as “calculate a straight line that begins at the position of the subject and runs in the direction determined to be toward one of the line segments that make up the containment perimeter, wherein the line segments are not longitude or latitude lines.” *Id.* at 7–10.

In its Preliminary Response, Patent Owner does not propose any explicit claim constructions, and does not comment on Petitioner's constructions or alleged agreements on claim terms. *See* Prelim. Resp. We apply the same standard that is used to construe a patent claim in a civil action under 35 U.S.C. § 282(b), and construe each claim in accordance with the ordinary and customary meaning of such claim, as understood by one of ordinary skill in the art in the context of the patent, and the prosecution history pertaining to the patent, as articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2021)). “[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). For the purposes of institution, we do not expressly construe any claim terms beyond the extent necessary in our discussion of the parties’ arguments below.

E. Chang and Geeks

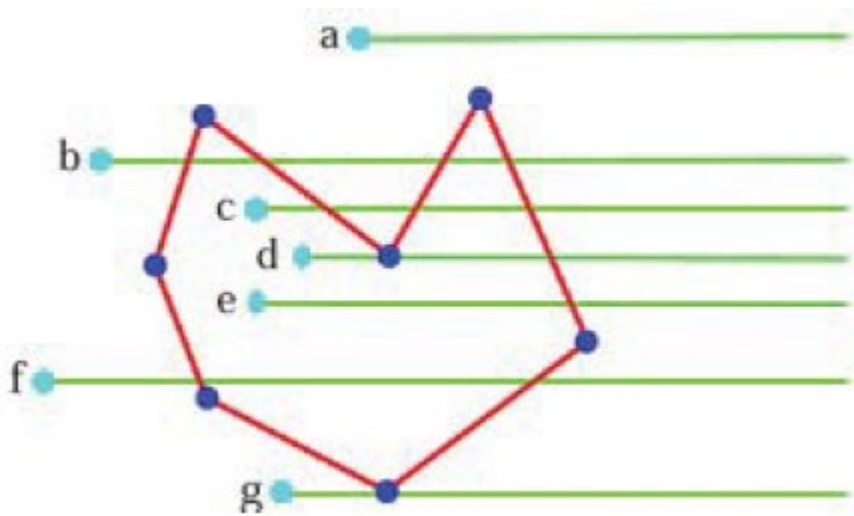
Petitioner contends that claims 1, 2, 8–11, 17, and 18 of the ’295 patent are unpatentable as anticipated under 35 U.S.C. § 102 by Chang and the material Chang incorporates from Geeks. Pet. 36. Alternatively, Petitioner contends that claims 1, 2, 8–11, 17, and 18 would have been obvious under 35 U.S.C. § 103, over the combined teachings of Chang and Geeks. *Id.* at 36 n.2. Petitioner also relies upon the Madisetti Declaration to support its positions. Ex. 1006. At this stage of the proceeding, we are persuaded by Petitioner’s explanations and supporting evidence. We begin our analysis with a brief overview of Chang and Geeks.

1. *Overview of Chang*

Chang, a presentation at a Rutgers University Capstone design project, relates to a wireless pet containment system. Ex. 1010, 1, 14. Chang proposed to “build on [prior] wireless containment system[s] by adding an Android application component” to “not only track their pet, but also draw an imaginary fence within which they wish to contain their pet.” *Id.* The app works in conjunction with a collar having a GPS sensor and a control unit. *Id.* The control unit receives GPS coordinates from the sensor and fence parameters from the Android app and runs an algorithm to ensure the pet is within the given parameters. *Id.* One research challenge identified by Chang is “[r]equir[ing] [an] efficient algorithm to perform real-time computation of [the] pet’s location.” *Id.* at 15. Chang points to, “How to check if a given point lies inside or outside a polygon”; i.e., “Geeks.” *Id.*

2. *Overview of Geeks*

Geeks, an article on a “computer science portal for geeks,” describes “a simple idea to check whether a point is inside or outside” a polygon constructed of line segments. Ex. 1011, 1–2. First, a horizontal line is drawn to the right of each point and extended to infinity. *Id.* Second, the number of times the line intersects the polygon is counted. *Id.* If the number is even, the point is outside the polygon; if the number is odd, the point is inside the polygon. *Id.* The Figure below illustrates this approach:



The Figure illustrates a polygon of seven blue points connected by seven red lines, with points a–g at various locations either inside or outside the polygon, and green horizontal lines extending from each point to the right edge of the Figure. *Id.* A C++ implementation is described. *Id.* at 2–5.

3. Analysis

Petitioner provides a detailed analysis supported by testimony about how the references teach the limitations in the claims. Pet. 36–43. We begin with claim 10.

a) Claim 10

[10.Preamble] A method for determining whether a subject wearing a device is inside or outside of a containment zone defined by a containment perimeter, the method comprising:

Petitioner points to Chang as describing a collar with a GPS sensor and control unit, in which an algorithm is run to ensure that the pet is within parameters based on location and virtual fence parameters. *Id.* at 36 (citing Ex. 1010, 14; Ex. 1006 ¶ 182). Petitioner further points to Chang’s image of a containment area, including a perimeter. *Id.* at 36–37 (citing Ex. 1010, 15; Ex. 1006 ¶ 183).

[10.A] generating position data corresponding to the position of the subject; the position data including satellite positioning data;

Petitioner points to Chang as describing a collar with a GPS sensor that determines and sends a pet's location to a control unit, which is a Raspberry Pi processor. *Id.* at 37 (citing Ex. 1010, 15; Ex. 1006 ¶¶ 185–188).

[10.B] receiving data from a memory representing a plurality of line segments forming the containment perimeter;

Petitioner points to Chang's reception of fence parameters from an Android app and Chang's disclosure that the "Raspberry Pi ['RPI'] transfers raw data from the GPS sensor to useful data structure." *Id.* at 38. (citing Ex. 1010, 14; Ex. 1006 ¶¶ 189–193). Meanwhile the "RPI constructs connections with Android devices using socket programming and passes the coordinates as a usable data structure for Java." *Id.* (quoting Ex. 1010, 15). Petitioner further contends that the fence parameters must inherently be stored in a memory for the algorithm to ensure that the pet is within those parameters. *Id.* (citing Ex. 1010, 14; Ex. 1006 ¶ 192).

[10.C] mathematically casting a ray from the position of the subject toward a line segment of the plurality of line segments representing the containment perimeter;

[10.D] mathematically determining the number of line segments of the plurality of line segments that are intersected by the ray; and

[10.E] determining, from the number of line segments of the plurality of line segments intersected by the ray, whether the

subject is inside the containment zone or outside of the containment zone.

Petitioner points to Chang as describing the problem as “finding an appropriate algorithm for determining whether a point lies within a given polygon and fine-tuning an acceptable order of precision for the GPS sensor on the pet collar.” *Id.* at 39–40 (citing Ex. 1010, 14). Petitioner points to Chang’s identification of Geeks as describing “[h]ow to check if a given point lies inside or outside a polygon.” *Id.* at 39 (citing Ex. 1010, 15).

Petitioner points to Geeks as describing casting horizontal lines from points near a polygon, including points that cast lines toward a line segment of a containment perimeter. *Id.* (citing Ex. 1011, 2; Ex. 1006 ¶¶ 198–200). Petitioner further points to Geeks as describing counting the number of times a line intersects the polygon, and determining therefrom whether the point is inside or outside the polygon. *Id.* at 40 (citing Ex. 1011, 2; Ex. 1006 ¶ 199).

With respect to the combination, Petitioner points to Chang’s statement of a need for an algorithm that determines whether a point lies inside or outside a polygon, and Chang’s direct reference to the Geeks article describing an algorithm having those exact properties. *Id.* at 39–40 (citing Ex. 1010, 15). Petitioner relies on its declarant’s statement that a person of ordinary skill in the art would understand Chang to incorporate the algorithm of Geeks as the algorithm for Chang’s collar. *Id.* at 39 (citing Ex. 1006 ¶¶ 195–197). Further, Petitioner’s declarant states that a person having ordinary skill in the art would understand Chang and Geeks to be treated as a single reference describing the collar. *Id.* (citing Ex. 1006 ¶¶ 195–197). We determine these facts to be sufficient, at this stage, to show that a person of

ordinary skill in the art would have reason to combine the references with a reasonable expectation of success.

At this stage, we need not decide whether Chang incorporates Geeks by reference for purposes of anticipation because we are sufficiently persuaded that Chang's express mention of Geeks is a teaching to use the algorithm of Geeks that is sufficient for obviousness. However, further briefing should address this issue (as well as all issues not specifically addressed in this institution decision).

We turn to Patent Owner's argument, recognizing that the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Patent Owner argues, with respect to Chang and Geeks, that "Chang itself is clear that the processing and in/out determination take place *off* the collar." Prelim. Resp. 26 (citing Ex. 1010, 14 ("the [1] collar, which contains a GPS sensor, is responsible for sending the pet's current coordinates to the [2] control unit")). Patent Owner also argues that a separate control unit, not the collar, processes the data in Chang. *Id.* (citing Ex. 1010, 15).

On this record, we disagree with Patent Owner's arguments. Although Patent Owner argues that Chang's processing and in/out determination take place "off the collar," claim 10 does not recite a collar. To the extent claim 10 recites a device, claim 10 does not require any particular processing or determination to occur on that device. Rather, claim 10 requires only that the device be worn by a subject. Patent Owner's additional argument, that Chang's collar sends coordinates to the control unit, is also not commensurate with the scope of claim 10, which requires

neither a collar nor any particular components or steps being taken on a single device.

b) *Claims 11, 17, and 18*

Claim 11 further requires,

wherein the step of determining if the subject is inside the containment zone or outside of the containment zone includes determining if the number of line segments of the plurality of line segments intersected by the ray is an odd number in which case the subject is determined to be inside the containment zone and determining if the number of line segments of the plurality of line segments intersected by the ray is an even number in which case the subject is determined to be outside of the containment zone.

Ex. 1020, 5.

Petitioner points to Geeks' description that if the number of intersections of a line cast from the point is even, the point is inside the polygon, and that if the number of intersections of a line cast from a point is odd, the point is outside the polygon. Pet. 41–42 (citing Ex. 1011, 2; Ex. 1011 ¶¶ 169–171).

Claim 17 further limits the subject to one of an animal, a human, or an object. Ex. 1020, 7. Petitioner points to Chang's description of a "pet" receiving a correction as a reminder to stay within the yard. Pet. 42 (citing Ex. 1010, 14; Ex. 1006 ¶¶ 215–218).

Claim 18 further limits the device to be the form of a collar. Ex. 1020, 7. Petitioner points to Chang's description of a collar that contains a GPS sensor. Pet. 42–43 (citing Ex. 1010, 15; Ex. 1006 ¶¶ 219–223).

With respect to Patent Owner's arguments that Chang and Geeks do not teach a collar having a processor thereon (*see* Prelim. Resp. 26), such arguments are not commensurate with the scope of claims 11 and 17, which

do not recite a collar, or claim 18, which recites a collar but not that any processing or determination steps occur on that collar.

c) *Claims 1, 2, 8, and 9*

We turn to claim 1, which differs from claim 10 in that claim 1 recites a device comprising a positioning unit (for determining the positioning of the subject) and a processor unit in communication with the positioning unit and configured to perform steps analogous to steps 10[B-E] (i.e., receiving data and performing the mathematical determination of the subject's position relative to the containment zone). Ex. 1020, 1–2. Petitioner points to the above-identified descriptions in Chang and Geeks for the limitations common to claims 1 and 10. Pet. 40–41.

With respect to the positioning unit and processor unit being part of the device, Petitioner points to the following photo as “depict[ing] the collar and its components”:



The photo reproduced above portrays an equation in which two pictures of electronic components are added to a green robot icon to equal a picture of a device having a loop. *Id.* at 36–37 (citing Ex. 1010, 15; Ex. 1006 ¶ 183).

Patent Owner argues that Chang's collar-located GPS sends coordinates to the control unit, and that a separate control unit, not the collar, processes the data. Prelim. Resp. 26 (citing Ex. 1010, 14–15). However,

Patent Owner does not explain how sending data between two components demonstrates that those two components may not be located on the same device, such as a collar. By contrast, Petitioner's declarant Madisetti states that a person of ordinary skill in the art "would understand that the reference to the *Geeks* article in *Chang* is intended to incorporate the described algorithmic solution into the description of the collar." Ex. 1006 ¶ 153. Thus, based on the existing record, Petitioner is reasonably likely to prevail on its assertion that claim 1 would have been obvious over, *Chang* and *Geeks*. However, we emphasize that this determination is solely for the purposes of institution under the applicable burden, and that any final determination will address any further explanation and evidence raised by Patent Owner.

Claims 2, 8, and 9 recite limitations analogous to those in claims 11, 17, and 18, and we agree that those limitations are described by *Chang* and *Geeks* as discussed for claims 11, 17, and 18, *supra*.

d) *Determination*

At this stage of the proceeding, for purposes of institution, Petitioner has provided sufficient explanations and supporting evidence concerning claims 1, 2, 8–11, 17, and 18. These explanations identify how each limitation of these claims is either described by, or taught or suggested by the applied combination of prior art. With respect to obviousness, Petitioner has further provided a rationale for each proposed combination, as well as facts supporting how each combination would be accomplished with a reasonable expectation of success.

In view of the foregoing, we are persuaded on the current record that Petitioner is reasonably likely to prevail on its assertions that claims 1, 2, 8–

11, 17, and 18 would have been obvious over the applied combination of Chang and Geeks.

F. Llaría and Schirra

Petitioner contends that claims 10, 11, 17, and 18 of the '295 patent are unpatentable as anticipated under 35 U.S.C. § 102 by Llaría and the material Llaría incorporates from Schirra. Pet. 43–44. Alternatively, Petitioner contends that claims 10, 11, 17, and 18 would have been obvious under 35 U.S.C. § 103, over the combined teachings of Llaría and Schirra. Pet. 43 n.5. Petitioner also relies upon the Madisetti Declaration to support its positions. Ex. 1006. At this stage of the proceeding, we are persuaded by Petitioner's explanations and supporting evidence. We begin our analysis with a brief overview of Llaría and Schirra.

1. Overview of Llaría

Llaría relates to monitoring livestock. Ex. 1012, 1. Specifically, Llaría aims to “implement a system capable of determin[ing] the location of animals in mountain pastures.” *Id.* at 2. Llaría seeks geolocation devices that can operate during seven months without needing battery replacement, assuring good coverage, and having a size and weight that does not disturb the animals. *Id.* at 3. Llaría's device consists of four parts: GPS module, wireless communication module, microcontroller, and batteries. *Id.* Livestock locations and virtual fences may be seen on a user interface. *Id.*

2. Overview of Schirra

Schirra relates to “point-in polygon strategies.” Ex. 1013, 1. Schirra tests a number of different codes representing different algorithms to compare correctness and numerical stability. *Id.* at 2–3.

3. *Analysis*

a) *Petitioner's contentions*

With respect to the preamble of claim 10, Petitioner contends that Llara describes a collar having a geolocation device (Fig. 3), containing a GPS module, a low-power microcontroller, batteries, and a wireless communication (Fig. 2). Pet. 44–46 (citing Ex. 1012, 2422; Ex. 1006 ¶ 229). Petitioner further points to Llara's description of a user interface showing virtual fences on a map that permits users to manage zones, and to track animals in the field and monitor their movements. *Id.* at 43–47.

With respect to limitation 10.A, Petitioner points to Llara's description of Global Positioning System data to acquire positions of the collar. *Id.* at 46 (citing Ex. 1012, 2422). With respect to limitation 10.B, Petitioner points to Llara's description of functionalities for creating, editing, and deleting virtual fences over a map. *Id.* at 47 (citing Ex. 1012, Fig. 5, 2422). Petitioner relies on its declarant's statement that a memory is inherently required for such creating, editing, and deleting. *Id.* (citing Ex. 1012, 2422; Ex. 1006 ¶ 236).

With respect to limitations 10.C– 10.E, Petitioner points to Llara as describing that “point-in-polygon geometric computations [32] are used to decide whether an animal position is found to be inside an area (fence) or not, thus generating an alarm on the user interface.” *Id.* at 47–48 (citing Ex. 1012, 2423, 2425). Petitioner points to reference “[32]” in Llara as Schirra, and that this indicates incorporation of the point-in-polygon strategies described in Schirra. *Id.* at 48 (citing Ex. 1012, 2420; Ex. 1006 ¶¶ 239–241).

Petitioner points to Schirra's description of the "crossing number algorithm" as "[p]robably the most common algorithm for point-in-polygon testing." *Id.* (citing Ex. 1013, 2). Petitioner further points to Schirra's description, "[c]rossing number algorithms compute the parity of the **number of intersections** of an (horizontal) **ray** with the polygon boundary." *Id.* (quoting Ex. 1013, 3). Petitioner relies on its expert's statement that a person would understand that whenever the point is within the polygon, the line will be cast towards a line segment of the containment perimeter. *Id.* at 48–49 (citing Ex. 1006 ¶ 242).

With respect to claim 11, Petitioner further relies on its expert's statement that a person having ordinary skill in the art would recognize that an odd/even determination is inherently the basis for the crossing number algorithms. *Id.* at 49 (citing Ex. 1006 ¶ 243). With respect to claim 17, Petitioner points to Llaría as stating its ideal solution as knowing "the position of each animal." *Id.* at 50 (citing Ex. 1012, 2421). With respect to claim 18, Petitioner points to Llaría's description of a collar that includes a "GNSS module," a "wireless communication module," a "microcontroller," and an "energy unit." *Id.* (citing Ex. 1012, 2422 Figs. 2, 3).

With respect to the combination as viewed in the context of obviousness, Petitioner points to Llaría's statement of a need for an algorithm that determines whether a point lies inside or outside a polygon, and Llaría's direct reference to Schirra's article describing an algorithm having those exact properties. *Id.* at 48–49 (citing Ex. 1013, 2–3). Petitioner relies on its declarant's statement that a person of ordinary skill in the art would understand Llaría to incorporate the algorithm of Schirra as the algorithm for Llaría's collar. *Id.* at 48 (citing Ex. 1006 ¶¶ 239–241).

Further, Petitioner's declarant states that a person having ordinary skill in the art would understand that Llara and Schirra to be treated as a single reference describing the collar. *Id.* at 49 (citing Ex. 1006 ¶¶ 239–241). We determine these facts to be sufficient, at this stage, to show that a person of ordinary skill in the art would have reason to combine the references with a reasonable expectation of success. At this stage, we need not decide whether Llara incorporates Schirra by reference for purposes of anticipation because we are sufficiently persuaded that Llara's express mention of Schirra is a teaching to use the algorithm of Schirra that is sufficient for obviousness.

b) Patent Owner's arguments

On this record, we disagree with Patent Owner's arguments. Patent Owner argues that Llara's processing and in/out determination take place "off the collar" and that the need for battery consumption would weigh against adding elements to the collar. Prelim. Resp. 26. However, claim 10 does not recite a collar. To the extent claim 10 recites a device, and claim 18 limits that device to a collar, neither claim requires any particular processing or determination to occur on that device or collar.

c) Determination

At this stage of the proceeding, for purposes of institution, Petitioner has provided sufficient explanations and supporting evidence concerning claims 10, 11, 17, and 18. These explanations identify how each limitation of these claims is either described by, or taught or suggested by the applied combination of prior art. With respect to obviousness, Petitioner has further provided a rationale for each proposed combination, as well as facts

supporting how each combination would be accomplished with a reasonable expectation of success.

In view of the foregoing, we are persuaded on the current record that Petitioner is reasonably likely to prevail on its assertions that claims 10, 11, 17, and 18 would have been obvious over the applied combination of Llarra and Schirra.

G. Remaining Claims and Grounds

For purposes of institution, we need not address all grounds presented by Petitioner. However, in furtherance of addressing the issues in the Petition, we address representative grounds advanced by Petitioner with respect to the claims not addressed in the grounds discussed above.

a) Claims 3, 6, 7, 12, 15, and 16

Petitioner contends that the combination of Berntsen and Chang/Geeks teaches claims 1–18. The teachings of Chang and Geeks have been discussed above. Petitioner contends that Berntsen describes “[a] system for invisible fencing for animals, that is a device mounted on animals.” Pet. 66. Petitioner points to Berntsen’s description of a polygonal animal containment area, and an animal-mounted collar device, containing microcontroller, wireless communication, GPS, motion detection, storage means, and speaker, wherein the collar may acquire updates of defined areas. *Id.* at 66–69. Petitioner contends that Berntsen’s device can “check whether the current position of the animal . . . is within the configured area(s),” but that Berntsen does not teach a specific mathematical algorithm for such determination. *Id.* at 69 (quoting Ex. 1014, 7:40–41). Petitioner contends that the teachings of Chang and Geeks provide the algorithm limitations of claims 1 and 10, for the reasons expressed in the discussion of

Chang and Geeks above. *Id.*

Claims 3 and 12 further limit claims 1 and 10, respectively, “wherein the line segment of the plurality of line segments representing the containment perimeter toward which the ray is cast is line segment closest to the position of the subject.” Ex. 1020, 2, 6. With respect to claims 3 and 12, Petitioner points to Berntsen’s description that the “system calculates the shortest distance to this area based on actual GNSS [Global Navigation Satellite System] position.” *Id.* at 71 (citing Ex. 1014, Abstr.). Relying on its declarant, Petitioner contends that a person having ordinary skill in the art would have found it obvious to select the direction for the ray to be closest line segment, which is calculated by Berntsen. *Id.* at 71–72 (citing Ex. 1006 ¶ 630).

Claims 6 and 15 further limit claims 1 and 10, respectively. Claim 6 recites,

further including a correction unit configured to issue a stimulus to the subject when the subject is determined to be outside of the containment zone; wherein the correction unit includes a static circuit for issuing the stimulus to the subject in the form of a static correction when the subject exits the containment zone, and wherein the correction unit further includes an audio speaker for issuing an audible correction when the subject is within a predetermined distance of a perimeter of the containment zone.

Ex. 1020, 3. Claim 15 recites similar limitations of performance of issuing a stimulus. *Id.* at 6–7. Petitioner contends that Berntsen teaches these limitations in the form of a circuit for generating an electric shock, and a buzzer to generate warning tones as a correction that is started, and varied with increasing or decreasing frequency, according to the calculated distance to the configured area. Pet. 73 (citing Ex. 1014, 2:17–21 (“[t]he most

important issue regarding fencing of animals without the use of a physical fence, is that the animal must be given an intuitively understandable warning signal before an unpleasant stimuli is applied to the animal.”); 7:30–60 (“examine whether the calculated distance in step d) is such that correction should be performed”)).

Claims 7 and 16 further limit claims 6 and 15, respectively, reciting, “further including a communication unit, in communication with the processor unit, configured to transmit an alert to an electronic device of an operator by way of a communication network when the subject exits the containment zone.” Ex. 1020, 4, 7. Petitioner points to Berntsen’s description of a control unit that communicates wirelessly with the animal-mounted device to retrieve stored data and to receive messages at specific cases. Pet. 74 (citing Ex. 1014, 5:14–22).

Petitioner contends that one having ordinary skill in the art would have been motivated to combine the algorithm of Geeks for determining whether a point is within a polygon, in view of Chang’s description of such algorithm being incorporated into pet containment devices, with the teachings of Berntsen in order to provide the means to determine whether or not a pet is within a polygonal containment area as desired by Berntsen. *Id.* at 75 (citing Ex. 1006 ¶¶ 546, 565). Petitioner further contends that “because these algorithms are very commonly known and involve basic arithmetic functions, a POSA would have had a reasonable expectation that [the Chang/Geeks] algorithms could be successfully implemented on the *Berntsen* collar.” *Id.* As an alternative basis, Petitioner further relies upon either Berntsen or AAPA to show the knowledge of one of ordinary skill in the art in support of a reasonable expectation of success in combining the

above-listed references. *Id.* We view Petitioner’s reliance on the alleged AAPA for that purpose as being consistent with the Memorandum and with the Federal Circuit’s holding in *Qualcomm*.

Patent Owner argues that this ground lacks “any *KSR* arguments, in many cases not even mouthing the words ‘combine’ or ‘motivation,’ let alone how or why to make the combinations.” Prelim. Resp. 26–27. However, Petitioner provides such motivation to combine, as discussed above, and on this record, we find Petitioner’s contentions sufficiently persuasive.

At this stage of the proceeding, for purposes of institution, Petitioner has provided sufficient explanations and supporting evidence concerning claims 3, 6, 7, 12, 15, and 16. These explanations identify how each limitation of these claims is either described by, or taught or suggested by the applied combination of prior art. Petitioner has further provided a rationale for each proposed combination, as well as facts supporting how each combination would be accomplished with a reasonable expectation of success.

In view of the foregoing, we are persuaded on the current record that Petitioner is reasonably likely to prevail on its assertions that claims 3, 6, 7, 12, 15, and 16 would have been obvious in view of the applied combination of Berntsen, Chang and Geeks.

b) *Claims 4, 5, 13, and 14*

Petitioner contends that the combination of Trenkle and Chang/Geeks teaches claims 1–18. Pet. 86. The teachings of Chang and Geeks have been discussed above. Petitioner points to Trenkle’s description of “an improved animal indicator apparatus that tracks the locations of an animal and alerts

nearby persons when the animal approaches a boundary.” Pet. 86 (quoting Ex. 1016, Abstr). Petitioner also points to Trenkle’s description that “the indicator apparatus is configured to be worn by a dog or other animal and generally includes a location determining component operable to determine a current geographic location of the apparatus; memory for storing cartographic data representative of at least one boundary; an indicator; and a processor.” *Id.* Further, Petitioner argues that Trenkle provides that “the processor 106 determines if the most recent geographic location of the indicator apparatus has crossed or is actually within one of the boundaries.” *Id.* (citing Ex. 1016, 13:3–6). Petitioner further cites Trenkle’s description that a user may enter boundaries into the memory, and then transfer the information to the memory of the indicator apparatus, and that such information may be also be transmitted from the navigation units. *Id.* at 89.

Petitioner contends that Trenkle does not teach a specific mathematical algorithm for such determination. *Id.* at 90 (quoting Ex. 1014, 7:40–41). However, Petitioner contends that the teachings of Chang and Geeks provide the algorithm limitations set forth in claims 1 and 10, for the reasons expressed in the discussion of those references. *Id.*

Claims 4 and 13 further limit claims 1 and 10, respectively; claim 4 recites:

wherein the positioning unit includes a global navigation satellite system receiver in communication with a plurality of satellite constellations to produce the satellite positioning data and wherein the positioning unit further includes an attitude and heading reference system configured to provide to the processor unit attitude and reference data regarding the subject; wherein the position data includes the attitude and reference data.

Ex. 1020, 2–3. Claim 13 recites similar limitations. *Id.* at 6. Claims 5 and

14 depend from claims 4 and 13, respectively, reciting, “wherein the attitude and heading reference system comprises one or more of a gyroscope, accelerometer, and a magnetometer.” Ex. 1020, 3, 6.

Petitioner points to Trenkle’s description of a GNSS receiver receiving signals “from a plurality of satellite constellations, such as both GPS and GLONASS.” Pet. 92 (citing Ex. 1014, 3:3–33). Petitioner further points to Trenkle’s description of the indicator apparatus having sensors, such as acceleration, speed, orientation, attitude, and combinations thereof. *Id.* at 92–93 (citing Ex. 1014, 4:16–26). Petitioner further points to Trenkle’s description of sensors that “may be configured to **determine a gait or position of the animal**. For example, **the processor 106 may use information provided by the one or more sensors to determine if the animal is barking, upright, running, walking, prone, treeing an animal, and the like**.” *Id.* (citing Ex. 1014, 4:16–26). Petitioner further points to Trenkle’s description that information from the sensors may be provided to the navigation unit for analysis or display. *Id.* at 93 (citing Ex. 1014, 4:16–26).

Petitioner contends that one having ordinary skill in the art would have been motivated to combine the algorithm of Geeks for determining whether a point is within a polygon, in view of Chang’s description of such algorithm being incorporated into pet containment devices, in order to provide the means to determine whether or not a pet is within a containment area as desired by Trenkle. *Id.* at 95 (citing Ex. 1006 ¶¶ 1320–1324, 1098). Petitioner further contends that “because these algorithms are very commonly known and involve basic arithmetic functions, a POSA would have had a reasonable expectation that [the Chang/Geeks] algorithms could

be successfully implemented on Trenkle's collar. *Id.* at 95–96.

Patent Owner argues that this ground lacks “any *KSR* arguments, in many cases not even mouthing the words ‘combine’ or ‘motivation,’ let alone how or why to make the combinations.” Prelim. Resp. 26–27. However, Petitioner provides such motivation to combine, as discussed above, and on this record, we find Petitioner's contentions sufficiently persuasive.

At this stage of the proceeding, for purposes of institution, Petitioner has provided sufficient explanations and supporting evidence concerning claims 4, 5, 13, and 14. These explanations identify how each limitation of these claims is either described by, or taught or suggested by the applied combination of prior art. Petitioner has further provided a rationale for each proposed combination, as well as facts supporting how each combination would be accomplished with a reasonable expectation of success.

In view of the foregoing, we are persuaded on the current record that Petitioner is reasonably likely to prevail on its assertions that claims 4, 5, 13, and 14 would have obvious in view of the applied combination of Trenkle, Chang and Geeks.

III. CONCLUSION

Taking into account the Preliminary Response, we conclude that the information presented in the Petition demonstrates that there is a reasonable likelihood that Petitioner would prevail in challenging at least one of claims 1–18 of the '295 patent as unpatentable. Given this determination, we institute trial on all challenged claims and all grounds raised in the Petition. *See SAS Inst.*, 138 S. Ct. at 1359–60; 37 C.F.R. § 42.108(a). At this stage of the proceeding, we have not made a final determination with respect to the patentability of any challenged claim.

IV. ORDER

Accordingly, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4, an *inter partes* review is hereby instituted based on all claims and all grounds raised in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this Decision.

IPR2021-01483
Patent 9,848,295 B1

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