UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

GEOSCOPE TECHNOLOGIES PTE. LTD.
Patent Owner

Case No. IPR2023-01209
U.S. Patent No. 7,561,104

PATENT OWNER'S PRELIMINARY RESPONSE

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LIST OF EXHIBITS

Exhibit No.	Petitioner's Exhibits
1001	U.S. Patent No. 7,561,104, issued on July 14, 2009 ("the '104 Patent")
1002	File History of U.S. Patent Application No. 12/026,333, filed on February 5, 2008 ("the '333 Application")
1003	File History of Reexamination Control No. 90/012,694 ("the '694 Reexam")
1004	Reexamination Certificate issued on August 18, 2014 (Reexamination Control No. 90/012,694)
1005	U.S. Provisional Application No. 60/899,379, filed on February 5, 2007 ("the '379 Provisional")
1006	U.S. Patent No. 7,706,811 ("Shkedi")
1007	IEEE P802.15 Wireless Personal Area Networks, Ranging Subcommittee Final Report, 8 Nov. 2004, R. Roberts, Harris Corporation
1008	U.S. Patent No. 8,406,753, issued on March 26, 2013 ("the '753 Patent")
1009	U.S. Patent Application Publication No. 2003/0064735, published on April 3, 2003 to D. Spain et al. ("Spain")
1010	Jian Zhu and G. D. Durgin, "Indoor/outdoor location of cellular handsets based on received signal strength," 2005 IEEE 61st Vehicular Technology Conference, Stockholm, Sweden, 2005, pp.92-96, Vol. 1, doi: 10.1109/VETECS.2005.1543256 ("Zhu")
1011	Heikki Laitinen, Jaakko Lähteenmäki, Tero Nordström, "Database Correlation Method for GSM Location", VTT Information Technology, IEEE, 2001. ("Laitinen")

1012	Declaration of David Hilliard Williams
1013	Curriculum Vitae of David Hilliard Williams
1014	Declaration of Dr. Sylvia Hall-Ellis
1015	Curriculum Vitae of Dr. Sylvia Hall-Ellis
1016	Complaint dated November 22, 2022, *Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.*, Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022 ("the Related Litigation")
1017	Not Assigned
1018	File History of U.S. Patent Application No. 12/424,320, filed on April 15, 2009 ("the '320 Application")
1019-1023	Not Assigned
1024	Plaintiff Geoscope Technologies PTE. LTD.'s Opening Claim Construction Brief dated May 26, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.*, Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022
1025-1027	Not Assigned
1028	Claim Construction Memorandum Opinion & Order dated July 19, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.*, Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022
	Patent Owner's Exhibits
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	*Not Assigned*

2003	Memorandum Opinion on Google's Motion for Judgment on the Pleadings on Patent Eligibility dated September 18, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC*, 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, *Geoscope Technologies Pte. Ltd. v. Apple Inc.*, Civ. Action No. 1:22-cv-01373 (EDVA)
2005	Final Judgment dated October 6, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC*, Civ. Action No. 1:22-cv-01331 (EDVA)
2006	Final Judgment dated October 5, 2023, *Geoscope Technologies Pte. Ltd. v. Apple Inc.*, Civ. Action No. 1:22-cv-01373 (EDVA)
2007	Order dated June 26, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC*, 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, *Geoscope Technologies Pte. Ltd. v. Apple Inc.*, Civ. Action No. 1:22-cv-01373 (EDVA)
2010	Order dated June 26, 2023, *Geoscope Technologies Pte. Ltd. v. Apple Inc.*, Civ. Action No. 1:22-cv-01373 (EDVA)
2011	Defendant Google LLC's Final Invalidity Contentions dated July 3, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC*, Civ. Action No. 1:22-cv-01331 (EDVA)
2012	Geoscope's Opening Appeal Brief dated November 17, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC, Apple Inc.,* Case Nos. 24-1003 (Lead) 24-1018 (member) (Fed. Cir.)
2013	U.S. Patent No. 9,097,784 issued on Aug. 4, 2015 to Alles et al.
2014-2016	*Not Assigned*

2017	Preliminary Identification of Asserted Claims dated March 27, 2023, *Geoscope Technologies Pte. Ltd. v. Google LLC*, Civ. Action No. 1:22-cv-01331 (EDVA)

I. INTRODUCTION

The Board should deny the Petition for *Inter Partes* Review of U.S. Patent No. 7,561,104 ("'104 Patent") because Petitioner Google LLC ("Petitioner") fails to demonstrate a reasonable likelihood that any challenged claim is not patentable.

As an initial matter, the Board should exercise its discretion to deny the Petition under § 314(a). Two district court litigations involving the '104 Patent have already resulted in final judgments based on the district court's ruling that the asserted claims are unpatentable pursuant to 35 U.S.C. § 101. These litigations are *Geoscope Technologies Pte. Ltd. v. Google LLC.*, Civ. Action No. 1:22-cv-01331-MSN (E.D. Va.) ("Google Action") and *Geoscope Technologies Pte. Ltd. v. Apple Inc.*, Civ. Action No. 1:22-cv-01373-MSN (E.D. Va.) ("Apple Action"). Moreover, by the time the district court issued its § 101 opinion, the parties and the court had already invested substantial resources into the actions, completing *Markman*, fact discovery, and expert discovery. Under similar circumstances, the Board has recognized that institution would not be an efficient use of its time and resources. Institution would be particularly inefficient here because Patent Owner has only appealed the district court's § 101 ruling as to one claim challenged in this proceeding but the Board is required to institute on all challenged claims or none. Further, the Petition falls far short of presenting a "compelling unpatentability challenge" that would warrant institution despite this inefficiency.

Because Patent Owner has only appealed the district court's § 101 ruling as to dependent claim 2 which requires a "database compris[ing] previously-gathered calibration data for one or more non-uniform grid points within said region," Patent Owner has focused its preliminary response on that claim. Even if the merits are considered, the Petition still fails. At a minimum, Petitioner fails to show that its cited art has any teaching or suggestion of "non-uniform grid points." The Petitioner proposed the district court's construction of "grid point," which recognizes that the grid points of the '104 Patent are not just any points on a grid. Rather, they have specific requirements including that they are generated based on the analysis of calibration data. They are not merely locations where data is collected—the '104 Patent distinguishes such locations, referring to them instead as "calibration points." The cited art, however, only discloses conventional predefined grids that are fundamentally different from the non-uniform grid points of the '104 Patent. As a result, Petitioner is unable to point to any disclosure in its prior art references that meets aspects of the claim construction that it proposed for this proceeding. Instead, Petitioner simply ignores those aspects of the construction. This is a fatal flaw that mandates denial of institution.

II. THE BOARD SHOULD EXERCISE ITS DISCRETION AND DENY THIS PETITION UNDER §314(A)

The Board should exercise its discretion to deny institution under § 314(a) because institution would be an "inefficient use of Board resources." *NHK Spring*

Co., Ltd. v. Intri-Plex Technologies, Inc., IPR2018-00752, Paper 8, 19-20 (PTAB Sept. 12, 2018). As explained in further detail below, two district court litigations involving the '104 Patent are not just at advanced stages but, in fact, have ***already resulted in final judgments*** stemming from the district court's ruling that the asserted claims are unpatentable pursuant to 35 U.S.C. § 101.

In *NHK Spring Co.*, the Board denied institution of an *inter partes* review under § 314(a) where a parallel district court proceeding was nearing its final stages, and a PTAB proceeding would not conclude until about six months after the district court trial was scheduled. *NHK Spring Co.*, IPR2018-00752, Paper 8 at 19-21. In so reasoning, the Board set the precedent that parallel court proceedings must be considered when determining whether the institution of an *inter partes* review is consistent with the objective of the America Invents Act ("AIA") to "provide an effective and efficient alternative to district court litigation." *Id*.

Building on *NHK Spring Co.*, in *Apple Inc. v. Fintiv, Inc.*, the Board identified specific factors relating to "whether efficiency, fairness, and the merits support the exercise of authority to deny institution in view of an earlier trial date in the parallel proceeding." IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020) (precedential). The *Fintiv* 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.

The Director provided further guidance on the application of the *Fintiv* precedent in a June 21, 2022 Memorandum regarding an Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation ("Guidance Memo") and *CommScope Techs. v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 (PTAB Feb. 27, 2023) (precedential). The Director set forth a "compelling merits test" under which the Board—if it has found that *Fintiv* factors 1-5 favor discretionary denial—must assess whether a petition presents a "compelling unpatentability challenge" before discretionarily denying institution. *CommScope*, IPR2022-01242, Paper 23 at 3-5. As the Director explained, "the compelling merits standard is a higher standard than the standard for institution set by statute."[1] *Id*. at 3. A reasonable likelihood that the petitioner would prevail with

[1] Institution of an IPR is authorized only when "the information presented in the

respect to at least one challenged claim does not suffice to demonstrate that a challenge is "compelling." Rather, a "compelling" challenge is one "in which the evidence, if unrebutted at trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence" such that "it is ***highly likely*** that the petitioner would prevail with respect to at least one challenged claim." *Id*. at 3-4 (emphasis added). This is a "high standard" (*see AviaGames, Inc. v. Skillz Platform, Inc.*, IPR2022-00530, Paper 14 at 3, 5 (PTAB Mar. 2, 2023)) and the Board must explain its reasoning in determining whether the merits are compelling. *CommScope*, IPR2022-01242, Paper 23 at 4-6.

The *Fintiv* factors weigh strongly in favor of discretionary denial and Petitioner's challenge does not meet even the statutory standard, let alone the higher "compelling merits" standard. On September 18, 2023, the district court issued its ruling that the asserted claims of the '104 Patent are unpatentable under § 101 in both the Google Action and the Apple Action. Exs. 2003, 2004. Shortly thereafter, on October 5, 2023 and October 6, 2023, the district court issued final judgments in both actions. Exs. 2005, 2006. Accordingly, both actions are closed pending Patent

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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).

Owner's appeal to the Federal Circuit. As explained further below, Patent Owner's appeal involves just one claim of the '104 Patent that Petitioner challenges here, making discretionary denial even more appropriate. *See infra* § II.f.

The Board has recognized that the *Fintiv* factors strongly favor denial of institution where the challenged patent has already been invalidated by the district court under § 101. In *AviaGames*—which is ***directly*** analogous to the present case—the Board denied institution after weighing the *Fintiv* factors "largely because the claims of the challenged patent have been determined to be invalid" explaining that "the interests of efficiency and integrity of the system would be best served by invoking 35 U.S.C. § 314(a) to deny institution" in view of the district court's ruling under § 101. *AviaGames*, IPR2022-00530, Paper 12 at 11-15. Although the Board initially exercised its discretion to deny institution based on the *Fintiv* factors alone, the Director remanded the matter to the Board to assess "whether the record before the Board prior to institution presents a compelling, meritorious challenge," stating that "[i]f the Board finds the record does not rise to this high standard, the Board will exercise discretion to deny institution." *AviaGames*, IPR2022-00530, Paper 14 at 5-6. Importantly, the Director did not disagree with or take issue with the Board's analysis of the *Fintiv* factors in *AviaGames*. On remand, the Board determined that the Petition did not meet the "compelling merits" standard and discretionarily denied institution. *AviaGames*, IPR2022-00530, Paper 15 at 2-3.

Similarly, in *Snap Inc. v. Blackberry Ltd.*, a district court had issued an order finding all claims of the challenged patent invalid under § 101; as a result, the Board denied institution, in large part because it did "not consider it an efficient use of Board resources to institute an *inter partes* review where all remaining Challenged Claims have already been adjudicated by an Article III court." IPR2020-00391, Paper 8 at 17 (PTAB July 13, 2020).

As discussed below, the *Fintiv* factors favor discretionary denial here even more than they did in *AviaGames* and *Snap*. And because Petitioner has failed to meet the high standard required by the "compelling merits test," the Board should exercise its discretion to deny institution under § 314(a).

a. <u>Factor 1</u>: The district court case has concluded, and cannot be stayed

"A district court stay of the litigation pending resolution of the PTAB trial allays concerns about inefficiency and duplication of efforts," and thus "weigh[s] against exercising the authority to deny institution under *NHK*." *Fintiv*, IPR2020-00019, Paper 11 at 6.

Although Petitioner contends it "will seek a pre-institution stay" (Pet. at 56), it has not filed any motion to stay the Google Action in view of the instant Petition. Nor could it, because the district court proceedings are closed pending the § 101 appeal to the Federal Circuit. Accordingly, contrary to Petitioner's assertion, there is no need to "predict whether the district court will stay related litigation"—the

district court ***cannot*** stay the litigation given the posture. Pet. at 56. Thus, as the Board found in *Snap*, this factor weighs in favor of exercising discretion to deny institution. *Snap*, IPR2020-00391, Paper 8 at 13; *see also AviaGames*, IPR2022-00530, Paper 12 at 12 (finding that *Fintiv* Factor 1, if weighed, favors denial because "the District Court's invalidity determination has already been made").

b. <u>Factor 2</u>: The Board's final written decision deadline would be more than one year after the district court issued its § 101 decision

As demonstrated by *NHK* and its progeny, "[i]f the court's trial date is earlier than the projected statutory deadline, the Board generally has weighed this fact in favor of exercising authority to deny institution under *NHK*." *Fintiv*, IPR2020-00019, Paper 11 at 9.

The district court completed its consideration of the '104 Patent and reached its final decision in September 2023, months before the Board would even institute review, much less issue a final written decision. There is no further scheduled or proposed trial date in the Google Action. In *AviaGames*, under the same circumstances, the Board found that that this factor "weighs ***heavily*** in favor of denying institution" because "the District Court has completed its consideration of the [challenged patent]." *AviaGames*, IPR2022-00530, Paper 12 at 12-13 (emphasis added). The Board in *Snap* came to the same conclusion, finding that this factor weighed in favor of denying institution because the Board's statutory deadline for

the final written decision would be "one year after the district court issued final judgment." *Snap*, IPR2020-00391, Paper 8 at 13. For the same reasons, the Board should find that this factor weighs in favor of denial of institution.

c. <u>Factor 3</u>: There has been substantial investment by the parties and district court in the litigation, culminating in a final decision by the court

"[I]f, at the time of the institution decision, the district court has issued substantive orders related to the patent at issue in the petition, this fact favors denial." *Fintiv*, IPR2020-00019, Paper 11 at 9-10.

The Google Action is concluded as a result of the district court's § 101 ruling—*i.e.*, a substantive order related to the '104 Patent. Ex. 2003. Based on the same facts, the Board in *AviaGames* and *Snap* found this factor to weigh in favor of denial of institution. *AviaGames*, IPR2022-00530, Paper 12 at 13 ("The District Court's invalidity determination is a substantive order related to the '602 patent. We determine this factor weighs in favor of denying institution.") (citations omitted); *Snap*, IPR2020-00391, Paper 8 at 13 (finding that *Fintiv* Factor 3 supports denial of institution because "[t]he parties' and district court's investment in the district court case was sufficient to already reach a final adjudication.").

Even before the district court issued its § 101 ruling, the parties and district court had already made a substantial investment in the litigation. As Petitioner recognizes, the district court issued a *Markman* order (Ex. 1028)—another

substantive order related to the ’104 Patent—before the Petition was filed and this weighs in favor of denial. Pet. at 57. Moreover, fact and expert discovery in the Google Action were completed prior to the district court’s § 101 ruling and nearly completed even before the Petition was filed on August 9, 2023. *See* Ex. 2007 (setting July 3, 2023 deadline for opening expert reports and August 18, 2023 deadline for close of expert discovery). This completed discovery included extensive written discovery, numerous depositions of fact and expert witnesses, and expert reports (including those addressing the validity of the ’104 Patent under 35 U.S.C. §§ 102 and 103).

Contrary to Petitioner’s assertions of diligence (*see* Pet. at 57-58), Petitioner waited until ***after*** the parties and the court invested significant resources in the case to file the Petition. Petitioner contends that it “filed its Petition less than three months after being made aware of the full set of asserted claims.” *Id*. This contradicts the record. The Petition challenges every asserted claim identified in Patent Owner’s preliminary identification of asserted claims, served on March 27, 2023. Ex. 2017; *see also* Pet. at 6 (identifying challenged claims). Although Patent Owner narrowed its assertion of claims on June 12, 2023, that apparently had no bearing on the Petition, which challenges far more claims than were identified as asserted on that date. Ex. 2008. Thus, Petitioner’s contention that its purported “diligence in filing its Petition outweighs any investment” in the litigation is incorrect.

Moreover, the district court and Patent Owner also made a substantial investment in the Apple Action, another litigation involving the '104 Patent.[2] The same substantive orders—a *Markman* order and § 101 ruling—were issued by the district court in the Apple Action. Exs. 2004, 2009. And fact and expert discovery were also completed in the Apple Litigation prior to the district court's § 101 ruling in September 2023. Ex. 2010 (setting July 3, 2023 deadline for opening expert reports and August 18, 2023 deadline for close of expert discovery). Again, Petitioner chose to file the Petition ***after*** these parties and the district court invested substantial resources in the case.

Thus, even aside from the district court's substantive § 101 ruling related to

[2] Although Petitioner is not a party to the Apple Action, the Board has recognized that discretionary denial under the *Fintiv* factors can be based on a district court litigation involving the same challenged patent even if Petitioner is not a party to that case. For example, in *Mylan Laboratories Ltd. v. Janssen Pharmaceutica NV*, IPR2020-00440, Paper 17 (PTAB Sept. 16, 2020), the Board denied institution after evaluating the *Fintiv* factors for two related litigations involving the challenged patent—one between the patent owner and the petitioner (referred to as the "Mylan litigation") and one between the patent owner and a different defendant (referred to as the "Teva litigation"). *Id.* at 9-11, 25.

the ’104 Patent, there has been substantial investment by the parties and the district court in the Google Action (and the Apple Action). Accordingly, in this proceeding, this factor weighs even more heavily in favor of denying institution than it did in *AviaGames* and *Snap* where the Board found that the district court’s § 101 ruling alone was sufficient to conclude that this factor weighs in favor of denying institution.

d. <u>Factor 4</u>: The ’104 Patent was found to be invalid by another tribunal and, in any event, there is substantial overlap between issues raised in the petition and in the district court

Fintiv states that “if the petition includes the same or substantially the same claims, grounds, arguments, and evidence as presented in the parallel proceeding, this fact has favored denial,” and if “other circumstances weigh against redoing the work of another tribunal, the Board may, nonetheless, exercise the authority to deny institution.” *Fintiv*, IPR2020-00019, Paper 11 at 12, 14.

In *AviaGames*, the Board determined that the fact that “the challenged patent ha[d] already been found to be invalid by another tribunal” weighed in favor of exercising discretion to deny institution. *AviaGames*, IPR2022-00530, Paper 12 at 14. For at least the same reason, the Board should find the same here.

Even apart from the district court’s § 101 ruling, two of the prior art references relied on by Petitioner for this proceeding—Shkedi and Laitinen—are also relied on by Petitioner in the Google Action. Ex. 2011 at 20-21, 23 (identifying U.S. Patent

Pub. No. 2008/0070572, which issued as Shkedi, and Laitinen as prior art asserted against the '104 Patent in Petitioner's Final Invalidity Contentions in the Google Action); *see also* Ex. 1006 at 1 (showing that the "Prior Publication Data" for Skhedi includes US 2008/0070572). Thus, there is significant overlap between Petitioner's invalidity arguments in this proceeding and its invalidity arguments in the district court. Further, the record pertaining to these invalidity arguments has already been developed in the district court, including through hundreds of pages of expert reports. Subject to the pending appeal, the '104 Patent will remain invalid under § 101[3] or its invalidity will be adjudicated in the district court based on this extensive, already-developed record. Petitioner does not address this factor—and the clear overlap in arguments—beyond stating that it "reserves the right" to file a stipulation in the Google Action. Pet. at 58. But the Google Action is closed pending

[3] Consistent with the Director's guidance, if the district court's § 101 ruling is affirmed in a final, non-appealable judgment by the Federal Circuit, this proceeding—if instituted—would be terminated. *See AviaGames*, IPR2022-00530, Paper 14, 5-6 (Director explaining that "[i]f the Board institutes an IPR after a compelling merits analysis, and if the invalidity judgment under 35 U.S.C. § 101 of the district court is affirmed in a final, non-appealable judgment by the Federal Circuit, this proceeding shall be terminated.").

appeal.

It is an inefficient use of the Board's resources to adjudicate the validity of the '104 Patent where the district court has already done it. And even if considering only the validity of the '104 Patent under §§ 102 and 103, it is an inefficient use of the Board's resources to develop a record that has already been developed in the Google Action. Thus, this factor weighs in favor of denying institution.

e. <u>Factor 5</u>: Petitioner and the defendant in the district court litigation are the same party

The petitioner here and the defendant in the district court litigation are both Google LLC—in other words, identical. This was true in *Fintiv*, *Snap*, and *AviaGames*. Therefore, this factor weighs in favor of denying institution.

f. <u>Factor 6</u>: Other circumstances weigh in favor of exercising discretion to deny institution, including the merits

The "factors considered in the exercise of discretion" are part of a "balanced assessment of all the relevant circumstances in the case, including the merits." *Fintiv*, IPR2020-00019, Paper 11 at 14. "[I]f the merits of the grounds raised in the petition are a closer call, then that fact has favored denying institution when other factors favoring denial are present." *Id*. at 15.

As discussed in the merits sections below, each ground is lacking as to the only challenged claim for which Patent Owner has appealed the district court's § 101 ruling—dependent claim 2—at least because the asserted references fail to teach the

"wherein said database comprises previously-gathered calibration data for one or more non-uniform grid points within said region" limitation. *Infra* § VII. Thus, at best, the merits in this case fall into the camp of a "closer call," not in Petitioner's favor. At a minimum, the merits fall far short of satisfying the "compelling merits test" which presents a "higher standard than the standard for institution set by statute," requiring that it be "highly likely that the petitioner would prevail with respect to at least one challenged claim." *CommScope*, IPR2022-01242, Paper 23 at 3-5.

Additionally, in *AviaGames*, the Board explained in connection with this factor that "on balance, the District Court's invalidity determination is the most important relevant circumstance and, as the challenged patent has already been found to be invalid, this factor favors denial of institution." *AviaGames*, IPR2022-00530, Paper 12 at 14-15. The same is true here—the district court has already found the challenged patent to be invalid and, for the same reason as in *AviaGames*, this weighs in favor of denying institution.

There is an even stronger case for denial of institution here because Patent Owner has appealed the district court's § 101 ruling for only ***one*** of the four claims challenged by Petitioner. The only claim of the '104 Patent for which Patent Owner has sought reversal of the district court's § 101 ruling is dependent claim 2. Ex. 2012 at 7-8. Patent Owner cannot seek reversal as to any additional claims of the '104

Patent as it has already filed the opening brief in its appeal (Ex. 2012) and the deadline for filing any other notice of appeal passed no later than November 6, 2023. Fed. R. App. P. 4(a)(1)(A) ("In a civil case … the notice of appeal required by Rule 3 must be filed with the district clerk within 30 days after entry of the judgment or order appealed from."). Thus, the district court's ruling as to the other asserted claims of the '104 Patent is truly final—they can no longer be appealed to the Federal Circuit.

This is important because, in *AviaGames*, the Director explained that the Board should ***terminate an already-instituted IPR*** if, after institution, the Federal Circuit affirmed the district court's § 101 ruling:

> That said, should the district court's invalidity judgment be upheld on appeal, ***the parallel proceedings at the Board would impose additional burdens and costs on the parties, including the Patent Owner, and this tribunal***. If the Board institutes an IPR after a compelling merits analysis, and if the invalidity judgment under 35 U.S.C. § 101 of the district court is affirmed in a final, non-appealable judgment by the Federal Circuit, this proceeding ***shall be terminated***.

AviaGames, IPR2022-00530, Paper 14 at 5-6 (emphasis added).

The Director acknowledged that it is inefficient for the Board to proceed—even after institution—with an IPR on claims subject to a final, non-appealable judgment of invalidity. Although the Director's instruction refers to a final, non-appealable judgment by the Federal Circuit, the same principle is applicable here

because, other than dependent claim 2, the asserted claims of the '104 Patent are ***already*** subject to a final, non-appealable judgment of invalidity. Accordingly, institution is particularly inefficient here because only one of the four challenged claims is at issue in Patent Owner's appeal but the Board is required to institute on all claims or none. *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355-57 (2018); *see also* GUIDANCE ON THE IMPACT OF SAS ON AIA TRIAL PROCEEDINGS, *available at* https://www.uspto.gov/patents/ptab/trials/guidance-impact-sas-aia-trial ("As required by the decision, the PTAB will institute as to all claims or none.").

Because institution of any ground raised in the Petition would be an inefficient use of the Board's resources—as evidenced by all six *Fintiv* factors—and the Petition fails to satisfy the "compelling merits test," the Board should exercise its discretion under § 314(a) to deny institution.

III. OVERVIEW OF THE '104 PATENT

The '104 Patent is directed to an invention for determining the location (or "geolocating") of a mobile device using signal information from wireless communications networks (*e.g.*, cellular signals). Ex. 1001 at 1:46-54. To accomplish this, the claimed inventions recite providing a database of "calibration data" and collecting "network measurement data" observed by the mobile device. *Id.* at cl. 1. The observed network measurement data is then modified to account for varying conditions and other variables that may be caused by, for example,

environmental factors or signals propagating indoors. *Id*. at 3:43-49. Once modified, the observed network measurement data is compared with the database of calibration data to determine the location of the mobile device. *Id*.

The invention of the ’104 Patent addresses a particular problem in geolocation involving disparities between calibration data and observed data caused by “varying conditions and other operational variables” affecting how signals propagate in different environments, resulting in “poor estimated location accuracy.” *Id*. at 1:33-40, 9:35-39. One common reason for this disparity is that calibration data is “typically collected in an outdoor environment” because it is “time-consuming to perform calibration procedures indoors” but geolocation within a building—using observed data collected indoors—is often desirable. *Id*. 1:24-32. Thus, the differences in signal propagation outdoors versus indoors can make it difficult to perform an appropriate comparison of calibration data to observed data for geolocation. *Id*. To solve this problem, the ’104 Patent independent claims are directed to modifying the observed data measured by a mobile device to eliminate disparities with previously-gathered calibration data. *Id*. at 3:43-49. The specification describes at length what these modifications may entail and how they are performed. *Id.* at 5:5-45, 5:58-6:52, 6:53-7:19.

Dependent claim 2 of the ’104 Patent further recites the use of what the patent refers to as non-uniform “grid points.” As used in the ’104 Patent, these “grid points”

are not merely points on a grid. Rather, as explained below, the grid points of the ’104 Patent are data structures that are generated and associated with signal information based on analysis of the similarities between calibration data that has been previously collected in a region. Because they are generated based on the calibration data—rather than being predefined—the location, geographical boundaries, and associated signal information of the grid points are not defined until determined from particular aspects of the calibration data. The grid points serve as additional known locations associated with network signal information, creating a denser “map” for mobile devices to compare observed data to for the purpose of determining their location.

The grid points of the ’104 Patent “usually will not be uniformly distributed throughout the geographic region,” and thus the ’104 Patent (and related patents) often uses the term “non-uniform grid points” or “NUGs” when describing grid points. *See* Ex. 1008 at 2:43-50; *see also* Ex. 1001 at 3:50-60.[4] Additionally, the grid

[4] U.S. Patent No. 8,406,753 (Ex. 1008; “’753 Patent”) and U.S. Patent No. 9,097,784 (Ex. 2013; “’784 Patent”) claim priority to the same provisional application as the ’104 Patent, and also describe “grid points” as the term is used in this patent family. Consequently, the district court relied on disclosures in the ’753 Patent and ’784 Patent in construing the term “grid point.” *See* Ex. 1028 at 19-20 (citing ’753 Patent

points "represent an area of collected calibration data." Ex. 1001 at 3:56-60. Accordingly, the district court construed "grid point" as "a point associated with representative calibration data for an area," which is the same construction that Petitioner proposes for this proceeding. Pet. At 15-16 (citing Ex. 1028 at 20).

In its *Markman* order, the district court provided further detail about the meaning of "grid point" in the '104 Patent and its construction of the term. *First*, the district court stated that the '753 Patent's explanation that calibration data from a number of locations is "gathered and analyzed so that particular grid points within the geographic region can be determined and associated with a particular set or sets of calibration data" demonstrates "what *must be done* to arrive at a grid point or set of grid points." Ex. 1028 at 19 (quoting '753 Patent at Abstract) (emphasis in original). Accordingly, the district court acknowledged that the claimed grid points must be generated based on the measured calibration data—they do not exist until generated by the claimed invention. *Second*, the district court explained that "representative calibration data" in its adopted construction reflects that "the defining characteristic of a NUG region … is that the data points within an area are

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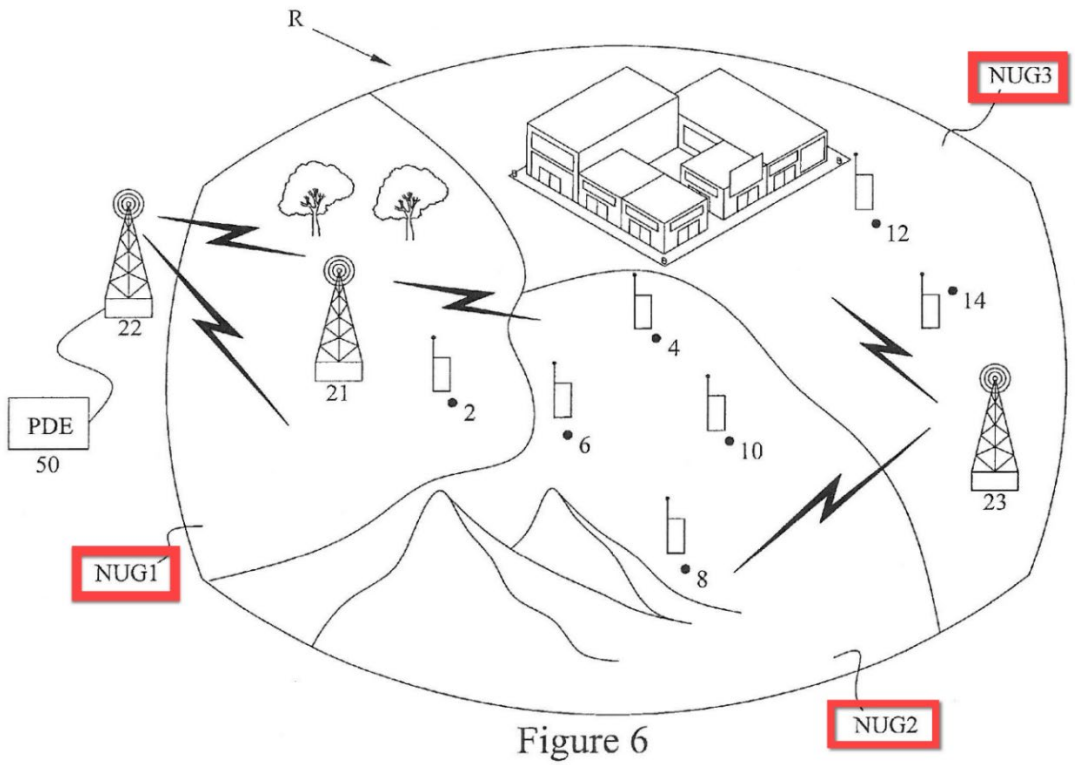
(as "Ex. E") and '784 Patent (as "Ex. F")). Petitioner has also recognized that the related '753 Patent "describe[s] more fully" the "non-uniform grid points" of the '104 Patent. *See* Pet. at 32.

all 'statistically very similar' such that each of the grid points within the NUG region can represent the overall NUG." Ex. 1028 at 20 (citing Ex. 1001 at 3:56-60; Ex. 1008 at 10:29-11:7; Ex. Ex. 2013 at 6:22-28). In other words, the geographical boundaries of the claimed grid points are undefined until determined by the claimed invention based on similarities across the measured calibration data.

Thus, although termed grid *points*, they are not just "points"—they represent a broader area whose boundaries are defined by the commonality of the calibration data measured in the region. This is depicted in the related '784 Patent, which shows "a geographical region (R) having NUGs represented by NUG1, NUG2, and NUG3," and explains "[a] NUG may be generated to represent the signal characteristics and calibration data over a given region." Ex. 2013 at 6:21-34.



Id. at Fig. 6.

To generate grid points, calibration data for a number of locations is "gathered and analyzed so that particular grid points within the geographic region can be determined and associated with a particular set or sets of calibration data." Ex. 1008 at Abstract, 9:34-39. The calibration data used to generate grid points "may be obtained at each of several calibration points, which may be discrete points within region R each having geographical coordinates (e.g., latitude and longitude) associated therewith" and can include information regarding, for example, signal strength. *Id*. at 9:56-10:7; *see also* Ex. 1001 at 3:61-63. A single point—the "grid point" or "non-uniform grid point"—is then generated and includes specific coordinates but is also defined by the geographical area comprising similar

calibration data. *See* Ex. 1008 at 9:34-48. For this reason, the set of grid points is well-defined and ordered from a network signal perspective, but appears irregular and non-uniform from a geographical perspective, as shown in the figure above.

Generating the claimed grid points includes determining their location (or "geographical coordinates") and boundaries based on evaluation of the calibration data. *Id*. at 9:34-40, 12:9-14; *see also id.* at 2:51-60. Because the claimed grid points are generated from calibration data gathered in a region, they are tailored in location and shape to that region based on the available calibration data. *Id*. at 12:9-14. Additionally, generating grid points includes associating them with "characteristics" that describe the grid point—*e.g.*, information about signal strengths derived from the measured calibration data. *Id.* at 12:26-50. Thus, each grid point is a data structure that captures the necessary components to define parameters of the network signals in a region and their propagation:

> For each so obtained NUG [non-uniform grid point], a variety of parameters and functions may be generated and stored to describe that NUG. These are termed the NUG characteristics. The NUG characteristics are a representation in that attempt to capture the nature and variability of the data associated with that NUG in a compact and representative form. These characteristics may include, but are not limited to, the following: (a) an ordered list of neighboring cells; (b) functions defined on the absolute neighboring cell power levels (e.g., mean, median, kth moment, cluster-mean, etc.); (c) functions defined

> on the relative neighboring cell power differences (e.g., mean, median, kth moment, cluster-mean, etc.); (d) serving cell/sector; (e) timing advance parameter (or equivalent); (f) individual pdf (probability density function or probability distribution function) of each neighboring cell power level; (g) joint pdf of neighboring cell power levels; (h) mean and variance of neighboring cell power levels; (i) mobile device orientation (e.g., indoors, outdoors, direction mobile device is facing (e.g., North, South, etc.), tilted upwards, azimuth, elevation, etc.); (j) a compact and/or efficient representation that enables retrieval of the calibration data NMR vectors assigned to this NUG; (k) the network state as indicated in the calibration data; (l) a confidence measure indicative of the reliability of the calibration data feeding this NUG …

Id.

The claimed grid points are new creations that define a geographical area based on the propagation of signals of opportunity in the area, and capture parameters of that propagation to enable later geolocation using observed signals. *See* Ex. 1001 at 3:50-60. Consequently, the "grid" of the '104 Patent does not exist—and is not defined—until the calibration data is gathered and analyzed to generate the claimed "grid points," each with a unique shape and geographical area dictated by the propagation of the network signals in a region, as determined from the measured calibration data.

The '753 Patent describes how the non-uniform grid points of the '104 Patent

are generated based on the evaluation of calibration data. For example, the statistical similarity of the calibration data can be evaluated to determine where a grid point should be generated, if one should be generated at all. Ex. 1008 at 10:66-11:6. The statistical similarity in the calibration data can be assessed based on clustering tests, a probability density function, the mean and variance of the data, or other functions of the calibration data. *Id*. at 10:66-11:6, 12:4-14. Once the grid points are generated, they can be used in connection with geolocating a mobile device using network signals. Ex. 1001 at 4:40-61.

IV. SUMMARY OF THE REFERENCES ASSERTED IN THE PETITION

A. Shkedi

Shkedi describes a method for determining the location of a mobile communications device comprising the steps of (1) "[r]egistering a selected location by first-causing a portable RF communications device at the selected location" to measure the signal strength of signals received "from a plurality of local fixed-location service-area antenna stations"; (2) "[r]ecording the selected location by electronically storing at least two of the respective reception signal strength measurements"; (3) "[m]onitoring by second-causing a portable RF communications device" to measure the signal strength of signals received "from a plurality of respectively local fixed-location service-area antenna stations"; and (4) "[d]etermining if the portable RF communications device of the Monitoring step is at the selected location of the registering step by electronically comparing measurements in the monitoring step with the stored at least two measurement of the Recording step." Ex. 1006 at 5:36-63. Shkedi explains that the "Registration" step is "a data collection step where the portable device comes to measure the antenna signal space reception characteristics at the selected location." *Id.* at 11:18-28. As part of the "Registration" and "Recording" steps, the portable RF communications device "access[es] a GPS location coordinate for the selected location" and "keep[s]

the GPS location coordinate with the stored signal strength measurements." *Id.* at 13:9-14.

B. Zhu

Zhu describes a study evaluating the accuracy of Received Signal Strength (RSS) location techniques indoors. Ex. 1010 at 92. In particular, Zhu describes a method for locating a wireless handset using a "RF Map Database (RFMD)" comprising a "two-dimensional raster array with uniform grid spacings of 10m squares" representing a cellular network area. Each point in the raster array "corresponds to a location within the network and contains a vector of received signal strength indicator (RSSI) values in dBm for all audible base stations." *Id.* at 93. Zhu explains that "[a] modeled estimate of signal strength, P_R, is placed at every raster point" in the array and then compared to signal strength measurements taken with a wireless handset. *Id.* at 92-93. For areas "far from measured points," Zhu relies on "purely modeled signal strength" but for areas "that are several raster points away from measured data points," Zhu uses "a weighted combination of the modeled values and the value of nearby measurement point" in a process called "local interpolation." *Id.* The difference in the regions of data populated between taking measurements, interpolating, and modeling is depicted in Figure 2 of Zhu (reproduced below).

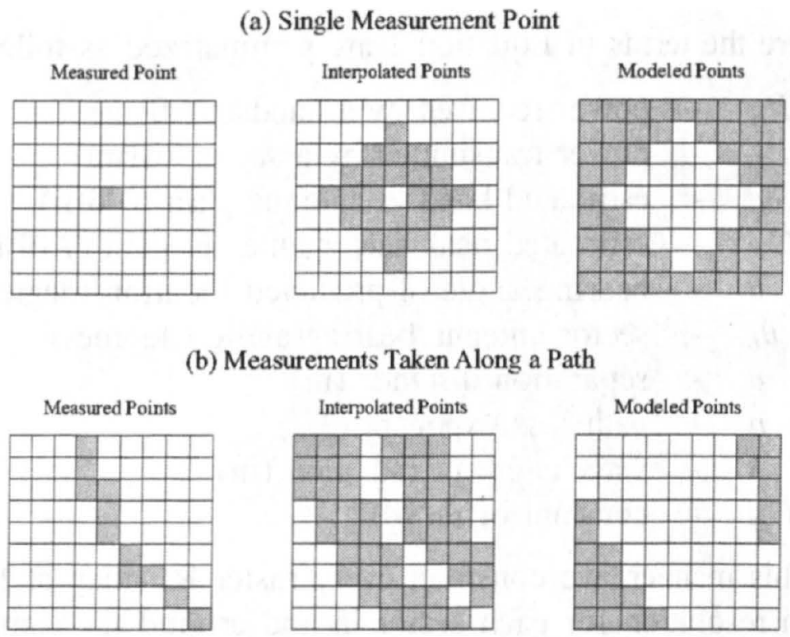


Fig. 2. Marked raster regions (in gray) for (a) a single measurement and (b) a path of measurements.

As seen in the figure, the grid of Zhu is predefined and uniform. The location and boundaries of squares in the grid are not based on any measurements. Indeed, the grid is defined prior to any such measurements.

To determine the location of the wireless handset, the Euclidean distances between the RSS vectors received from the handset and contained at each raster point in the RF Map Database are calculated after normalizing the RSS vectors "by subtracting out the average dBm-power of all received channels." *Id.* at 95.

C. Spain

Spain describes a "method for determining the location of a mobile unit" using "a fingerprint database that contains a number of fingerprints along with their corresponding location identities." Ex. 1009 at Abstract, [0047]. Figure 10 of Spain

(reproduced below) shows the structure of the fingerprint database, which includes "Lat and Long fields [that] indicate the latitude and longitude of the location to which the fingerprint corresponds" and "the time at which the fingerprint was captured." *Id.* at [0099].

501

Fingerprint Database					
No.	Lat.	Long.	Time	Fingerprint	Description
1					
2					
3					
4					
5					
6					
…					
L					

Fig. 10

As used in Spain, "fingerprint" refers to "a predetermined combination of observable RF spectral parameters." *Id.* at [0035]. Spain describes building the fingerprint database by "taking off-line snapshots of fingerprints at various locations" or "taking fingerprint measurements at predetermined locations and using intelligent algorithms that interpolate the fingerprints at all locations in between the sampled locations." *Id.* at [0100]-[0101]. Spain further describes that the "complete grid of locations for the cellular service area" can be used as training data to improve the accuracy of the fingerprint database using "learning/training techniques." *Id.* at [0054]-[0055]. Although Spain provides scant detail on the "learning/training

techniques," Spain explains that "[p]osition will be used as the input value, while signal strength will be used as the target value." *Id.* at [0054].

Accordingly, while Spain uses the term "grid point," it only uses this term in referring to a conventional grid, and thus does not use the term in the manner used in the '104 Patent. As the district court recognized in its *Markman* order—which Petitioner relies on for its proposed construction of "grid point"—the '104 Patent uses "grid point" to more specifically mean "a point associated with representative calibration data for an area" that is generated based on analysis of calibration data. Pet. at 15-16 (citing Ex. 1028 at 20); *see also* Ex. 1028 at 19 (district court explaining that gathered and analyzing calibration data is "what *must be done* to arrive at a grid point or set of grid points") (emphasis in original) (citing Ex. 1008 at Abstract); *see also supra* § III. As explained in further detail below, Spain does not teach generating and using "grid points" as that term is used in the '104 Patent. *Infra* § VII.

D. Laitinen

Laitinen describes a "Database Correlation Method (DCM)" that determines the location of a mobile station "by comparing the transmitted fingerprint [i.e., "signal information samples"] and the fingerprints of the database." Ex. 1011 at 2505. Central to DCM is the creation and maintenance of the database, which is built by collecting measurements over a "street grid of the trial area" at regular intervals.

Id. at 2504-06. Laitinen distinguishes DCM from other location methods based on the fact that it "requires no new hardware at [base station] sites" and creates "the signal strength database through measurements instead of computations." *Id.* at 2505.

Laitinen specifically describes the implementation of DCM to GSM "using the signal strength measurements performed by all GSM handsets." *Id.* at 2504. Laitinen describes how in GSM, "only the LAC [Location Area Code] is known to the network" in idle mode, and thus, the mobile station "must be able to transmit the available parameters to the location server," such as signal strength measurements and cell ID. *Id* at 2505.

V. LEVEL OF ORDINARY SKILL IN THE ART

Patent Owner adopts Petitioner's definition of a person of ordinary skill in the art ("POSITA") for the purposes of this Preliminary Response. Patent Owner reserves the right to present arguments on the definition should the Petition be instituted.

VI. CLAIM CONSTRUCTION

Patent Owner does not dispute Petitioner's statement on claim construction for the purposes of this Preliminary Response. Patent Owner reserves the right to present arguments on the constructions should the Petition be instituted.

VII. PETITIONER FAILS TO SHOW A REASONABLE LIKELIHOOD OF PREVAILING IN ITS CHALLENGE TO CLAIM 2

To the extent the Board considers the merits of the Petition, the Petition fails to demonstrate that Shkedi or Zhu anticipates or, each in view of Spain, renders obvious claim 2 of the '104 Patent.[5] Further, the Petition fails to demonstrate that the combinations of Zhu and Laitinen or Zhu, Laitinen, and Spain render obvious claim 2 of the '104 Patent.

A. Ground 1: Petitioner Fails to Show that Claim 2 Is Anticipated by Shkedi

Claim 2 of the '104 Patent, which depends from Claim 1, further recites "wherein said database comprises previously-gathered calibration data for one or more non-uniform grid points within said region." Ex. 1001 at cl. 2. Because Shkedi has no teaching or suggestion of a database comprising previously-gathered calibration data for one or more non-uniform grid points, Petitioner fails to show that Shkedi anticipates claim 2 of the '104 Patent.

As Petitioner recognizes—and as the district court recognized in its *Markman* order—the term "grid point" in the '104 Patent has the same meaning as it does in

[5] Of the challenged claims, only the district court's § 101 ruling as to claim 2 of the '104 Patent is on appeal to the Federal Circuit. *See supra* § II.f. For the purposes of this Preliminary Response, Patent Owner discusses the merits only as to claim 2.

the related ’753 Patent. Pet. at 15-16, 32; Ex. 1028 at 18-20. As further explained above in Section III, the district court concluded that “grid point,” as used in the ’104 Patent, specifically refers to “a point associated with representative calibration data for an area” that is ***generated based on analysis of calibration data***. Ex. 1028 at 20; *see also id.* at 19 (district court explaining that gathering and analyzing calibration data is “what *must be done* to arrive at a grid point or set of grid points”) (emphasis in original). The related ’753 Patent explains that “grid points do not necessarily have to be part of a uniform grid and usually will not be uniformly distributed throughout the geographic region,” and that such non-uniformly distributed grid points are more specifically referred to as “non-uniform grid points.” Ex. 1008 at 2:43-50. With respect to these “non-uniform grid points,” the ’104 Patent further explains that “a non-uniform grid point (NUG) may represent the signal characteristics and/or calibration data over a given region.” Ex. 1001 at 3:50-52.

Petitioner points to Shkedi’s description of “A Signal-Comparison Based Location-Determining Method” and a database comprised of signal-strength location correlation data deriving from the Registering step or the Monitoring step of said method as disclosing this limitation but provides only vague, cursory explanations. Pet. at 32-34. As explained below, Petitioner ignores the specific requirements for “non-uniform grid points” set forth in the ’104 Patent, related ’753 Patent, and its own proposed construction.

Shkedi describes a method for determining the location of a mobile communications device comprising "Registration," "Recording," and "Monitoring" steps. Ex. 1006 at 5:36-63. The "Registration" step is "a data collection step where the portable device comes to ***measure the antenna signal space reception characteristics at the selected location***" while the "Monitoring" step is a second data collection step "alike in technical detail to the Registering step" from which the location of the mobile communications device can be determined by comparison to the measurements collected at the "Registration" step and recorded in the "Recording" step. *Id.* at 11:18-28, 11:51-65, 12:6-11 (emphasis added). Accordingly, contrary to Petitioner's assertion, Shkedi's "Registering" and "Monitoring" steps merely involve locations where measurements (*i.e.*, calibration data) are ***collected***, not locations that are generated based on analysis of the measurements. That such measurements are taken at various locations where the user is located or where GPS signals are unavailable does not change that these locations are defined independently of any calibration data. *See* Pet. at 32-34 (citing Ex. 1006 at 8:41-44, 17:43-45). These locations where calibration data is collected are distinct from the claimed "non-uniform grid points," which are locations generated based on an analysis of collected calibration data. Indeed, the claims of the '104 Patent distinguish the "non-uniform grid points" from locations where calibration data is collected, referring to the latter as "calibration points." *See* Ex. 1001 at cl. 4 ("…

includes calibration data gathered at a predetermined calibration point …").

Petitioner also relies on language in Shkedi regarding "collecting correspondences between GPS (latitude longitude) coordinates and antenna space reception 'coordinates' for the same location" to create a "transformational data bank," which can in turn, be used to find "a never registered location" by "grabbing antenna space reception 'coordinates' and extrapolating them within the correspondence set" as disclosing "non-uniform grid points." Ex. 1006 at 13:9-25; *see* Pet. at 33. Specifically, Petitioner contends—without explanation—that the extrapolated locations "constitute non-uniform grid points that are used to 'build' Shkedi's database for location determination." Pet. at 33. As an initial matter, Shkedi contains virtually no description of a purported "transformational data bank" and "antenna space reception 'coordinates,'" and Shkedi makes clear its discussion of these concepts is aspirational. *See* Ex. 1006 at 13:9-25 ("This aspect ***anticipates*** that a transformational data bank ***could be created*** …") (emphasis added).

Nonetheless, even to the extent this constitutes a teaching, it involves no more than using "extrapolation" of measured data to determine a user's location. Ex. 1006 at 13:9-25. In other words, the "extrapolated" location Shkedi refers to—which Petitioner contends constitute a "non-uniform grid point"—is just a ***user's current location***. This is not a disclosure of "non-uniform grid points" in a database that are then used to determine a user's location as the disclosure explicitly applies to a

"never registered location," meaning a location that has not been registered in Shkedi's database. *Id*. at 13:18-21; *see also id*. at 5:44-49 (describing Shkedi's "Registering" process). Rather, it is a prospective teaching of determining a user's location from measured data in a particular manner. Thus, this has nothing to do with "non-uniform grid points" as that term is used in the '104 Patent or "build[ing]" a database, as Petitioner contends. Pet. at 33.

Petitioner concludes its discussion as to "non-uniform locations" with the cursory statement that "Shkedi's database of non-uniform grid points ([Ex. 1006], 14:1-7) is built from . . . (2) measuring of signal strengths to "fill in the map" (EX1016, ¶61) with non-uniform locations," referencing Patent Owner's complaint. Pet. at 34. Petitioner's characterization of Patent Owner's position as to "grid points" is incorrect, especially to the extent Petitioner suggests this limitation is met by filling in measurements for predetermined locations on a map. Regardless, the proper inquiry is not based on erroneous characterizations of Patent Owner's complaint for patent litigation, but rather based on consideration of the claim language, as construed. *TI Grp. Auto. Sys. (N. Am.), Inc. v. VDO N. Am., L.L.C.*, 375 F.3d 1126, 1139 (Fed. Cir. 2004) ("The first step involves the proper interpretation of the claims. The second step involves determining whether the limitations of the claims as properly interpreted are met by the prior art."); *Deere & Co. v. Gramm*, 842 F. App'x 628, 632 (Fed. Cir. 2021). Despite proposing the district court's

construction of "grid point" for this proceeding (Pet. at 15-16), Petitioner has failed to explain how Shkedi teaches this limitation based on the district court's construction and further discussion regarding "grid points." *See supra* § III.

Lastly, Petitioner fails to meaningfully address how Shkedi satisfies the district court's construction of "grid point" requiring it to be associated with "representative calibration data for an area." Petitioner's sole discussion of this requirement of the claim term is that "Non-uniform user locations stored in Shkedi's database are 'point[s] associated with representative calibration data for an area [*e.g.*, within a predetermined proximity].'" Pet. at 33 (alterations in original). Petitioner provides no explanation as to how being "within a predetermined proximity" purportedly discloses "representative calibration data." Moreover, Petitioner's quoted language from Shkedi, when read in context, merely explains the assumption underlying all fingerprinting methods that:

> "[I]f a mobile telephone (at a user selected location) measures a plurality of service antenna signals . . . then that mobile telephone (or an equivalent unit) upon observing an identical list of service antennas with substantially identical respective signal strengths—can reasonably conclude that it is within a predetermined proximity of the original user selected location."

Ex. 1006 at 8:41-48.

The district court—which adopted the construction that Petitioner proposed—explained that "representative calibration data" in the construction reflects 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." Ex. 1028 at 20. Yet, Petitioner does not point to anything in Shkedi teaching evaluating the statistical similarity, or any other commonality, in the calibration data. Rather, Petitioner effectively disregards the "representative calibration data" portion of the construction, which is a fatal flaw in this ground. Accordingly, Petitioner fails to show Shkedi anticipates claim 2 of the '104 Patent.

B. Ground 2: Petitioner Fails to Show that Claim 2 Is Obvious Over Shkedi in View of Spain

For obviousness, Petitioner has the burden of establishing that a POSITA would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that they would have had a reasonable expectation of success in doing so. *InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1347 (Fed. Cir. 2014). Petitions that fail to provide a substantive analysis of why or how a POSITA would have modified the prior art to render the claims obvious, including "establishing what is being modified and why, based on the differences between the prior art and the claimed invention" are routinely denied by the Board. *See, e.g.*, *Shopkick Inc. v. Novitaz, Inc.*, IPR2015- 00279, Paper 7 at 27, 30 (PTAB May 29, 2015). Because Petitioner fails to provide ***any*** substantive analysis for its asserted combination of Shkedi in view of Spain to meet its burden,

Ground 2 also fails.

Petitioner provides no explanation as to ***how*** Shkedi would be modified in view of Spain to achieve the claimed invention apart from stating that a POSITA would "include [Spain's] points in Shkedi's database." Pet. at 36. At most, this is an unsupported conclusion that fails to explain how a POSITA would make this purported modification. As to motivation to combine, Petitioner argues that both references "seek to improve accuracy in mobile unit location determination using 'fingerprinting' techniques" and "are directed to improving location accuracy in areas with degraded GPS capability." Pet. at 37. As generic arguments that the references are directed to the same general field or same problem provide a motivation to combine do not suffice, Petitioner's obviousness argument fails. *Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 F. App'x 971, 976-77 (Fed. Cir. 2017). Petitioner also makes boilerplate assertions that the combination "would have been a routine addition" and "an obvious way to build the database in exactly the manner contemplated by Shkedi." Pet. at 37-38. These generic contentions largely parrot legal standards applicable to finding a motivation to combine and reasonable expectation of success, with no specificity or explanation. Thus, these arguments fail as well. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) ("To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning,

based on evidence of record, to support the legal conclusion of obviousness"); *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012) (finding generic motivations to combine insufficient).

Even assuming a POSITA would have been motivated to combine the references, Petitioner's argument fails because Spain does not teach or disclose "non-uniform grid points" as that term is used in the '104 Patent. Petitioner relies on Spain's description of how a fingerprint database "is built by taking fingerprint measurements at predetermined locations and using intelligent algorithms that interpolate the fingerprints at all locations between the sampled locations" as disclosing this limitation.[6] Pet. at 36-37 (citing Ex. 1009 at [0101] and [0054]-[0055]). Contrary to Petitioner's assertion, this disclosure confirms a key distinction between the interpolated fingerprints of Spain and the claimed "grid points." The claimed non-uniform grid points—including their geographical coordinates and boundaries—are generated based on analysis of calibration data. *See supra* § III; *see also* Ex. 1028 at 19.

In Spain, however, the interpolated fingerprints are used to fill in missing

[6] As explained in Section VII.A, Petitioner mischaracterizes Patent Owner's statements in contending that "Owner has defined 'non-uniform grid points to encompass "interpolated" grid points.'" Pet. at 36.

fingerprint measurements ***at predetermined locations***—*i.e.*, locations that are defined in advance independently of any calibration data. Petitioner points to no disclosure in Spain showing that the location corresponding to any interpolated fingerprints is tied to or determined based on analysis of the calibration data.

Nor could Petitioner do so. 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. Ex. 1009 at [0101] (emphasis added). That this interpolation occurs at "all locations" confirms that it is for the purpose of filling in fingerprint measurements for predetermined locations. Interpolating fingerprints for "all locations" is meaningless unless those locations have already been determined and defined; "all" refers to the entire set of locations, requiring the set of locations to be defined in advance. In other words, the predetermined locations are associated with measured fingerprints or, if no such measurements exist, filled in with interpolated measurements. Regardless, the location in the database associated with measured or interpolated fingerprint data is predetermined and defined independently of any calibration data. Thus, even crediting the interpolated fingerprints, Spain fails to teach a database that "comprises previously-gathered calibration data for one or more non-uniform grid points within said region."

Petitioner also fails to meaningfully address how Spain satisfies the district

court's construction of "grid point" requiring it to be associated with "representative calibration data for an area." *See* Pet. at 37. Petitioner addresses the construction of "grid point" that it proposed in only a cursory and superficial manner. In just two sentences, Petitioner points to Spain's disclosure that fingerprints may correspond to a "small area" and then concludes that this suffices to teach a "point associated with representative calibration data for an area." *Id.* At best, Petitioner shows that Spain teaches a point that corresponds to an area. But this disclosure does not show that any purported grid point in Spain is "associated with representative calibration data for an area."

Indeed, Petitioner does not even attempt to address the "representative calibration data" part of the "grid point" construction. For example, Petitioner does not explain how Spain teaches anything about "representative calibration data," what it means for calibration data to be "representative," how to evaluate whether calibration data is "representative," or anything else that could plausibly satisfy this part of the construction. *See* Pet. at 37. The district court—which adopted the construction that Petitioner proposed—explained that "representative calibration data" in the construction reflects 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." Ex. 1028 at 20. Yet, Petitioner does not point to anything in Spain teaching evaluating

the statistical similarity, or any other commonality, in the calibration data. Thus, Petitioner improperly disregards the "representative calibration data" portion of the construction, and thus cannot show a reasonable likelihood of prevailing on this ground.

C. Ground 3: Petitioner Fails to Show that Claim 2 Is Anticipated by Zhu

Zhu does not teach or suggest all of the limitations of Claim 2 of the '104 Patent; in particular, it fails to teach a database "compris[ing] previously-gathered calibration data for one or more non-uniform grid points."

First, Petitioner contends that Zhu's "measured points" constitute "non-uniform grid points" because they "tend to cluster along paths due to the walking or driving methods of collection"—and thus, may not be non-uniformly distributed relative to each other. Pet. at 47-48. But these "measured points" are locations where calibration data is ***collected***, which is why they "cluster" due to the "method[] of collection." Ex. 1010 at 94. These locations where calibration data is collected are distinct from the claimed "non-uniform grid points," which are locations generated ***based on an analysis of collected calibration data***. *See supra* § III. The "non-uniform grid points" of the '104 Patent claims are expressly distinguished from locations where calibration data is collected, which are referred to as "calibration points." *See* Ex. 1001 at cl. 4 ("… includes calibration data gathered at a predetermined calibration point …"). Thus, these "measured points" cannot be the

claimed "non-uniform grid points."

Second, Petitioner primarily relies on Zhu's "local interpolation" and "modeling" as teaching "non-uniform grid points," without any explanation apart from asserting "Owner has defined 'non-uniform grid points' to encompass 'interpolated' grid points." Pet. at 48-49. As explained above, Petitioner's argument is based on erroneous characterizations of Patent Owner's complaint for patent litigation that are not relevant to the proper inquiry at hand, which is based on consideration of the claim language, as construed. *Supra* § VII.B. Petitioner has failed to explain how Zhu teaches this limitation based on the district court's construction and further discussion regarding "grid points."

Moreover, whether the signal strength data is collected by taking actual measurements, interpolating, or modeling, these steps all take place at predefined, uniform points in the raster array that are defined independently of any calibration data, e.g., at 10m by 10m squares. Exhibit 1010 at 93-94. This is readily apparent from the figures in Zhu, shown below, which demonstrate that data is merely filled into a ***predefined and uniform grid***—the location and boundaries of squares in this grid are not based on any measured calibration data:

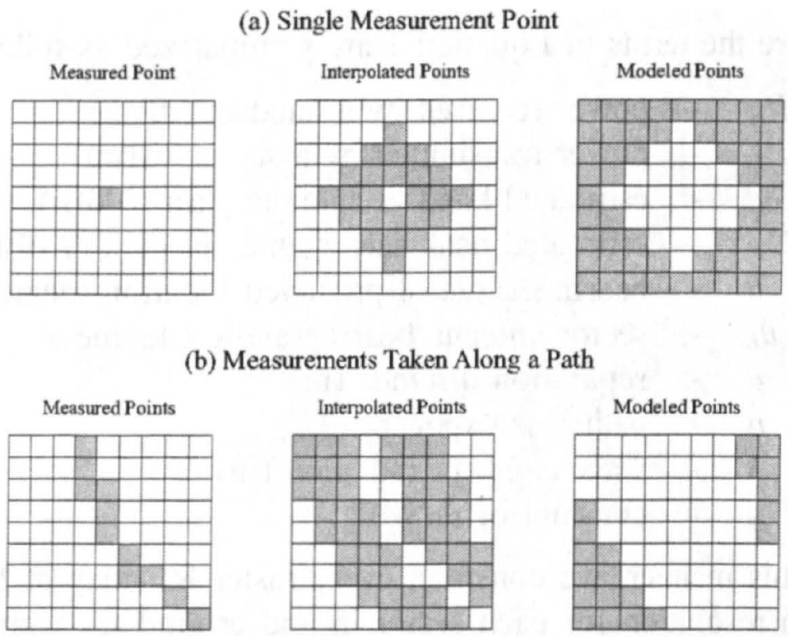


Fig. 2. Marked raster regions (in gray) for (a) a single measurement and (b) a path of measurements.

This is a critical distinction between the interpolated or modeled points of Zhu—which are part of a uniform, predetermined grid—and the claimed grid points of the '104 Patent, which are non-uniform and generated based on analysis of calibration data, including with respect to their geographical coordinates and boundaries. *See supra* § III. Petitioner points to no disclosure in Zhu showing that the location corresponding to any interpolated or modeled signal strength value is tied to or determined based on analysis of the calibration data.

Lastly, Petitioner fails to meaningfully address how Zhu satisfies the district court's construction of "grid point" requiring it to be associated with "representative calibration data for an area." *See supra* § VII.A. Petitioner's sole discussion of this requirement of the claim term is that "[a] non-uniform grid point within each 10-

meter area [of Zhu's grid spacing] is associated with representative calibration data (e.g., measured points)" Pet. at 49. Again, Petitioner provides no explanation as to how a point being within a 10-meter area purportedly discloses "a point associated with representative calibration data." Petitioner cannot show a reasonable likelihood of prevailing on this ground given that it has essentially disregarded the "representative calibration data" aspect of the construction for "grid point" that it proposed itself for this proceeding.

D. Ground 4: Petitioner Fails to Show that Claim 2 Is Obvious Over Zhu in View of Laitinen

Ground 4 fails for the same reasons as Ground 3. For Ground 4, Petitioner's ***only*** reliance on Laitinen is its purported disclosure of "determining which of first and second signal characteristics (i.e., the multiple 'signal strength measurements') has a greater magnitude in order to identify the cell ID having the strongest signal (i.e., 'the cell ID of the strongest cell')". Pet. at 51 (citing Ex 1011 at 2505). Petitioner does not even contend that Laitinen teaches or discloses the claimed "non-uniform grid points." *See* Pet. at 51-52. As explained in Section VII.C, Zhu does not teach or disclose "non-uniform grid points." Accordingly, Ground 4 also fails.

E. Ground 5: Petitioner Fails to Show that Claim 2 Is Obvious Over Zhu or Zhu-Laitinen in View of Spain

Ground 5 relies on the same art found in Grounds 2, 3, and 4, and fails for the same reasons as those grounds. Like Ground 2, Petitioner provides no explanation

as to how Zhu or Zhu-Laitinen would be modified in view of Spain to achieve the claimed invention apart from stating that a POSITA "would have been motivated to modify Zhu's system or the Zhu/Laitinen system to include Spain's learning/interpolating technique to improve location accuracy of Zhu's fingerprint techniques by generating non-uniform grid points 'between grid points' . . . e.g., for 'all locations in between the sampled locations.'" Pet. at 55 (citations to Spain omitted). This is insufficient for Petitioner to meet its burden. *Magnum Oil Tools*, 829 F.3d at 1380; *ActiveVideo*, 694 F.3d at 1328. Further, as explained in Sections VII.B-D, none of Zhu, Laitinen, or Spain teach or disclose "non-uniform grid points." Accordingly, Ground 5 necessarily fails as well.

VIII. CONCLUSION

Petitioner fails to show that institution is warranted. As explained above, institution would require an inefficient use of the Board's resources. A district court has already ruled that the '104 Patent claims are unpatentable under § 101, and the Petition falls far short of presenting a "compelling unpatentability challenge" that would warrant proceeding despite that ruling. And Patent Owner has only appealed the district court's ruling as to one of the four claims challenged here.

Even if the Board reaches the merits under the lower "reasonable likelihood" standard, denial is still warranted. Petitioner's sole ground fails to demonstrate that the asserted prior art teaches every limitation of the challenged claims. Petitioner

relies on superficial arguments that fail to satisfy the claim constructions that Petitioner itself proposed. For the foregoing reasons, Patent Owner respectfully requests that the Board deny institution.

Dated: November 22, 2023

Respectfully submitted,

/Ryan J. Singer/

Ryan J. Singer
Registration No. 79,736
Lead Counsel for Patent Owner
Christopher M. Gerson
Pro Hac Vice
Backup Counsel for Patent Owner
SCHULTE ROTH & ZABEL LLP
919 Third Avenue
New York, New York 10022
Tel: (212) 756-2000
Fax: (212) 593-5955
ryan.singer@srz.com
chris.gerson@srz.com

Counsel for Patent Owner
Geoscope Technologies Pte. Ltd.

CERTIFICATE OF COMPLIANCE

The undersigned certifies that this brief complies with the type-volume limitations of 37 CFR § 42.24(a)(1)(i). This brief contains 10,549 words as calculated by the "Word Count" feature of Microsoft Word, the word processing program used to create it. The undersigned further certifies that this brief complies with the typeface requirements of 37 CFR § 42.6(a)(2)(ii) and typestyle requirements of 37 CFR § 42.6(a)(2)(iii). This brief has been prepared in a proportionally spaced typeface using Microsoft Word in Times New Roman 14 point font.

Dated: November 22, 2023

/Ryan J. Singer/
Ryan J. Singer
Registration No. 79,736
Lead Counsel for Patent Owner
Christopher M. Gerson
Pro Hac Vice
Backup Counsel for Patent Owner
SCHULTE ROTH & ZABEL LLP
919 Third Avenue
New York, New York 10022
Tel: (212) 756-2000
Fax: (212) 593-5955
ryan.singer@srz.com
chris.gerson@srz.com

Counsel for Patent Owner
Geoscope Technologies Pte. Ltd.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing **Patent Owner's Preliminary Response**, was served on November 22, 2023 via email directed to counsel of record for the Petitioner at the following address of record as listed on PAIR:

Lead Counsel:
Patrick C. Keane, Esq.
Registration No. 32,858
BUCHANAN INGERSOLL & ROONEY PC
1737 King Street, Suite 500
Alexandria, Virginia 22314
Direct Telephone (703) 838-652 2
Main Facsimile (703) 836-2021
patrick.keane@bipc.com

Backup Counsel:
Roger H. Lee, Esq.
Registration No. 46,317
BUCHANAN INGERSOLL & ROONEY PC
1737 King Street, Suite 500
Alexandria, Virginia 22314
Direct Telephone (703) 838-6545
Main Facsimile (703) 836-2021
roger.lee@bipc.com

Backup Counsel:
Matthew L. Fedowitz, Esq.
Registration No. 61,386
BUCHANAN INGERSOLL & ROONEY PC
1700 K Street, NW, Suite 300
Washington, DC 20006
Direct Telephone (202) 452-7306
Main Facsimile (202) 452-7989
matthew.fedowitz@bipc.com

Backup Counsel:
Andrew R. Cheslock, Esq.
Registration No. 68,577
BUCHANAN INGERSOLL & ROONEY PC
1737 King Street, Suite 500
Alexandria, VA 22314
Direct Telephone (703) 838-6523
Main Facsimile (703) 836-2021
andrew.cheslock@bipc.com

Backup Counsel:
Mythili Markowski, Ph.D., Esq.
Registration No. 67,063
BUCHANAN INGERSOLL & ROONEY PC
1700 K Street, N.W., Suite 300
Washington, DC 20006

Backup Counsel:
Samuel Harrod, Esq.
Registration No. 79,148
BUCHANAN INGERSOLL & ROONEY PC
Union Trust Building,
501 Grant Street, Suite 200

Direct Telephone (202) 452-7314
Main Facsimile (202) 452-7989
mythili.markowski@bipc.com

Pittsburgh, PA 15219
Direct Telephone (412) 562-8805
Main Facsimile (412) 562-1041
samuel.harrod@bipc.com

Backup Counsel:
Ralph G. Fischer, Esq.
Registration No. 55,179
BUCHANAN INGERSOLL &
ROONEY PC
Union Trust Building
501 Grant Street, Suite 200
Pittsburgh, PA 15219
Direct Telephone (412) 392-2121
Main Facsimile (412) 562-1041
ralph.fischer@bipc.com

Dated: November 22, 2023

/Ryan J. Singer/

Ryan J. Singer
Registration No. 79,736
Lead Counsel for Patent Owner
Christopher M. Gerson
Pro Hac Vice
Backup Counsel for Patent Owner
SCHULTE ROTH & ZABEL LLP
919 Third Avenue
New York, New York 10022
Tel: (212) 756-2000
Fax: (212) 593-5955
ryan.singer@srz.com
chris.gerson@srz.com

Counsel for Patent Owner
Geoscope Technologies Pte. Ltd.