

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner

v.

GEOSCOPE TECHNOLOGIES PTE. LTD.,

Patent Owner.

CASE: IPR2023-01212

U.S. Patent No. 8,406,753

PATENT OWNER'S SUR-REPLY

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Exhibit List	
2001	Declaration of Christopher M. Gerson in Support of Patent Owner's Motion for Pro Hac Vice Admission of Christopher M. Gerson Under 37 C.F.R. § 42.10(c)
2002	<i>Not Assigned</i>
2003	Memorandum Opinion on Google's Motion for Judgment on the Pleadings on Patent Eligibility dated September 18, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC</i> , Civ. Action No. 1:22-cv-01331 (EDVA)
2004	Memorandum Opinion on Apple's Motion for Judgment on the Pleadings on Patent Eligibility dated September 18, 2023, <i>Geoscope Technologies Pte. Ltd. v. Apple Inc.</i> , Civ. Action No. 1:22-cv-01373 (EDVA)
2005	Final Judgment dated October 6, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC</i> , Civ. Action No. 1:22-cv-01331 (EDVA)
2006	Final Judgment dated October 5, 2023, <i>Geoscope Technologies Pte. Ltd. v. Apple Inc.</i> , Civ. Action No. 1:22-cv-01373 (EDVA)
2007	Order dated June 26, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC</i> , Civ. Action No. 1:22-cv-01331 (EDVA)
2008	Email from Saunak Desai to Stephen E. Noona, "Geoscope v. Google - Claim Narrowing" (June 12, 2023)
2009	Claim Construction Memorandum Opinion & Order dated July 19, 2023, <i>Geoscope Technologies Pte. Ltd. v. Apple Inc.</i> , Civ. Action No. 1:22-cv-01373 (EDVA)
2010	Order dated June 26, 2023, <i>Geoscope Technologies Pte. Ltd. v. Apple Inc.</i> , Civ. Action No. 1:22-cv-01373 (EDVA)
2011	Defendant Google LLC's Final Invalidity Contentions dated July 3, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC</i> , Civ. Action No. 1:22-cv-01331 (EDVA)

2012	<i>Not Assigned</i>
2013	U.S. Patent No. 9,097,784 issued on Aug. 4, 2015 to Alles et al.
2014	U.S. Patent No. 7,383,051 issued on June 3, 2008 to Spain, Jr. et al.
2015	U.S. Patent No. 8,068,855 issued on Nov. 29, 2011 to Dressler et al.
2016	U.S. Patent No. 7,725,111 issued on May 25, 2010 to Dressler et al.
2017	<i>Not assigned</i>
2018	Declaration of Saunak K. Desai in Support of Patent Owners Motion for Pro Hac Vice Admission of Saunak K. Desai Under 37 C.F.R. § 42.10(c)
2019	<i>Not assigned</i>
2020	Declaration of Mark Alan Sturza
2021	<i>Curriculum Vitae</i> of Mark Alan Sturza
2022	Deposition Transcript of David Hilliard Williams for IPR2023-01212 (U.S. Pat. No. 8,406,753) (April 23, 2024)
2023	Deposition Transcript of David Hilliard Williams for IPR2023-01209, -01210, -01211 (U.S. Pat. Nos. 7,561,104, 8,786,494 and 8,400,358) (April 23, 2024)

I. INTRODUCTION

Patent Owner (“PO”) proposes a construction of “[non-uniform] grid point” that further articulates the district court’s construction to better address issues raised by the specific prior art used in the Petition. PO’s construction is based on the intrinsic record, as well as the district court’s construction and related analysis and the arguments advanced by Petitioner in its claim construction brief.

Petitioner’s Reply opposes PO’s construction, contradicting not only the Markman order, but also Petitioner’s own representations to the court to obtain its construction. Petitioner told the district court one thing to obtain its construction, now Petitioner disavows those statements in its representations to the Board. Petitioner’s arguments against PO’s construction also fail because they avoid addressing PO’s construction and mischaracterize the intrinsic and extrinsic evidence.

Spain does not teach NUGs under the appropriate construction because the prior art only teaches generating calibration data. That is, the prior art employs interpolation or extrapolation to estimate signal strength measurements—calibration data—against a pre-laid grid, not generate NUGs that define the grid. Accordingly, the challenged claims are patentable.

II. CLAIM CONSTRUCTION

The district court construction of “grid point” and the intrinsic record both require construing “[non-uniform] grid point” as “a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data.” POR, 16-24. PO’s construction refines the district court’s construction of “a point associated with representative calibration data for an area” to address issues arising in this IPR. EX1028 [Markman Order], 18-20.

In particular, PO’s gives meaning to the term “representative” which Petitioner’s arguments otherwise read out of the construction. The “area” of “representative calibration data” in the district court construction has a boundary and the boundary is determined from evaluating the calibration data. All areas have boundaries and NUGs have different areas with different boundaries. POR, 7-13. In order to obtain “representative calibration data of an area,” the calibration data within the area must be evaluated such that each area comprises “representative calibration data” for that area. *Id.*

The district court correctly summarized Petitioner’s Markman arguments, stating “Defendants’ use of ‘representative calibration data’ is intended to reflect that the defining characteristic of a NUG region [] is that the data points within an area are all ‘statistically very similar’ such that each of the grid points within the

NUG region can represent the overall NUG.” EX1028 [Markman Order], 20. But unlike the prior art, where calibration data is simply assigned to predetermined areas or grids, the ’104 Patent and its family members teach that NUGs are determined based on areas that have *representative* calibration data for an area. EX1018 [’104 Patent], 3:50-52 (“[a] (NUG) may represent the [] calibration data over a given region.”); 3:56-57 (“The NUGs represent an area of collected calibration data.”). Thus, an evaluation of the calibration data must occur to determine how to assign calibration points to NUGs.

A. Petitioner’s Arguments Confirm PO’s Construction

1. Petitioner’s Arguments Contradict Its Representations to The District Court

Petitioner argues that evaluating the statistical similarity of calibration points is “without file history support.” Reply, 6. Petitioner is wrong. First, PO’s construction does not require evaluating statistical similarity. *Infra*, §II.A.2. The POR quote Petitioner cites is limited to the embodiments discussed directly before the quotation. POR, 12. It does not limit all evaluations of calibration points to analysis of statistical similarity.

Second, Petitioner told the district court the *opposite* of what it argues to the Board. Petitioner argued that “*the essence of a ‘grid point’*” is that “[t]he claimed

grid points represent an area for which calibration data is sufficiently similar that they can be represented by a single point for the entire area.” EX1025 [Google Opening Claim Construction Brief], 15 (emphasis added). Nor is Petitioner being quoted out of context. Petitioner similarly stated:

- “the described system stores only one point for a given NUG, because *the NUG represents an area for which all of the points within it would be similar if measured*, so each point is representative of the area” (*id.*, 16);
- “Once the NUG is defined, the system can store a single point within the NUG *because that point is, by definition, representative of (i.e., statistically similar to) the other points within the NUG*” (*id.*, 17);
- “Thus, the intrinsic record repeatedly confirms that a grid point is a point that represents calibration data across an area (*i.e., an area over which calibration data is sufficiently similar*).” *Id.*, 17.

All emphasis added. Importantly, Petitioner defined “representative of” as “i.e., statistically similar.” *Id.*, 17.

Moreover, Petitioner agreed with PO that a grid point’s area requires defined boundaries, stating “[t]hat natural obstacles can form a grid point boundary further confirms that *the grid point represents an area with defined boundaries*.” *Id.*, 16.

The district court adopted Petitioner’s construction and relied on Petitioner’s representations, stating “Defendants’ use of ‘representative calibration data’ is

intended to reflect that the defining characteristic of a NUG region [] is that the data points within an area are all ‘statistically very similar’ such that each of the grid points within the NUG region can represent the overall NUG.” EX1028 [Markman Order], 20.

Petitioner contradicts its Markman briefing in order to oppose PO’s construction. The Board should hold Petitioner to the unqualified representations it made to the district court and adopt PO’s construction.

2. Evaluation Is Required

Petitioner complains that “the District Court’s final claim construction of ‘grid point’ makes no mention of any ‘evaluation.’” Reply, 4. PO’s current construction was not before the district court, thus the issues addressed in the claim construction order were different. Moreover, the district court claim construction agrees with PO’s construction that “calibration data” must be “analyzed” to determine NUGS. EX1028 [Markman Order], 19. Petitioner’s reply argues—and PO agrees—that there is no relevant difference in “evaluation” and “analysis” for purposes of this IPR. Reply, 3.

Further, Petitioner’s Markman Briefing argued that grid points are generated by evaluating calibration data, stating NUGs are formed when “[n]earby points are evaluated for ‘statistical sufficiency’ to determine whether they are ‘statistically []

similar’ such that they should be part of the same NUG, or instead part of a different NUG.” EX1025, 17. To the extent the district court considered whether “evaluation” was necessary, it adopted Petitioner’s construction and agreed with Petitioner that NUGs are formed by evaluating calibration data. *Id.*

Petitioner argues that “[t]he ’753 Patent expressly discloses many ways for generating a grid point associated with representative calibration data for an area” Reply, 6 (citing EX1008, 10:29-59, 12:15-25 and 12:58-67). Consistent with PO’s construction, Petitioner cites passages where the grid point represents an area whose boundaries are determined from evaluation of the calibration data. *Id.*, 10:47-50 (“If the [calibration] data exhibits tight clustering, the data for the next candidate calibration point may be aggregated to the former calibration point”); 12:15-25 (NUGS may be generated based on “a minimum number of unique neighbors observed in [calibration] data accumulated from allocated calibration grid points”).

Petitioner argues “[o]ne or more signal strengths measured at a point, without further evaluation, can thus serve as representative calibration data for a grid point.” Reply, 6-7. While PO agrees that a NUG can be formed from one or more signal strengths measured at a point, even NUGs consisting of a single calibration point are formed based on evaluation of calibration data at neighboring points. The ’753 Patent clearly explains this:

All adjacent calibration data points may be similarly evaluated with respect to the first considered calibration point. Thus one or more of the adjacent calibration points may either wind up having all their data accumulated into a single NUG or, at the other extreme, each such calibration point may become the root of a separate NUG.

EX1001 [’753 Patent], 10:59-65. Not only does the “NUG Generator [] evaluate the data vectors at a particular (candidate) calibration point” (*id.*, 10:39-41), it evaluates “[a]ll adjacent calibration data points” “with respect to the first considered calibration point.” *Id.*, 10:59-61. As a result, the “adjacent calibration points” can be “aggregated to the former calibration point” if they exhibit “tight clustering.” (*id.*, 10:47-50). At one extreme, if all adjacent calibration points exhibit tight clustering, they may “wind up having all their data accumulated into a single NUG.” *Id.*, 10:61-63. “[A]t the other extreme, each such calibration point may become the root of a separate NUG.” *Id.*, 10:63-65. Thus, even in the “extreme” case where a NUG consists of a single calibration point, it has still been evaluated against all adjacent calibration points.

Petitioner argues that the “’104 Patent confirms grid points can also be determined from collected calibration data without evaluation.” Reply, 7. A NUG “represents the signal characteristics and/or calibration data over a given region.” EX1018 [’104 Patent], 3:52-60. The NUG is *representative* of the calibration data

in a given region, it is not the calibration data. The evaluation of calibration data is necessary to generate the NUG.

The '753 Patent makes this distinction clear, stating “for each of the calibration points the associated calibration data is evaluated and based on that evaluation a determination is made as to whether at least one grid point should be defined.” EX1001 ['753 Patent], 2:56-59. *See also id.*, 3:5-9, 3:16-19. Thus, the determination of whether to create a NUG is ***based on*** the evaluation.

Petitioner cites its expert's deposition to argue that “[Determining a grid point] would not require analysis. It could be just the actual measurements...” (Reply, 7), but while the expert was asked about *determining a grid point*, he limited his response to the construction for *calibration data*:

10 Q To determine which of that calibration data
11 is representative of an area would require analyzing
12 that set of collected calibration data, right?

13 MR. LEE: Objection. Form. Scope.
14 Relevance.

15 THE WITNESS: It would not require
16 analysis. It could be just the actual measurements,
17 and I believe that is an issue as part of the
18 calibration data construction, it being as:
19 "modified or unmodified network measurement data
20 associated with a geographical [sic] location."

EX2023 [Williams Dep. Tr.], 37:10-20. *Id.*, 39:3-11; *See generally id.*, 37:10-40:10.

By limiting his responses to whether the construction of calibration data requires analysis, Mr. Williams was not responding to the question of whether the patents require that NUGs are determined “based on” an “evaluation” or “analysis” of the calibration data. EX1001 [’753 Patent], 2:56-59. Mr. Williams’ testimony is not instructive.

Petitioner argues that “[t]he terms ‘evaluation’, ‘statistically very similar’ data, and ‘boundaries of an area’” are only embodiments of the ’753 Patent. Reply, 7-8. Petitioner provides no intrinsic analysis or evidentiary support that “evaluation” and “boundaries of an area” are optional for NUGs. Reply, 7-9. Indeed, the district

court's construction of "a point associated with representative calibration data for an area" *requires* boundaries because, as Petitioner stated, an "area" is defined by its boundaries. *See* EX1025, 16 ("That natural obstacles can form a grid point boundary further confirms that the grid point represents an *area* with defined boundaries.") (emphasis in original).

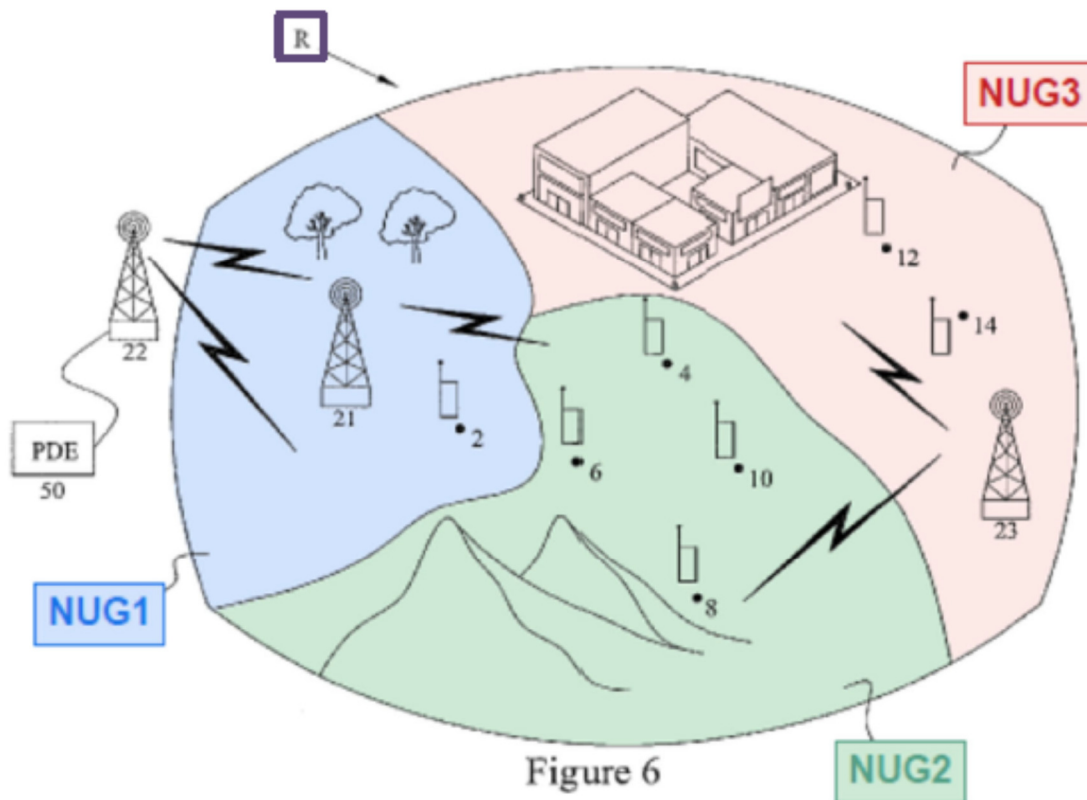
Instead, Petitioner focuses on "statistical similarity," arguing that the '379 Provisional "expressly discloses generating grid points and NUGs that are not based on statistical consistency/similarity of data." Reply, 7-9. Petitioner's argument contradicts its Markman arguments characterizing statistical similarity as "the essence of a 'grid point.'" *Supra*, §II.A.1. *See also* EX1028 [Markman Order], 20.

Moreover, nothing in PO's construction requires "statistical similarity." POR, 17-19. Instead, PO's construction tracks the Markman order, which characterized the evaluation (or analysis) of calibration data as "what *must be done* to arrive at a grid point or set of grid points." EX1028 [Markman Order], 19 (quoting EX1001 ['753 Patent], Abstract) (emphasis in original). PO's construction does not limit how calibration data is evaluated or how boundaries of the NUG are determined.

Petitioner argues that '784 Patent Figure 6 only illustrates exemplary NUGs. Reply, 9. Figure 6 (below) illustrates NUGs have different shapes, sizes and

boundaries depending on the representative calibration data for different areas.

NUGS are not uniformly assigned to a pre-defined grid.



EX2013 [’784 Patent], Fig. 6; *see also* EX1025, 15-17.

Petitioner argues that “Mr. Sturza was also unable to confirm whether boundaries are even stored pursuant to the teachings of the ’753 Patent.” Reply, 9. Nothing in PO’s construction requires the boundaries to be stored in any particular manner.

B. Petitioner’s “Single Calibration Point” Arguments Do Not Address Petitioner’s Construction

Petitioner argues that a NUG can consist of a single calibration point. Reply, 10-12. PO’s construction does not require a specific number of calibration points. Thus, Petitioner’s argument fails to address PO’s construction.

Petitioner argues that the district court’s Markman order “confirmed calibration data can be a single calibration point.” Reply, 10 (citing EX1028 [Markman Order], 20) (emphasis in original). Nothing at page 20 addresses “a single calibration point.” Instead, the Markman Order found that “Defendants’ use of ‘representative calibration data’ is intended to reflect that the defining characteristic of a NUG region [] is that the data points within an area are all ‘statistically very similar’ such that each of the grid points within the NUG region can represent the overall NUG.” *Id.* The court’s statement—with which Petitioner now disagrees—holds true whether a NUG is comprised of one data point (e.g., the first data point forms the root of its own NUG) or composed of many data points with statistical similarities. PO’s construction reflects this without limiting NUGs to the preferred embodiments.

C. Petitioner’s Indefiniteness Arguments Are Baseless

Petitioner argues that the terms “evaluation,” “statistical very similar” and “boundaries” are “ambiguous and indefinite.” Reply, 12-14. In the district court, Petitioner argued that grid points are determined by evaluating the statistical similarities of calibration points in order to determine NUG areas with defined boundaries. *See supra*, §II.A.1. Petitioner’s new indefiniteness arguments contradict those arguments and the resulting Markman order.

Further, Petitioner’s indefiniteness arguments fail for the reasons described below.

1. “Statistically Similar”

The term “statistically similar” is not used in the claims or in PO’s construction. *Supra*, §II.A.2. Thus, Petitioner’s argument fails, as indefiniteness applies only to *claim* language. *See* 35 U.S.C. §112(b) (“one or more claims particularly pointing out and distinctly claiming the subject matter ...); MPEP § 2173 (“the claim language must be ‘definite’ to comply with 35 U.S.C. 112(b)”).

Moreover, “examples in the written description help [] provide sufficient guidance to render the claims not invalid as indefinite.” *Niazi Licensing Corp. v. St. Jude Med. S.C., Inc.*, 30 F.4th 1339, 1349-50 (Fed. Cir. 2022). The specification provides many examples describing how the “‘statistical similarity’ of calibration

data is evaluated to generate a grid point.” POR, 27; *see generally*, POR, 27-29; EX2020 [Sturza Decl.], ¶¶86-87; EX1003 [’379 Provisional], 6. Thus, the intrinsic record provides written description support for evaluating statistical similarity.

2. “Evaluation”

The district court rejected indefiniteness arguments from Petitioner with respect to the “evaluating” limitation in the claims of ’753 Patent, instead applying the plain and ordinary meaning of the term. EX1028 [Markman Order], 21-23. The district court held that the specification and claims “provide a POSA with specific examples of what the ‘evaluating’ step might encompass.” *Id.*, 22. The same is true for the challenged claims—the intrinsic record not only explains how the NUG generator can evaluate calibration data based on statistical similarity (*supra*, §II.A.2), it provides examples of how NUGs can be evaluated “based not on statistical consistency but on other conditions.” EX1003 [’379 Provisional], 8. *See generally id.*, 5-8.

Petitioner ignores the intrinsic record. Instead, Petitioner misrepresents Mr. Sturza’s deposition testimony to imply that “evaluation” is indefinite. Reply, 13. Mr. Sturza testified (consistent with his declaration, the intrinsic record, and Petitioner’s Markman briefing) that the specification provides examples of how the evaluation can take place:

19 Q. How is the evaluation performed?

20 A. I don't believe I provided an opinion as to
21 any specific form for evaluation. You know, as we have
22 been discussing, you know, from the record, you know,
23 there are several examples of using statistical
24 similarity with examples of algorithms for, you know,
25 determining statistical similarity.

EX1031 [Sturza Dep. Tr.], 83:19-25. *See generally* EX2020 [Sturza Decl.], ¶¶89-90; EX1003 ['379 Provisional], 6; IPR2023-01210, EX1025, 17.

The quotes Petitioner's Reply cites were responses by Mr. Sturza to inappropriate questions about Petitioner's district court *Alice* arguments:

10 Q. Can the evaluation be performed by a human?

11 A. Again, it's not, you know, something I've
12 thought about. You know, I would -- I would need to
13 look at the, you know, record again on that. I don't --
14 you know, I don't have an opinion on that, no.

15 Q. Can the evaluation be performed as purely --
16 as a pure mental process?

17 ATTORNEY McBRIDE: Objection. Form. Scope.

18 A. Well, you know, I'm not sure what does a pure
19 mental process means. But again, it's not something
20 that I've, you know, provided an opinion on or thought
21 about.

EX1031 [Sturza Dep. Tr.], 84:10-21.

2 Q. If the evaluation cannot be performed by a
3 human or a computer, how would the evaluation be
4 performed?

5 A. You know, I've provided, you know, no opinion
6 on how the evaluation could be performed. I don't
7 know -- you know, I -- I really can't provide an answer
8 to that without, you know, doing the work.

EX1031 [Sturza Dep. Tr.], 87:2-8; *see id.*, 83:19-87:15. Questions about “performed by a human,” “part of a mental process,” and “performed by a computer” are directed to the *Alice* motion that is an issue in the district court. These are legal concepts

outside the scope of Mr. Sturza's testimony and role as an expert. *Id.*, 84:18-19 ("I'm not sure what does a pure mental process mean."). As such, Petitioner's argument is not relevant to an indefiniteness analysis or a cross examination of Mr. Sturza.

Further, because §101 is outside the scope of a cross examination on Mr. Sturza's declaration (37 C.F.R. §42.53(d)(5)(D)(ii)) and outside of the statutory scope of issues to be decided in an IPR (35 U.S.C. §311(b)), the Board should strike the entire inappropriate line of *Alice* questioning from EX1031, 84:1-87:15.

3. "Boundaries"

Petitioner provides no support for its contention that the term "boundaries" is indefinite. Reply, 12-14. Every area has a boundary. *Supra*, §II.A.2. Moreover, the intrinsic record explains how to generate NUG boundaries. EX1018 ['104 Patent], 4:1-6. Thus, boundary is not indefinite, since "the grid point represents an area with defined boundaries." EX1025 [Google Opening Claim Construction Brief], 16.

4. PO's Construction Is Not Functional

Petitioner argues that PO's construction of [non-uniform] grid point is functional and therefore indefinite. Reply, 13-14. First, the construction is not functional. That is, PO's construction defines how a NUG is generated (the "defining characteristic" and "essence" of a NUG), not what a NUG *does*. *Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244, 1255 (Fed. Cir. 2008) (functional

limitations are “defined ‘by what it does rather than what it is.’”). PO’s construction does not define the functions a NUG performs. Petitioner cites no cases to the contrary. Petitioner is therefore incorrect.

Nor is PO’s construction “ambiguous.” *Supra*, §§II.C.1-3. Further, while PO’s construction is not functional, “there is nothing intrinsically wrong with” using functional language in claims, unless the functional language fails “to provide a clear-cut indication of the scope of subject matter embraced by the claim.” *Swinehart*, 439 F.2d 210, 212–13 (C.C.P.A 1971). The intrinsic record provides a detailed description of how NUGs are determined based on an evaluation of calibration data. *Supra*, §II.A.2.

III. THE CHALLENGED CLAIMS ARE PATENTABLE

As discussed in the POR, Spain fails to disclose or render obvious “grid point” because Spain does not disclose generating grid points based on an evaluation of the calibration data. POR, 25-29. Spain provides a fixed grid of calibration data with calibration points without generating grid points based on that calibration data. *Id.*

A. Spain Does Not Satisfy The Claim Language Under Either Construction

Petitioner argues that “the Challenged Claims [are] unpatentable absent Patent Owner’s construction of a ‘grid point’.” Reply, 15. This ignores the POR’s argument

that Spain does not generate grid points based on calibration data as required by the claim under either party's construction. POR, 29. Moreover, Petitioner misstates the deposition testimony it quotes. Reply, 15. Consistent with the POR and his expert report (EX2020 [Sturza Decl], ¶¶93-97), PO's expert states that Spain does not meet the limitation because "the claims require [generating] one or more sets of grid points for said calibration." EX1032, 62:8-15. Then, he explains, consistent with the POR and his declaration, that he is applying PO's construction. *Id.*, 62:18-21. Regardless, he relies on the language of the claim as an independent basis for his opinion. EX2020 [Sturza Decl.], ¶93 ("For this reason, the plain language of the claims requires that the claimed grid points be generated based on this calibration data."). Petitioner's resort to misstating Dr. Sturza's opinions and ignoring the claim language demonstrates the weakness of their position.

Petitioner's argument that "Spain uses fingerprint measurements to generate grid points" (Reply, 16) is belied by its own supporting evidence. As Petitioner admits, the "fingerprint measurements" are "i.e., signal strengths representing calibration data" that are taken "at predetermined locations." Reply, 16. In other words, the "fingerprint measurements"—whether measured or interpolated—are simply calibration data assigned to uniform calibration points. POR, 27-28.

Petitioner argues that the calibration data correspond to a “small area.” Reply, 16. As discussed in the POR, these “small areas” are predetermined and uniform. POR, 28-29. There is no discussion in Spain of any evaluation to determine whether they are representative of an area; they are simply assigned an area. Ex. 1006 [Spain], [0099]-[0101]. The only disclosure in Spain is that the fingerprints are “preferably the center point” of the “small area.” EX1006 [Spain], [0099]. Thus, the embodiment discussed in Spain discloses a uniform grid. EX2020 [Sturza Decl.], ¶¶95-97. In other words, Spain does not generate grid points associated with representative calibration data for an area; instead, it assigns calibration data (i.e., measured or interpolated signal strength) to a predetermined, uniform grid. This is similar to how the ’753 Patent generates calibration points, not grid points. Accordingly, under either construction, the claim language requires Petitioner’s argument to fail.

B. Spain Does Not Disclose Grid Points Under The Proper Construction

Spain fails to disclose a grid point under PO’s construction of “grid point” as “a point associated with representative calibration data for an area whose boundaries are determined from evaluation of the calibration data.” POR, 25-29.

Petitioner argues that PO’s construction “does not foreclose generating ‘grid points’ at ‘predetermined locations.’” Reply, 18. This is incorrect. The grid points

are not determined until the calibration data has been evaluated. POR, 17-24, 26-27. This is reflected in the claim language, which discloses a two-step process where calibration data is provided for one or more calibration points in a geographic region and then grid points are generated (determined) for said calibration data. EX1001 [’753 Patent], cls. 1, 32. Spain discloses something similar to the first step (calibration data is provided for one or more calibration points), but discloses nothing similar to the second (where grid points are determined from evaluation of the calibration data.)

Petitioner argues that PO “fails to appreciate that Spain’s interpolated points can be generated at **arbitrary** (i.e., not predetermined) locations to resolve potentially ambiguous positions...” Reply, 18 (emphasis in original). Petitioner misrepresents Spain. As discussed in the POR (and not rebutted by Petitioner), Spain describes “interpolat[ing] the fingerprints at ***all locations*** in between the sampled locations” to reduce the number of physical measurements to be made to populate the fingerprint database. POR, 28 (Ex. 1006 at [0101].) “All locations” indicates that Spain utilizes a predetermined grid with predetermined locations. *Id.*; EX2020 [Sturza Decl.], ¶95.

When Spain discusses “improv[ing] location accuracy by eliminating potentially ambiguous positions from consideration” (Reply, 18 (quoting EX1006

[Spain], ¶[0009])), it is discussing ambiguity in the interpolated signal (i.e., because the interpolation is not accurate), not the fingerprint location. EX1006 [Spain], [0103]-[0104]. That is, Spain is addressing the issue where two or more locations have similar predicted fingerprints, or where one location has been assigned incorrect fingerprint. *Id.*, [0103] (“If the predicted fingerprints in two locations are similar, either of these error sources may cause the measured fingerprint to more closely match the fingerprint model for the incorrect location than for the correct location. This situation leads to the possibility of fingerprint ambiguities.”); [0104] (“For each point in the fingerprint model, the probability distribution of ambiguous locations may be calculated, as a function of the level of errors expected, by computing the likelihood that each pair of location points will be confused at that error level.”).

In other words, Spain is teaching that its interpolation can result in the wrong signal strengths being assigned to fingerprint locations. The “statistical analysis” and “intelligent agent” are Spain’s attempts to improve on ambiguous fingerprint data at particular locations, by, for example, identifying ambiguous locations and sending someone to “collect measurements for them.” *Id.*, [0055], [0104]. When Spain discusses “improv[ing] location accuracy by eliminating potentially ambiguous positions from consideration” (*Id.*, [0009]), it is suggesting that, when it attempts to

determine its location, the mobile phone should not consider locations where the interpolated fingerprint data is probably incorrect. Spain is not suggesting generating “arbitrary” locations as Petitioner incorrectly argues.

Petitioner argues that “One technique Spain discloses for generating a new grid point (i.e., fingerprint) is by interpolation of existing fingerprints.” Again, Petitioner misstates or misunderstands Spain. As the quote cited by Petitioner indicates, interpolation is part of building the original fingerprint database in Spain: “the database is built by taking fingerprint measurements [i.e., calibration data] at predetermined locations and using intelligent algorithms that interpolate the fingerprints at **all locations in between** the sampled locations.” Reply, 18-19 (quoting EX1006 [Spain], ¶[0101]) (emphasis provided by Petitioner). The interpolated points are just calibration data in the fingerprint database. In other words, Spain seeks to build a fingerprint database for “all locations” in a given region. In order to do so, Spain teaches taking physical measurements (e.g., drive test data that provides measured signal strengths) at “sampled locations.” EX1006 [Spain], [0101]. However, Spain recognizes that it may be impractical to measure the actual signal strength at “all locations in between the sampled regions”. *Id.* (“This method has the advantage of not requiring a great many physical measurements to be made, however, it does suffer from some loss in accuracy.”) Thus, Spain teaches to interpolate the

measured data to provide estimated signal strengths at the locations where measured signal strength data is not available. *Id.* (“This method has the advantage of not requiring a great many physical measurements to be made, however, it does suffer from some loss in accuracy” because interpolation is not as accurate as actual measurements)

Thus, interpolated data is just an estimate of the fingerprint measurement at a known location based on measured signal strengths from nearby locations. The interpolated data is not an “arbitrary position” nor is it representative of a particular area; instead, it is an estimated value at a known position.

Petitioner points to Spain [0054] for its use of the term “arbitrary position.” Reply, 19. Again, Petitioner divorces the term from the context in which it is used in order to confuse the Board. As Spain [0054] makes clear, “[t]he complete grid of locations for the cellular service will be used as training data” such that there is a “relationship between position and signal strength for each mapping.” *Id.* Thus, Spain is starting with a complete, predetermined, uniform grid of locations and provides estimated signal strength for any locations that lack actual signal strength measurements. The “arbitrary position” is one known position picked from the “complete grid of locations,” not a non-uniform grid point as taught in the ’753 Patent.

Spain does not “generat[e] new grid points for such ‘arbitrary locations’” as argued by Petitioner Reply, 19. Instead, Spain generates fingerprint data (i.e., calibration data) for the “complete grid of locations.” EX1006 [Spain], [0054] such that any position picked arbitrarily will have associated calibration data. Spain [0055] is not discussing creating “grid points” under either parties’ construction; instead, it is utilizing regressive “learning/training techniques” to improve the accuracy of the fingerprint data in the original fingerprint database—that is, it is improving the accuracy of existing calibration data. *Id.*, [0054]-[0055].

Petitioner again brings up “small areas” (Reply, 20), but Spain only discloses that the “Lat and Long fields in this embodiment” are “preferably the center point” of the small areas. EX1006 [Spain], [0099]. The coordinates are not disclosed as representative of the entire area and the area is not disclosed as based on calibration data. Nor does Spain discuss how the areas themselves are determined. Indeed, PO’s expert provided un rebutted testimony that a POSITA would understand these “small areas” “are predetermined without any consideration of the calibration data.” EX2020 [Sturza Decl.], ¶[0097].

Petitioner again confuses Spain when it states that “Spain discloses a preference for ‘low statistical variance’ of that data point (i.e., statistical similarity).” Reply, 20 (citing EX1006 [Spain], [0104]). Spain is discussing the statistical

variance of the probability distribution function for a “particular point.” *Id.* According to Spain, this is a proxy for the accuracy of location estimates. *Id.* That is, if statistical variance of the probability distribution function is low, the fingerprint data for a point is likely to be accurate. Spain is not comparing a group of adjacent calibration points to see if their calibration data is statistically similar; instead, it is evaluating whether the estimated (e.g., interpolated) calibration data at a particular calibration point is likely to be accurate or not. Petitioner’s statement that “Spain therefore recognizes that for a grid point representing a small area of calibration data, the calibration data should exhibit some degree of statistical similarity” (Reply, 20), completely misrepresents Spain for the same reason.

Finally, Petitioner argues “Where an ambiguity exists, Spain discloses that the database can be ‘continually improved’ by generating a new grid point.” Reply, 21 (quoting EX1006 [Spain], [0055]). Again, Spain’s fingerprint database is not generating new locations or areas, it is generating improved fingerprint data (i.e., improved calibration data) to replace inaccurate fingerprint data obtained through interpolation and assigning the improved data to existing fingerprint locations. EX1006 [Spain], [0054]-[0055]. The referenced disclosure is directed to improving the accuracy of estimated calibration data, not generating grid points associated with

representative calibration data for an area whose boundaries are determined from evaluation of the calibration data.

IV. CONCLUSION

For the reasons above, PO respectfully requests that the Board find the challenged claims patentable.

Date: October 23, 2024

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner's Sur-Reply (the "Sur-Reply") consists of 4,793 words, excluding table of contents, table of authorities, certificate of service, this certificate, or table of exhibits. The Sur-Reply complies with the type-volume limitation of 5,600 words as mandated in 37 C.F.R. § 42.24. In preparing this certificate, counsel has relied on the word count of the word-processing system used to prepare the paper (Microsoft Word).

Respectfully submitted,

/ Stephen McBride /

Date: October 23, 2024

CERTIFICATE OF SERVICE

The undersigned hereby certifies that the following document was served by electronic service, by agreement between the parties, on the date below:

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