

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. IPR2023-01213
Patent 9,097,784

**PETITION FOR INTER PARTES REVIEW
OF U.S. PATENT NO. 9,097,784**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. MANDATORY NOTICES PURSUANT TO 37 C.F.R. §42.8(a)(1)	3
A. Real Party-In-Interest	3
B. Identification of Related Matters Under 37 C.F.R. §42.8(b)(2)	3
C. Lead and Backup Counsel.....	4
D. Service Information Under 37 C.F.R. §42.8(b)(4).....	5
III. PAYMENT OF FEES	5
IV. REQUIREMENTS UNDER 37 C.F.R. §42.104.....	5
A. Grounds for Standing	5
B. Identification of Challenges and Precise Relief Requested	6
C. Prior Art Qualification of Asserted References	7
V. BACKGROUND	7
A. The '784 Patent	7
B. Examination History	9
C. The Prior Art	11
1. Crane (EX1004)	11
2. Spain (EX1005).....	12
D. Person of Ordinary Skill in the Art (“POSITA”).....	14
VI. CLAIM CONSTRUCTION	14
A. “wireless device”	15
B. “status of said wireless device”	15

C.	“determining said most likely street as a first one of said plural geographic locations”	16
D.	“determining a first point of said plural points that is in proximity to said first geographic location”	17
E.	Order of “obtaining” and “determining” steps.....	17
F.	Related Litigation Indefiniteness Positions.....	18
VII.	PETITIONER HAS A REASONABLE LIKELIHOOD OF PREVAILING	19
A.	Scope and Content of Crane and Spain.....	19
1.	Claim 1 (Preamble): “A method for generating a calibration database, comprising:”	20
a.	Element [1.1]: “receiving at a wireless device an attribute of a signal transmitted by a wireless transmitter to a mobile station in a region;”	21
b.	Element [1.2]: “wirelessly transmitting from said wireless device said attribute to a controller unit;”	26
c.	Element [1.3]: “obtaining location data of a plurality of geographic locations situated within said region, wherein said location data is determined using said wireless device, and wherein said region contains plural streets and intersections of said plural streets;”	28
d.	Element [1.4]: “providing a location information database wherein said location database includes latitude and longitude information for each of a plurality of points within said region;”	31
e.	Element [1.5]: “determining a status of said wireless device;”	32
f.	Element [1.6]: “determining from said status a most likely one of said plural streets upon which said wireless device is located;”	33

g.	Element [1.7]: “determining said most likely street as a first one of said plural geographic locations;”	35
h.	Element [1.8]: “determining a first point of said plural points that is in proximity to said first geographic location;”	37
i.	Element [1.9]: “entering said first point in said calibration database and associating the location data for the first one of said plural geographic locations determined by said wireless device with the first point.”	41
2.	Claim 2: “The method of claim 1 wherein said attribute is selected from the group consisting of: signal strength, Cell global identity, broadcast control channel, base station identity code.”	46
3.	Claim 10: “The method of claim 1 wherein said location database is a street database.”	47
4.	Claim 11: “The method of claim 1 wherein said status includes attributes selected from the group consisting of: direction of travel; speed of travel, and change in direction of travel.”	47
5.	Claim 12: “A system for generating a calibration database, comprising: a wireless device for determining location data at a plurality of geographic locations situated within a region, wherein said region contains plural streets and intersections of said plural streets, said wireless device receiving an attribute of a signal transmitted by a wireless transmitter to a mobile station in said region; a wireless device transmitter for transmitting from said wireless device said attribute to a controller unit; a location information database wherein said location database includes latitude and longitude information for each of a plurality of points within said region; circuitry for determining a status of said wireless device; circuitry for determining from said status a most likely one of said plural streets upon which said wireless	

	device is located; circuitry for determining said most likely street as a first one of said plural geographic locations; circuitry for determining a first point of said plural points that is in proximity to said first geographic location; and circuitry for entering said first point in said calibration database; and associating the location data for the first one of said plural geographic locations determined by said wireless device with the first point.”	48
6.	Claim 13: “The system of claim 12 wherein said attribute is selected from the group consisting of: signal strength, Cell Global identity, broadcast control channel, base station identity code.”	50
7.	Claim 21: “The system of claim 12 wherein said location database is a street database.”	51
8.	Claim 22: “The system of claim 12, wherein said status includes attributes selected from the group consisting of: direction of travel; speed of travel, and change in direction of travel.”	51
B.	A POSITA Would Have Been Motivated to Implement Spain’s Signal Attribute Conveyance in Crane’s Methods and Systems	52
C.	A POSITA Would Have Had a Reasonable Expectation of Successfully Implementing Spain’s Signal Attribute Conveyance Method in Crane’s Methods and Systems.....	53
VIII.	OTHER CONSIDERATIONS	53
A.	Secondary Considerations	53
B.	Discretion to Institute	54
1.	The Board should not deny this Petition under §314(a).....	54
a.	Factor 1: Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted.....	54

Petition for *Inter Partes* Review of U.S. Patent No. 9,097,784

b.	Factor 2: Proximity of the court’s trial date to the Panel’s projected statutory deadline for a final written decision.....	54
c.	Factor 3: Investment in the parallel proceeding by the court and the parties.....	55
d.	Factor 4: Overlap between issues raised in the petition and in the parallel proceeding	56
e.	Factor 5: Whether the petitioner and the defendant in the parallel proceeding are the same party	56
f.	Factor 6: Other circumstances that impact the Panel’s exercise of discretion, including the merits	56
2.	The Board should not deny this Petition under §325(d).....	57
a.	Factor (c)	59
b.	Factors (e) and (f).....	62
IX.	CONCLUSION.....	65
APPENDIX A - LIST OF EXHIBITS		
CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. §42.24		
CERTIFICATE OF SERVICE		

TABLE OF AUTHORITIES

Cases	Page(s)
<i>Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH</i> , IPR2019-01469, Paper 6 (PTAB Feb. 13, 2020).....	57, 59, 62
<i>Amgen Inc. v. Alexion Pharm., Inc.</i> , IPR2019-00740, Paper 15 (P.T.A.B. August 30, 2019).....	58
<i>Apple Inc. v. Parus Holdings</i> , IPR2020-00686, Paper 9 (Sept. 23, 2020).....	54
<i>Becton, Dickinson & Co. v. B. Braun Melsungen AG</i> , IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017)	57, 58
<i>Dish Network LLC v. Broadband iTV, Inc.</i> , IPR2020-01332, Paper 14 (Jan. 27, 2021).....	56
<i>DISH Network LLC v. Sound View Innovations, LLC</i> , IPR2020-01041, Paper 13, 22 (PTAB Jan 19, 2021)	62
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966).....	19
<i>Intel Corp. v. Qualcomm Inc.</i> , 21 F.4th 801 (Fed. Cir. 2021)	19
<i>Laboratory Corporation of America Holdings v. Ravgen, Inc.</i> , IPR2021-01054, Paper 11 (Nov. 5, 2021)	55
<i>Microsoft Corporation v. D3D Technologies, Inc.</i> , IPR2021-00703, Paper 10 (PTAB Oct. 12, 2021).....	55
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005) (<i>en banc</i>)	15, 18
<i>Puma N. Am., Inc. v. Nike, Inc.</i> , IPR2019-01058, Paper 10, 19 (PTAB Oct. 31, 2019).....	63
<i>Roku, Inc. v. Universal Electronics, Inc.</i> , IPR2019-01615 (P.T.A.B. April 17, 2020)	63

<i>Sand Revolution II v. Continental Intermodal Group-Trucking LLC</i> , IPR2019-01393, Paper 24 (PTAB June. 16, 2020)	54, 55, 56
<i>Scientific Design Co. v. Shell Oil Co.</i> , IPR2021-01537, Paper 7 (P.T.A.B. Mar. 18, 2022)	58
<i>Scientific Design Co. v. Shell Oil Co.</i> , IPR2022-00158, Paper 7 (P.T.A.B. Apr. 4, 2022)	58
<i>Sony Interactive Entertainment LLC v. Bot M8, LLC</i> , IPR2020-00963, Paper 9 (PTAB Nov. 20, 2020)	18
<i>Target Corp. v. Proxicom Wireless, Inc.</i> , IPR2020-00979, Paper 11 (PTAB Dec. 4, 2020)	18
<i>Toyota Motor Corp. v. Cellport Systems, Inc.</i> , IPR2015-00633, Paper 11 (PTAB Aug. 14, 2015)	14
<i>Trans Ova Genetics, LC v. XY, LLC</i> , IPR2018-00250, Paper 9, 18-19 (PTAB June 27, 2018)	62
<i>Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.</i> , 200 F.3d 795 (Fed. Cir. 1999)	63

Statutes

35 U.S.C. §102(b)	7
35 U.S.C. §103	6, 19
35 U.S.C. §§311-319	1
35 U.S.C. §314(a)	54
35 U.S.C. §318(a)	6
35 U.S.C. §325(d)	<i>passim</i>

Rules

37 C.F.R. §42.8(a)(1)	3
37 C.F.R. §42.8(b)(1).....	3
37 C.F.R. §42.8(b)(2).....	3
37 C.F.R. §42.8(b)(3).....	4
37 C.F.R. §42.8(b)(4).....	5
37 C.F.R. §42.10(a).....	4
37 C.F.R. §42.10(b)	5
37 C.F.R. §42.15(a).....	5
37 C.F.R. §42.100 <i>et seq.</i>	1
37 C.F.R. §42.102(a)(2)	5
37 C.F.R. §42.104	5

I. INTRODUCTION

Google LLC (“Petitioner”) requests *inter partes* review of Claims 1, 2, 10-13, 21, and 22 (“the Challenged Claims”) of U.S. Patent No. 9,097,784 (“the ’784 Patent”) (EX1001) under 35 U.S.C. §§311-319 and 37 C.F.R. §42.100 *et seq.*

The purported invention of the ’784 Patent is a method/system to collect and modify calibration data to correct calibration errors and “enhance the accuracy of the collected data” in a database by matching “calibration data associated with [a] mobile station” to “positions of streets ... in [a] street database.” EX1001, Abs. 11. 9-12; 1:26-27; 3:51-52; *see also* 3:23-4:6. “Ground truth data observed from a data collection device (i.e., a GPS receiver) may be collected and stored in a calibration database and compared to a street database to modify and enhance the calibration data for increased accuracy.” EX1001, 3:23-26. The ground truth data may also be data from “a terrestrial geo-location device [*e.g.*, wireless device] that measures received signal strengths from base stations or other wireless signaling devices.” EX1001, 3:32-35. One embodiment generates “a calibration database employing a wireless device in a region that contains plural streets....” EX1001, 2:22-24; *see* 2:21-36.

However, procedures to enhance calibration data stored in a database by matching wireless device position data with road position data were well known. For example, U.S. Patent No. 6,381,533 (Crane)(EX1004) discloses “an existing

geographic database for roads may be enhanced” by matching “positions of one or more cellular phones, or other types of wireless phones, to data indicating the locations of roads in a geographic area to derive data about phones located in vehicles traveling along the roads. The data about [cellular] phones located in vehicles traveling along the roads are used for updating or refining a geographic database.” EX1004, 2:25-34; 1:49-50. Crane discloses cellular phones and systems using “911” cellular phone location technologies and as using “any such technology that is presently available or that becomes available in the future ... suitable for the phone location determining system 104 in FIG. 1.” EX1004, 3:11-13. Crane looks to other references for discloses such specifics of location technologies. *See* EX1004 in its entirety.

U.S. Patent Publication No. 2003/0064735 (Spain)(EX1005) discloses a method for determining the location of a mobile unit using, among other attributes, “observed signal strength” to determine the location. EX1005, Abs. ll. 1-2; *see* ¶[0035]. The methods “for determining the location of mobile unit[s]” [] work in areas “where GPS coverage is not typically available, and [] do[] not require any infrastructure modifications.” EX1005, ¶[0034]:1-4. *See* EX1005 in its entirety.

The ’784 Patent claims are therefore not patentable.

II. MANDATORY NOTICES PURSUANT TO 37 C.F.R. §42.8(a)(1)

A. Real Party-In-Interest

Pursuant to 37 C.F.R. §42.8(b)(1), Petitioner certifies that Google LLC is the real party-in-interest. Google LLC is a subsidiary of XXVI Holdings Inc. which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

B. Identification of Related Matters Under 37 C.F.R. §42.8(b)(2)

The following is a list of any judicial or administrative matters that would affect, or be affected by, a decision in this proceeding:

Related District Court and PTAB Matters

1. *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 (pending) (the “Related Litigation”); and

2. *Geoscope Technologies Pte. Ltd. V. Apple Inc.*, Civ. Action No. 1:22-cv-01373 (EDVA) filed on December 1, 2022 (pending).

Related Applications

The ’784 Patent issued from U.S. Patent Application No. 14/518,868, filed on October 20, 2014, which is a continuation of U.S. Patent Application No. 12/026,372, filed on February 5, 2008 (U.S. Patent 8,938,252) which claims priority to U.S. Provisional Application No. 60/899,379, filed on February 5, 2007.

C. Lead and Backup Counsel

Pursuant to 37 C.F.R. §42.8(b)(3) and §42.10(a), Petitioner hereby identifies its lead and backup counsel as follows:

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A Power of Attorney is being filed concurrently herewith in accordance with 37 C.F.R. §42.10(b).

D. Service Information Under 37 C.F.R. §42.8(b)(4)

Petitioner consents to e-mail service at BIR-GoogleGeoscope@bipc.com.

III. PAYMENT OF FEES

The undersigned authorizes the Office to charge Deposit Account No. 02-4800 for fees required by 37 C.F.R. §42.15(a).

IV. REQUIREMENTS UNDER 37 C.F.R. §42.104

A. Grounds for Standing

Petitioner certifies the '784 Patent as available for *inter partes* review pursuant 37 C.F.R. §42.102(a)(2). Petitioner is not barred or estopped from requesting *inter partes* review on the grounds identified herein.

This Petition is filed within one year from service of the Complaint by Patent Owner ("Owner") in the Related Litigation asserting infringement of the '784 Patent.

Neither Petitioner nor its privies have received a final written decision under 35 U.S.C. §318(a) regarding any claim of the '784 Patent on any ground that was raised or could have been raised by Petitioner or its privies in any *inter partes* review, post grant review, or covered business method patent review.

B. Identification of Challenges and Precise Relief Requested

Petitioner challenges Claims 1, 2, 10-13, 21, and 22 of the '784 Patent and requests that these claims be found unpatentable¹ based on the following Ground:

Ground	Reference(s)	Basis	Claims
1	U.S. Patent No. 6,381,533 (“Crane”) (EX1004); U.S. Patent Publication No. 2003/0064735 (“Spain”) (EX1005)	§103	1, 2, 10-13, 21, and 22

In addition, Petitioner relies upon evidence listed in the Exhibit List, including the Declaration and *Curriculum Vitae* of David Hilliard Williams (EX1008, ¶¶1-12, and *see generally*, ¶¶13-262; EX1009).

¹ Owner asserts infringement of Claim 11 of the '784 Patent in the Related Litigation. EX1013.

C. Prior Art Qualification of Asserted References

For this Petition, Petitioner assumes the earliest effective filing date of the '784 Patent is February 5, 2007—the filing date of priority U.S. Provisional Application No. 60/899,379 (EX1003).²

U.S. Patent No. 6,381,533 (EX1004) issued on April 30, 2002 and constitutes prior art under Section 102(b).

U.S. Patent Publication No. 2003/0064735 (EX1005) published on April 3, 2003 and constitutes prior art under Section 102(b).

V. BACKGROUND

A. The '784 Patent

The '784 Patent discloses a “system and method to collect and modify calibration data.” EX1001, title. According to the '784 Patent, “[c]alibration data measured via a calibration data collection device may contain errors due to the physical limitations of the collection device and/or the collection process. Any data collection device may produce some degree of signal degradation or drop-out.” EX1001, Abs. ll. 2-5; EX1008, ¶¶24-25.

²In the Related Litigation, Owner states “each asserted claim of the '784 Patent is entitled to a priority date of February 5, 2007”. EX1013. Petitioner does not concede any challenged claim is entitled to an effective filing date of February 5, 2007.

The '784 Patent seeks to “ensure the integrity of the collected calibration data” and “enhance the accuracy of the collected data” in a database by matching “calibration data associated with [a] mobile station” to “positions of streets ... in [a] street database.” EX1001, Abs. ll. 9-12; 1:26-27; 3:51-52; *see also* 3:23-4:6. “Ground truth data observed from a data collection device (i.e., a GPS receiver) may be collected and stored in a calibration database and compared to a street database to modify and enhance the calibration data for increased accuracy.” EX1001, 3:23-26. The ground truth data may also be data from “a terrestrial geo-location device [e.g., wireless device] that measures received signal strengths from base stations or other wireless signaling devices.” EX1001, 3:32-35; EX1008, ¶¶26, 31.

One embodiment generates “a calibration database employing a wireless device in a region that contains plural streets....” EX1001, 2:22-24; *see* 2:21-36. The collection of calibration data in “a geographical area that contains multiple streets, highways, etc. having corresponding intersections” may result in “collecting erroneous location point data regardless of the type of data collection device. A street database may be used as a supplemental data source to compare and/or check the integrity of collected location data.” EX1001, 3:39-44; *see also* EX1012, ¶¶66, 69; EX1008, ¶¶27-29.

“The street database data may be stored in the same database [] used to store the collected ground truth data or may be stored in a separate database.” EX1001, 3:48-50; EX1008, ¶30.

The ’784 Patent explains exemplary ways in which a “street database” can provide enhanced data. *See* EX1001, 4:7-67. The ’784 Patent discloses comparing a progression of measurements to a likely path derived from a street database showing, *e.g.*, “the direction of one-way streets, off-street territories, etc.” EX1001, 3:47-48; *see* 3:39-50, 4:19-28; EX1008, ¶¶32-33.

The ’784 Patent describes associating, or matching, supplemental information—*e.g.*, “latitude, longitude and other forms of geographical location data” and “ancillary information such as the direction of one-way streets, off-street territories, etc.”—“to the collected location data.” EX1001, 3:45-62; EX1008, ¶34.

B. Examination History

The ’784 Patent issued from U.S. Patent Application No. 14/518,868, filed October 20, 2014 as a continuation of U.S. Patent Application No. 12/026,372 filed February 5, 2008, and claims priority to U.S. Provisional Application No. 60/899,379 filed February 5, 2007. EX1001, cover; EX1008, ¶41.

No Official Actions rejected claims of the ’784 Patent during Examination. A Notice of Allowance was mailed on June 19, 2015, allowing all pending claims.

Claims 1 and 12 of the '784 Patent included an Examiner's Amendment. EX1008, ¶36.

In an Examiner-Initiated Interview on June 4, 2015 (EX1002, p.30), a proposed Examiner Amendment to independent Claims 1 and 12 of the '784 Patent was discussed to put the application in condition for allowance. The Examiner cited U.S. Pub. No. 2008/0070572 to Shkedi ("Shkedi"). *Id.* The Examiner Amendment amended independent Claim 1 to recite "determining from said status a most likely one of said plural streets upon which said wireless device is ~~sited for a first one of said plural geographic locations~~ located; determining said most likely street as a first one of said plural geographic locations; . . ." EX1002, pp.25-26. Independent Claim 12 contains a similar amendment. EX1008, ¶37.

A Notice of Allowance mailed June 19, 2015 presented the Examiner's Reasons for Allowance: "prior art was found teaching the inventive concept of collecting location fingerprints (*~claimed location data*) and GPS coordinates both corresponding to the same location and associating them in a database for calibration purposes (*see US 2008/0070572 [Shkedi], paragraph 54*)." EX1002, p.27. The Examiner found that "Shkedi fails to teach" the four "determining" steps of the independent claims as well as the step reciting "entering . . . **with the first point.**" EX1002, pp.27-28; EX1008, ¶38.

The '784 Patent was allowed with the Examiner's Amendment. EX1002, p.28; EX1008, ¶39.

C. The Prior Art

1. Crane (EX1004)

Crane discloses a data collection method/system for collecting geographic data, determining positions of wireless devices (*e.g.*, cellular phones), and matching the positions of the wireless devices to associated positions of roads in a geographic area. EX1004, 1:13-20. Crane's method/system "matches the position of one or more cellular phones" with "data indicating the locations of roads" to "derive data about phones located in vehicles traveling along the roads." EX1004, 2:26-30. "The data about phones . . . are used for updating or refining a geographic database." EX1004, 2:30-32; EX1008, ¶¶59-61.

Crane recognizes that "an existing geographic database for roads may be enhanced." EX1004, 1:49-50. Fig. 2 illustrates a phone location determining system 104 which outputs "data 140" which includes attributes such as "ID", "TIME" and phone position (*e.g.*, latitude/longitude, or "LAT/LONG") to a data collection system 200 of Fig. 4, wherein phone positions are matched to positions of roads 152 (Fig. 6) represented by Fig. 4 data 170 (*e.g.*, "LAT/LONG") in the geographic database 172. EX1004, 3:57-63. The "LAT/LONG" information provided by the phone determining system is determined using the illustrated Fig. 1 inputs from the

towers 108 into the phone location determining system 104, in conjunction with “available technologies” such as cellular phone “911” phone location technology. EX1004, 3:7-13; EX1008, ¶¶62-64.

Crane states: “[a] geographic database can also be updated using the position data for a plurality of cellular telephones.” EX1004, 6:27-28. Crane modifies data collected and stored in a database (*i.e.*, a calibration database) for increased accuracy in “cellular phone location matching.” EX1004, 6:46-58. Crane uses “data about phones” and “positions of cellular phones . . . to update the data that indicate the positions of roads that are already represented in the geographic database. Using the positions of cellular phones that travel along roads can help increase the accuracy of the data that represent the positions used to represent roads in the database.” EX1004, 6:46-52; *see* 2:30-33. Crane produces a “database with new, more accurate data”. EX1004, 6:56-57. Crane increases data accuracy by associating data representing locations of cellular phones with road data so that “the database with new, more accurate data can be used for subsequent cellular phone location matching.” EX1004, 6:56-58; EX1008, ¶¶65-69.

2. Spain (EX1005)

Spain discloses details for determining a mobile device location (*i.e.*, a “mobile unit”) as referenced in Crane, for areas where GPS coverage is not typically

available to augment location determination performance. EX1005, ¶[0034]; EX1008, ¶70.

Mobile device location is determined using a database containing multiple RF data entries. *See* EX1005, Abs. ll. 1-9, ¶¶[0047], [0052], [0062]. Determining the location of a mobile unit can be performed using “GPS receivers” and that, “[w]hen combined with differential corrections, the GPS accuracy can be improved.” EX1005, ¶[0003]:13-17. GPS location is “not always reliable since the mobile unit may be in an environment where there is no penetration of GPS satellite signals.” EX1005, ¶[0004]:9-11. For example, “it is well known that GPS receivers do not work very well in urban canyons and indoor locations where signal strength is very low.” EX1005, ¶[0033]:2-4; EX1008, ¶¶71-74.

Spain’s disclosed method: “(a) works in areas where GPS coverage is not typically available, and (b) does not require any infrastructure modifications.” EX1005, ¶[0034]:2-4; EX1008, ¶75.

Spain uses an attribute of “observed signal strength” to generate a spectral fingerprint for the current location of the mobile unit. EX1005, ¶[0035]; *see* ¶[0041]:1-3. The generated signal strength fingerprint is “transmitted” to a “database [] stored at [a] location server” over a “wireless link.” EX1005, ¶[0048]:1-4. Fingerprint matching to determine a location of a mobile phone may leverage

“mobile unit motion constraints to generate multiple hypotheses for mobile unit locations over time.” EX1005, ¶¶[0061]:9-10; EX1008, ¶¶76-78.

The “fingerprint information along with the coordinates of the location are entered into the database.” EX1005, ¶¶[0100]:3-4. Spain’s solutions for locating a mobile phone involve building databases that include “latitude and longitude of the location to which the fingerprint corresponds.” EX1005, ¶¶[0099]:6-9; EX1008, ¶¶79-80.

D. Person of Ordinary Skill in the Art (“POSITA”)

A POSITA would have been someone knowledgeable in wireless networks, cellular radio systems, mobile communication devices and radio navigation systems, having at least a bachelor’s degree in electrical engineering, with a background in radio frequency communications and/or navigation system technology as well as approximately two years of industry experience working on radio communication and/or navigation systems. EX1008, ¶40.

VI. CLAIM CONSTRUCTION

The Board only construes the claims when necessary to resolve the underlying controversy. *Toyota Motor Corp. v. Cellport Systems, Inc.*, IPR2015-00633, Paper 11 at 16 (PTAB Aug. 14, 2015) (citing *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). Other than the terms addressed below, Petitioner believes that no express constructions of the claims are necessary.

Claim terms are interpreted according to *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*), and its progeny. *See also* EX1008, ¶42. Some terms of the '784 Patent are in dispute and a Markman Order (EX1028) issued in Related Litigation addressing those disputes construing claim terms. Any claim terms not addressed below should be interpreted consistent with the *Phillips* standard. The Challenged Claims are unpatentable under the constructions below.

A. “wireless device”

The term “wireless device” is construed as:

a device capable of transmitting and receiving signals while unattached to any physical wires

Petitioner’s construction is consistent with the Markman Order. *See* EX1028, p.32. A wireless device “may include a wireless transmitter, radio frequency transmitter, mobile telephone, cellular telephone, text messaging device, portable computer, laptop computer, personal digital assistant, vehicle security device, vehicle tracking device and pager.” EX1001, 5:40-43. EX1008, ¶¶45-49.

B. “status of said wireless device”

The term “status of said wireless device” is construed to encompass:

information regarding the movement or orientation of the wireless device

In the Related Litigation, Petitioner and Owner stipulate that “status of said wireless device” should be construed as “information regarding the movement or orientation of the wireless device.” EX1023, p.1. EX1008, ¶¶50-51.

The “status” may encompass an attribute used to determine a most likely one of said plural streets upon which the wireless device is located. This is consistent with the claims and specification of the ’784 Patent. EX1008, ¶52.

For example, “[t]he status of a wireless device may be determined (905), and based upon the status, a most likely street upon which the wireless device is sited may be determined as the geographic location (907).” EX1001, 8:63-66. Claim 11 recites “wherein said status includes attributes selected from the group consisting of: direction of travel; speed of travel, and change in direction of travel.” EX1001, 10:7-9; EX1008, ¶53.

C. “determining said most likely street as a first one of said plural geographic locations”

In Related Litigation, the District Court determined this term is indefinite. *See* EX1028, pp.28-30. Petitioner does not directly construe this term for this Petition. Petitioner recognizes that this term encompasses the prior art of record, although the bounds of the term are not reasonably certain to a POSITA. EX1008, ¶54.

For purposes of this Petition, Petitioner recognizes that this term encompasses “determining a street upon which a wireless device is most likely located as a first geographic location of a geographic region,” although the bounds of the term are

unclear. Accordingly, the Grounds show where this phrase may be found in the prior art. EX1008, ¶55.

D. “determining a first point of said plural points that is in proximity to said first geographic location”

In Related Litigation, the District Court determined the term “in proximity” is indefinite. *See* EX1028, pp.24-28. Petitioner does not directly construe this term for this Petition. Petitioner recognizes that this term encompasses the prior art of record, although the bounds of the term are not reasonably certain to a POSITA. EX1008, ¶56.

For purposes of this Petition, Petitioner recognizes that this term encompasses “determining a point of the location information database that is in proximity to the first geographic location” and “in proximity” encompasses where the “first point” and “said first geographic location” match (*e.g.*, are the exact same location), although the bounds of this term and “in proximity” are unclear. Accordingly, the Grounds show where this term may be found in the prior art. EX1008, ¶57.

E. Order of “obtaining” and “determining” steps.

In the Related Litigation, Petitioner and Owner stipulate that the order of “obtaining” and “determining” steps of Claims 1 and 12 of the ’784 Patent should be construed as “‘obtaining . . .’ and ‘determining from said status . . .’ must occur before ‘determining said most likely street . . .,’ which must occur before

‘determining a first point of said plural points . . .’.” EX1027, p.1. Petitioner applies this construction. EX1008, ¶58.

For purposes of this Petition the term “circuitry” in independent Claim 12 under a *Phillips* plain and ordinary meaning construction refers to circuitry for generating a calibration database as recited in elements of Claim 12. *See* EX1001, 2:37-62, Fig. 5, controller 160, server 180.

F. Related Litigation Indefiniteness Positions

In the Related Litigation, Petitioner asserts the following terms are indefinite: “determining said most likely street as a first one of said plural geographic locations” (Claims 1, 12); and “in proximity” (Claims 1, 12). EX1025, pp.21-25. The District Court determined that these terms are indefinite. *See* EX1028, pp.24-30.

The Board has consistently held that Petitioners may assert such indefiniteness positions in the Related Litigation, while simultaneously arguing that the prior art discloses the elements containing those terms. *See Target Corp. v. Proxicom Wireless, Inc.*, IPR2020-00979, Paper 11 at 16–17 (PTAB Dec. 4, 2020); *Sony Interactive Entertainment LLC v. Bot M8, LLC*, IPR2020-00963, Paper 9 at 11 (PTAB Nov. 20, 2020). The Federal Circuit has confirmed the Board should consider prior art challenges in view of such litigation indefiniteness positions, including in circumstances where a Petitioner has asserted certain terms should be interpreted as means-plus-function terms, provided any “indefiniteness [does not]

render[] it impossible to adjudicate the prior-art challenge on its merits.” *Intel Corp. v. Qualcomm Inc.*, 21 F.4th 801, 812-814 (Fed. Cir. 2021).

Under all potential constructions, the Grounds herein apply a sufficient understanding of the Challenged Claims to “adjudicate the prior-art challenge on its merits.”

VII. PETITIONER HAS A REASONABLE LIKELIHOOD OF PREVAILING

The Challenged Claims are unpatentable over the prior art. EX1008, ¶¶23, 35, 81.

The Challenged Claims would have been obvious over the combination of Crane and Spain (Ground 1). Obviousness under 35 U.S.C. §103 is determined by evaluating the prior art scope and content, ascertaining differences between the claimed invention and the prior art, and resolving the level of ordinary skill in the relevant art, considering any objective evidence of “secondary considerations” relevant to obviousness. *Graham v. John Deere Co.*, 383 U.S. 1 (1966).

A. Scope and Content of Crane and Spain

The following sections detail where each element of Claims 1, 2, 10-13, 21, and 22 is found in the prior art. EX1008, ¶82.

1. Claim 1 (Preamble): “A method for generating a calibration database, comprising:”

Crane discloses the Preamble of Claim 1.³ EX1008, ¶110.

The term “calibration” encompasses “associating location data for a most likely street upon which a wireless device is located with latitude and longitude information from a location information database.” *See* EX1001, Abs. ll. 1-2, 1:25-33, 9:15-42; EX1008, ¶¶83-84.

Crane discloses a geographic database which associates location data for a most likely street upon which a wireless device is located with a first point at which a wireless device is located and that is determined to be proximate to the location data. “In FIG. 4, a data collection system 200 uses the data 140 collected by the cellular phone location determining system 104 in conjunction with the data 170 from the geographic database 172 to generate new data 210. The data collection system 200 matches the acquired cellular phone position data 140 to the locations of roads 152 represented by the data 170 in the geographic database 172.” EX1004, 3:49-55. The “database with new, more accurate data can be used for subsequent cellular phone location matching” [EX1004, 6:56-58], and constitutes the “calibration database” of the ’784 Patent’s Claim 1 Preamble. EX1008, ¶¶85-86.

³ Petitioner does not concede that the Preamble is limiting.

The updated geographic database 172 constitutes a “calibration database” of the ’784 Patent Preamble and can be used to “make derived database products.” EX1004, 6:62-63. The derived database products of Crane are also “calibration databases” as recited in the Preamble. EX1008, ¶¶87-88.

Crane states that “[t]he derived database products may include only portions of all the data in the master version of the database” and serve to “improve accuracy” of the geographic database—just as the “calibration database” in Claim 1 serves to enhance the accuracy of the collected data. EX1004, 6:62-65; EX1001, 1:66-2:4; EX1008, ¶¶89-90.

a. Element [1.1]: “receiving at a wireless device an attribute of a signal transmitted by a wireless transmitter to a mobile station in a region;”

Crane and Spain disclose Element [1.1]. EX1008, ¶91.

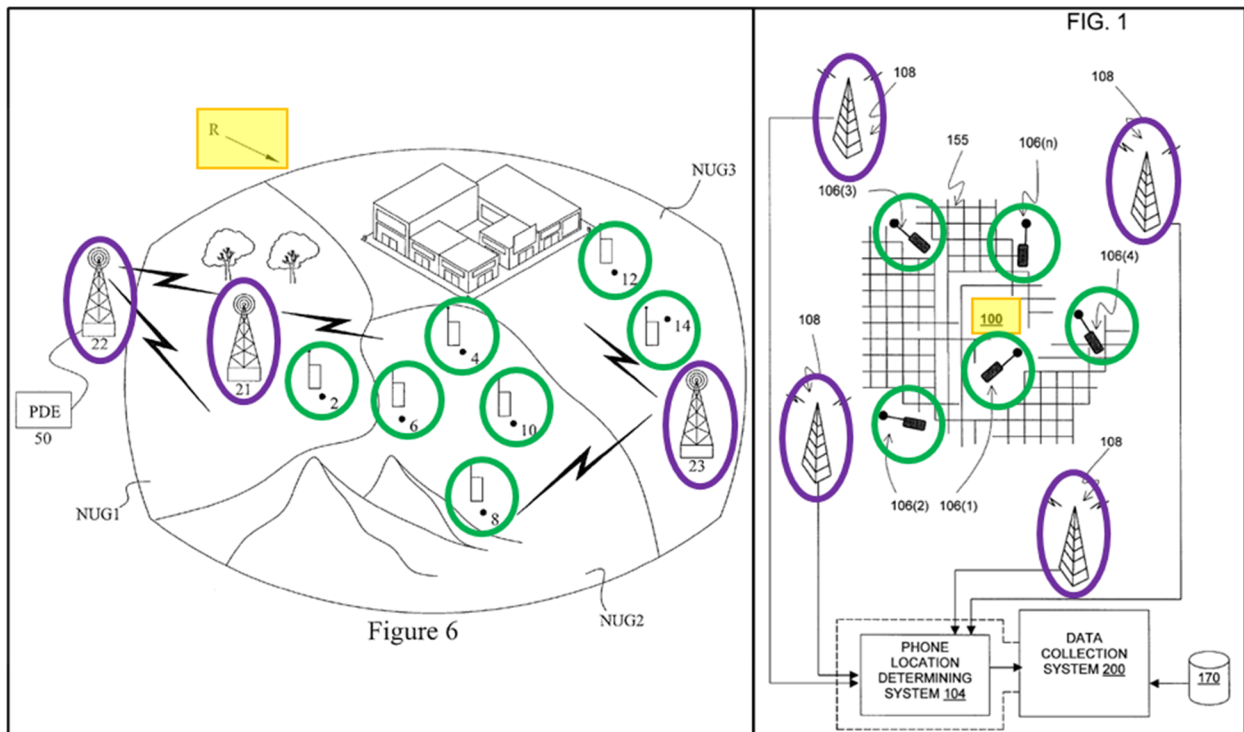
A “wireless device” refers to a device capable of transmitting and receiving signals while unattached to any physical wires. *See* Section VI.D. EX1008, ¶92.

Crane discloses the use of cellular phones, which fall under the definition of “mobile station” and “wireless device.” EX1004, 1:13-20. Crane recognizes that the cellular phones include wireless components (*e.g.*, while unattached to any physical wires) to both receive and transmit wireless signals. *Id.*; *see also id.* at 7:33-50 (disclosing wireless phones having hardware and software that determine the geographic location of the phone and sending that information to the data collection

system). Thus, Crane discloses mobile stations and wireless devices that receive and transmit wireless signals. EX1008, ¶¶93-96.

Crane also discloses a region as geographic area 100, including “mobile stations”/“wireless devices” and including base stations/towers. EX1004, Fig. 1 (illustrating geographic area 100 with cellular phones depicted as 106(1), 106(2), 106(3), 106(4), and 106(n)), and towers depicted as 108), 2:36-39, 2:66-3:7. The “towers 180 or other equipment located throughout the geographic area 100” making up the cellular phone location determining system 104 is a system component having a “wireless transmitter.” EX1004, Fig. 1, 3:1-7. The towers are shown in Fig. 1 to wirelessly provide inputs (*i.e.*, signals with signal strengths) to the cellular phone’s phone location determining system 104.

The claimed elements and Crane’s corresponding disclosures are visualized in a side-by-side of the ’784 Patent’s Fig. 6 and Crane’s Fig. 1 (reproduced and annotated below):



EX1008, ¶¶97-99.

“Mobile stations” and/or “wireless devices” that receive and transmit signals are circled in green. “Wireless transmitters” that send to and receive signals from the “mobile stations” are circled in purple. These “mobile stations” and “wireless transmitters” are located within a region (highlighted “R” in Fig. 6 of the ’784 Patent and “100” in Fig. 1 of Crane). EX1008, ¶100.

Crane does not expressly disclose details by which a cellular phone’s location is determined by “phone location determining system 104”. Fig 1 clearly depicts towers 108 providing signals to the phone location determining system. Crane does not expressly state that its cellular phones receive “an attribute of a signal” from a wireless transmitter. “An attribute of a signal” may encompass “information of a

signal transmitted by a wireless transmitter.” See EX1001, 5:59-64. For example, Claim 2 recites that the “attribute” can be “signal strength, Cell global identity, broadcast control channel, base identity code.” During Examination of a ’784 parent application, Owner asserted “[t]he ‘attribute’ as claimed is required to be from a signal transmitted from the wireless transmitter (base station), to the mobile station.” EX1006, p.10; EX1008, ¶¶101-102.

Because Crane’s cellular phones and systems are described as using “911” cellular phone location technologies and as using “any such technology that is presently available or that becomes available in the future ... suitable for the phone location determining system 104 in FIG. 1”, Crane contemplates a POSITA referencing other documents for such technologies. EX1004, 3:7-13; EX1008, ¶103.

Spain expressly discloses such technologies and therefore satisfies the missing limitation of locating a wireless device, such as a cellular phone, using attributes of a signal transmitted by a wireless transmitter to the device. EX1008, ¶104.

Spain, like Crane, discloses a “mobile station” and a “wireless device”: “Mobile Unit (mobile unit) in a wireless communication network.” EX1005, ¶[0030]:2-3; *see also id.* at ¶[0032]:3-4 (“the mobile unit could be equipped with a GPS receiver” allowing the mobile unit to determine its own location); EX1008, ¶105.

As with Crane, Spain discloses that its “mobile station”/“wireless device” wirelessly communicates with a “transmitter”: “communication link between the mobile unit and location server is through the base stations and base station controllers of the cellular network.” EX1005, ¶[0037]:7-10; *see also id.* at ¶[0031]:2-4, Fig. 1. Here, the “base station” of Spain is the claimed “transmitter.” EX1008, ¶¶106-107.

Spain expressly states that in its mobile device location determination system, a “mobile station”/“wireless device” receives an “attribute of a signal” from the “transmitter”: “The mobile unit is equipped with the appropriate circuitry and software to capture the required signals and their parameters.” EX1005, ¶[0043]:1-3; *see also id.* at ¶[0037]:10-11 (“data is communicated in both directions”). The “signals and their parameters” of Spain are the claimed “attribute of a signal,” *i.e.*, information of a signal as construed per Section VI.B. EX1008, ¶¶108-109.

Spain discloses that one of those “signals and their parameters” may be a signal strength, broadcast control channel number, or a base station identity code: “In one embodiment, signal strength is used.... In yet another embodiment, the identity of the signal source (*e.g.*, channel number or station code) is used.” EX1005, ¶[0041]; *see also id.* at ¶[0043]:11-13 (“the location of the transmitter is broadcast in the signal and is extracted in the mobile unit”). EX1008, ¶110.

The use of Spain's attribute of a signal transmitted by a wireless transmitter to a wireless device for determining the location of the wireless device by the phone location determining system 104 of Crane would have been implemented in a routine manner with a high probability of success to yield a predictable result, and would have been obvious to a POSITA. EX1008, ¶111.

Spain discloses an exemplary phone location determination system contemplated by Crane, such that Crane and Spain in combination disclose each and every element of [1.1]. EX1008, ¶112.

b. Element [1.2]: “wirelessly transmitting from said wireless device said attribute to a controller unit;”

Crane and Spain in combination disclose Element [1.2]. EX1008, ¶113.

A “controller unit” encompasses a component capable of monitoring data and entering data into a database. For example, the '784 specification states: “[t]he controller unit 160 may monitor the statistical sufficiency of the data available for the current location of the ATME 100, and may further implement tests.” EX1001, 6:5-7. Additionally, “examination of the reported data may be performed by the controller unit 160 and/or one or more of the other network components” and “controller 160 may signal to the ATME 100 when it no longer needs data.” EX1001, 7:1-3; 7:36-37. A “controller unit” encompasses a device capable of controlling another device and/or process, such as the ATME 100 and/or a calibration process. *See* EX1001, 7:1-67, 8:1-26.

Crane's "data collection system 200" is the claimed "controller unit." Crane's data collection system 200 monitors data. EX1004, 3:49-51 ("data collection system 200 uses the data 140 collected by the cellular phone location determining system 104"), 3:57-59 ("data collection system 200 includes a process 250 that acquires the data 140 indicating the positions of cellular phones in a geographic area"). Crane's data collection system 200 also enters data into a database, *e.g.*, updating database products. *See* EX1004, 3:52-56, 6:46-61, Figs. 4/7/8. Crane discloses that its "wireless devices" wirelessly communicate with the "controller" through the cellular phone location determining system 104. EX1004, 3:4-7; EX1008, ¶¶114-117.

Crane does not expressly disclose that its cellular phones transmit an "attribute of a signal" to data collection system 200, but Spain expressly discloses this limitation as discussed in Element [1.1], *supra*. EX1008, ¶118.

Like Crane, Spain discloses that its mobile unit wirelessly communicates with a controller: "communication link between the mobile unit and location server is through the base stations and base station controllers of the cellular network." EX1005, ¶[0037]:7-10; *see also id.* at ¶[0031]:2-4, ¶[0037]:1-5, Fig. 1. Spain discloses that its mobile unit transmits the "attribute of a signal" to the controller. EX1005, ¶[0043]:1-3 ("The mobile unit ... capture[s] the required signals and their parameters."), ¶[0037]:10-11 ("data is communicated in both directions", *i.e.*, from

the base station to the mobile unit and from the mobile unit to the base station and base station controllers). EX1008, ¶¶119-120.

The use of Spain's attribute for determining the location of the wireless device by the phone location determining system of Crane would have been implemented in a routine manner with a high probability of success to yield a predictable result, and would have been obvious to a POSITA. EX1008, ¶121.

Crane and Spain in combination disclose each element of [1.2]. EX1008, ¶122.

- c. **Element [1.3]: “obtaining location data of a plurality of geographic locations situated within said region, wherein said location data is determined using said wireless device, and wherein said region contains plural streets and intersections of said plural streets;”**

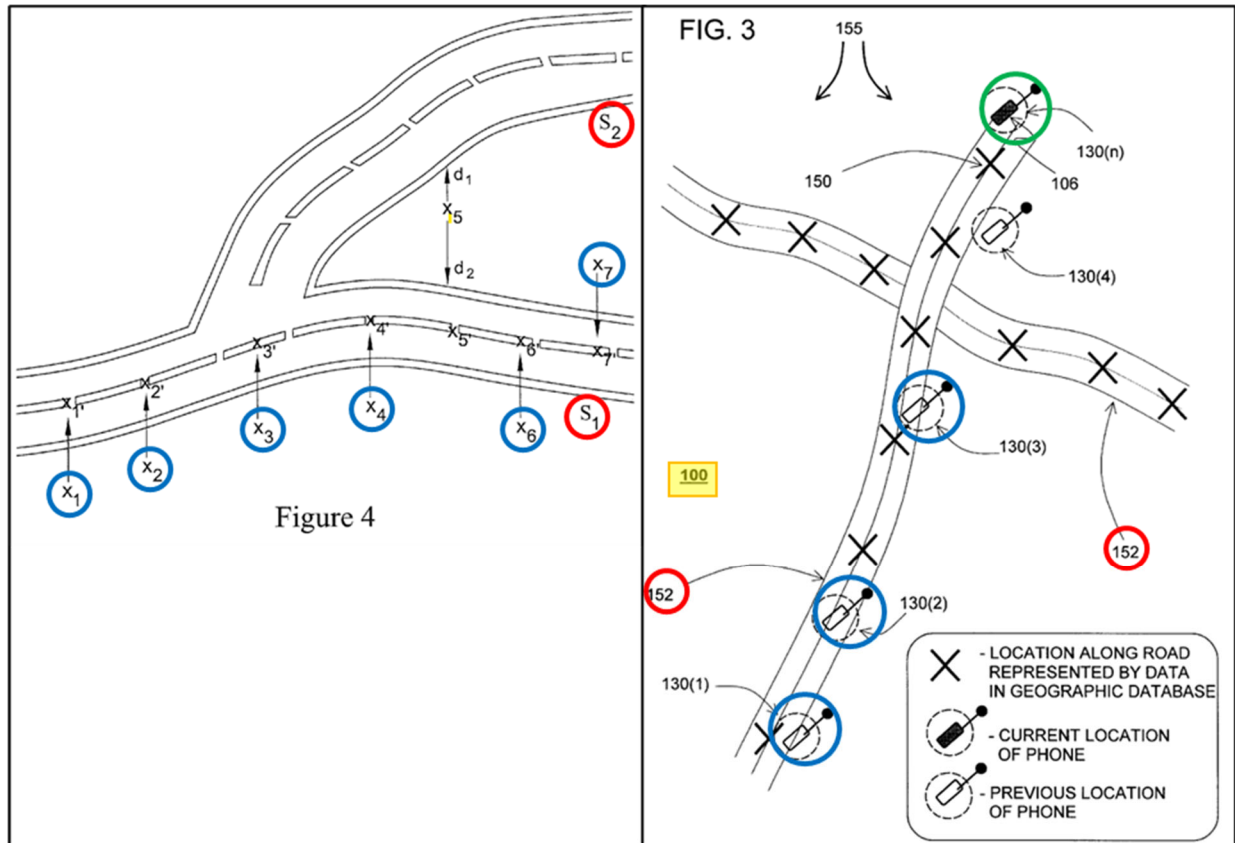
Crane discloses Element [1.3]. Crane discloses obtaining location data using Crane's “phone location determining system 104” for generating the updated geographic database with “new, more accurate data” (*i.e.*, a calibration database) in the same manner as is described with respect to Fig. 9 of the '784 Patent [EX1001, 8:55-60]. *See* EX1004, 3:49-52; 6:56-58. EX1008, ¶¶123-124.

Crane also discloses using such wireless device location data for providing a wireless device “status” (*e.g.*, information regarding the movement or orientation of the wireless device; *see* Section VI.H., *supra*). *See* EX1004, 4:27-34. EX1008, ¶¶125-127.

“Location data of a plurality of geographic locations” encompasses location data for geographic locations within a geographic region obtained by a wireless device. *See* EX1001, 8:28-41, 8:43-54. For example, the ’784 Patent discusses “obtaining location data for a plurality of geographic locations situated within a region from the wireless device and providing a location information database including latitude and longitude information for each of a plurality of points within the region.” EX1001, 2:25-29. The ’784 Patent discloses that “location data may be obtained for a geographical region (operation 701). The first set of location data may be stored in a database (operation 702).” EX1001, 8:29-31; EX1008, ¶¶128-129.

Crane discloses obtaining a set of location data (*e.g.*, 140) for geographic locations (*e.g.*, 130(1), 130(2), ... 130(n)) situated within a region (*e.g.*, geographic region 100). EX1004, 3:16-32, Fig. 2. Crane discloses that the location data is determined using the cellular phone “wireless device.” EX1004, 1:13-20, 3:4-13. EX1008, ¶¶130-131.

Crane discloses that the “region contains plural streets and intersections of said plural streets.” EX1004, Fig. 3 (depicting at least two streets of road network 155 that intersect in region 100), 3:33-48. The claimed elements and Crane’s corresponding disclosures are visualized in a side-by-side of the ’784 Patent’s Fig. 4 and Crane’s Fig. 3 (reproduced/annotated below):



EX1008, ¶¶132-133.

“Mobile stations”/“wireless devices” that receive and transmit signals are circled in green (“106” in Fig. 3 of Crane). The “plurality of geographic locations” are circled in blue. These “mobile stations”/“wireless devices” and the “plurality of geographic locations” are located within a region (highlighted as “100” in Fig. 3 of Crane). Both figures illustrate a “region contain[ing] plural streets and intersections of said plural streets” (each street label is circled in red, “S1” and “S2” in Fig. 4 of the ’784 Patent and “152” in Fig. 3 of Crane). EX1008, ¶134.

Thus, Crane discloses each element of [1.3]. EX1008, ¶135.

- d. Element [1.4]: “providing a location information database wherein said location database includes latitude and longitude information for each of a plurality of points within said region;”**

Crane discloses Element [1.4]. EX1008, ¶136.

A “location information database” encompasses a database of latitude and longitude information for plural points in a geographic region. *See* EX1001, 2:14-16. For example, “[a] location information database having accurate latitude and longitude information for plural points in the same geographic region may be provided, such as a street database.” EX1001, 8:60-63. During Examination of a ’784 parent application, Owner stated “[t]he location information database includes geographic points associated with, for example, roads or other geographic features. These points are distinct from the geographic locations described above and obtained by the wireless device.” EX1007, p.11. EX1008, ¶¶137-138.

Crane discloses providing a location information database (*e.g.*, geographic database 172) containing latitude and longitude information for plural points (*e.g.*, “data 174 representing the coordinates of the points along the roads 152 that form the road network 155 represented by the geographic database 172”) in a geographic region (*e.g.*, 100). EX1004, Figs. 3/4 (depicting database 172 containing road data 174 with the specific latitude and longitude information), 3:45-48. EX1008, ¶¶139-140.

Crane discloses each element of [1.4]. EX1008, ¶141.

e. **Element [1.5]: “determining a status of said wireless device;”**

Crane discloses Element [1.5]. EX1008, ¶142.

Per Section VI.H., a “status of said wireless device” means information regarding the movement or orientation of the wireless device. Examples of such a status include the direction of travel, speed of travel, and a change in direction of travel, according to the ’784 Patent. EX1001, 10:7-9 (Claim 11). EX1008, ¶143.

Crane discloses the status of its cellular phones:

As mentioned above, the cellular phone location determining system 104 can acquire a plurality of locations of a single phone over a period of time. Each position of the cellular phone relative to the previous (in time) position, a *rate of travel* of the cellular phone across a geographic area can be determined. *A direction of travel* can also be determined.

EX1004, 4:27-34 (emphasis added); EX1008, ¶144.

In the Related Litigation, Petitioner and Owner stipulate that “status of said wireless device” should be construed as “information regarding the movement or orientation of the wireless device.” EX1023, p.1. Crane discloses “information regarding the movement or orientation of the wireless device” because Crane discloses determining positions of cellular phones relative to previous positions in

time, a rate of travel of the cellular phone, and a direction of travel of a cellular phone. EX1004, 4:27-34; EX1008, ¶145.

Crane discloses each element of [1.5]. EX1008, ¶146.

f. Element [1.6]: “determining from said status a most likely one of said plural streets upon which said wireless device is located;”

Crane discloses Element [1.6]. EX1008, ¶147.

“A most likely one of said plural streets upon which said wireless device is located” encompasses a street on which a wireless device is most likely located. For example, “based upon the status, a most likely street upon which the wireless device is sited may be determined as the geographic location (907).” EX1001, 8:64-66. Owner’s Preliminary Infringement Contentions characterize this term as “whether a device is located on a street and what street the device is likely located on.” EX1010; EX1011, p.8, 1[g]. Owner states that a device’s “direction and speed of travel, including in conjunction with other information and data” may be used “to determine whether the device is located on a street and what street the device is likely located on.” *Id.* EX1008, ¶¶148-149.

Crane determines from the status (*e.g.*, direction of travel, rate of travel), the most likely street upon which the cellular phone is located:

[T]he data collection system 200 includes a process 256 that matches the acquired cellular phone positions 140 to

positions of roads 152 which are represented by the data 170 in the geographic database 172....

The matching process 256 optionally includes other processes 260 that perform analysis and filtration of the data 140. The analysis and filtration processes 260 may make use of several assumptions and/or observations.... For example, if the acquired cellular position data 140 *indicate that the cellular phone is on or within a certain threshold distance of the position of a road 152 or is moving, the cellular phone can be assumed to be inside of a vehicle traveling along the road [152]....* The analysis process 260 computes a distance 270 between each of the locations 130 of the phone and the straight dashed lines 266 which represent the roads. *If the distances 270 are sufficiently small, the cellular phone can be assumed to be in a vehicle traveling along the actual [i.e., most likely] road.*

Another operation that can be performed in the analysis and filtration step 260 is to *determine a rate of travel of the cellular phone*. The rate of travel can be used as a factor when determining whether the cellular phone is located in a vehicle travelling along the road.

EX1004, 3:57-47 (emphasis added). Crane uses the status of the cellular phone (*i.e.*, direction of travel in relation to its distance from known roads, whether it is moving,

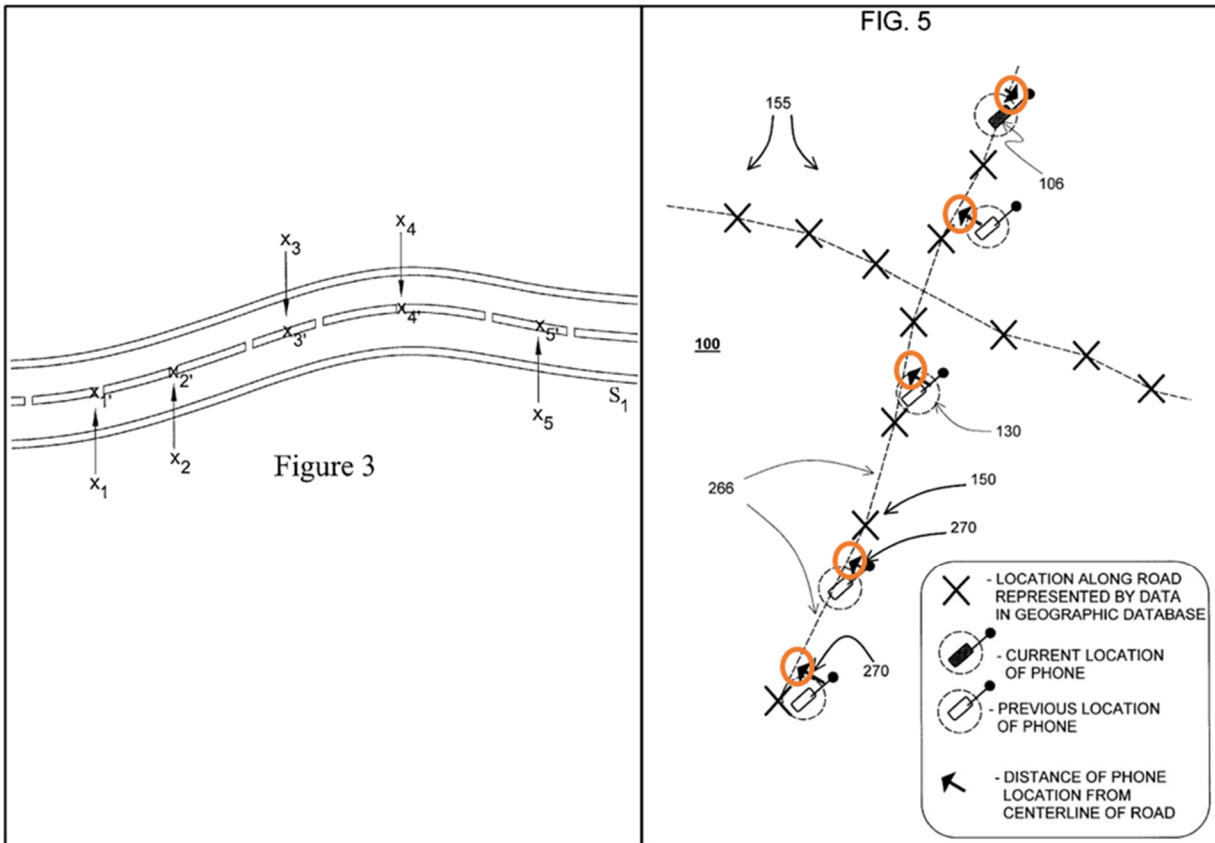
and/or the rate of travel), to determine the most likely street (*e.g.*, 152) that the vehicle carrying the cellular phone is travelling along. EX1008, ¶¶150-151.

Crane discloses each element of [1.6]. EX1008, ¶152.

g. Element [1.7]: “determining said most likely street as a first one of said plural geographic locations;”

Crane discloses Element [1.7]. EX1008, ¶153.

Per Section VI.C., “determining said most likely street as a first one of said plural geographic locations” at least encompasses determining a street on which a wireless device is most likely located as a first geographic location of a geographic region. This is consistent with the claim language, however, the bounds of the term are unclear. Crane discloses at least determining a street on which a wireless device is most likely located as a first geographic location of a geographic region. Again, the claimed elements and Crane’s corresponding disclosures are visualized in a side-by-side of the ’784 Patent’s Fig. 3 and Crane’s Fig. 5 (reproduced and annotated below):



EX1008, ¶¶154-155.

In the '784 Patent, location data points X_1 , X_2 , X_3 , X_4 , and X_5 are measured by a mobile station/wireless device. EX1001, 4:19-20, Fig. 3. Once the location data points are obtained, a location information database uses the measured location data points (X_1 - X_5) to determine points located on the most likely street X_1' , X_2' , X_3' , X_4' , and X_5' . EX1001, 4:21-25, Fig. 3. Here, the most likely street is S_1 . Based on the specification and claim language, the location data points (e.g., X_1 - X_5) measured by a mobile station/wireless device may be used to determine street S_1 as a street on which a wireless device is most likely located. Per Section VI.J., “determining said

most likely street as a first one of said plural geographic locations” may at least encompass determining a street on which a wireless device is most likely located as a first geographic location of a geographic region. Although the bounds of the term are unclear, Crane discloses determining a street on which a wireless device is most likely located as a first geographic location of a geographic region by disclosing an example matching Fig. 3 of the ’784 Patent. EX1008, ¶¶156-160.

Crane discloses location data points 140 (*see e.g.*, Figs. 2/4) measured by a mobile station 106 (*see e.g.*, 130(1), 130(2), 130(4), and 130(n) in Fig. 3 of Crane). Once the location data points are obtained, a location information database (*e.g.*, geographic database 172 prior to being updated) is used to determine the points located on a street on which a wireless device is most likely located as plural geographic locations (*e.g.*, orange circles in annotated Crane Fig. 5). EX1004, 3:15-56, Fig. 5. Thus, Crane determines a first mostly likely street location of the geographic locations, a second most likely street location of the geographic locations and so forth. EX1008, ¶¶161-162.

Crane discloses each element of [1.7]. EX1008, ¶163.

h. Element [1.8]: “determining a first point of said plural points that is in proximity to said first geographic location;”

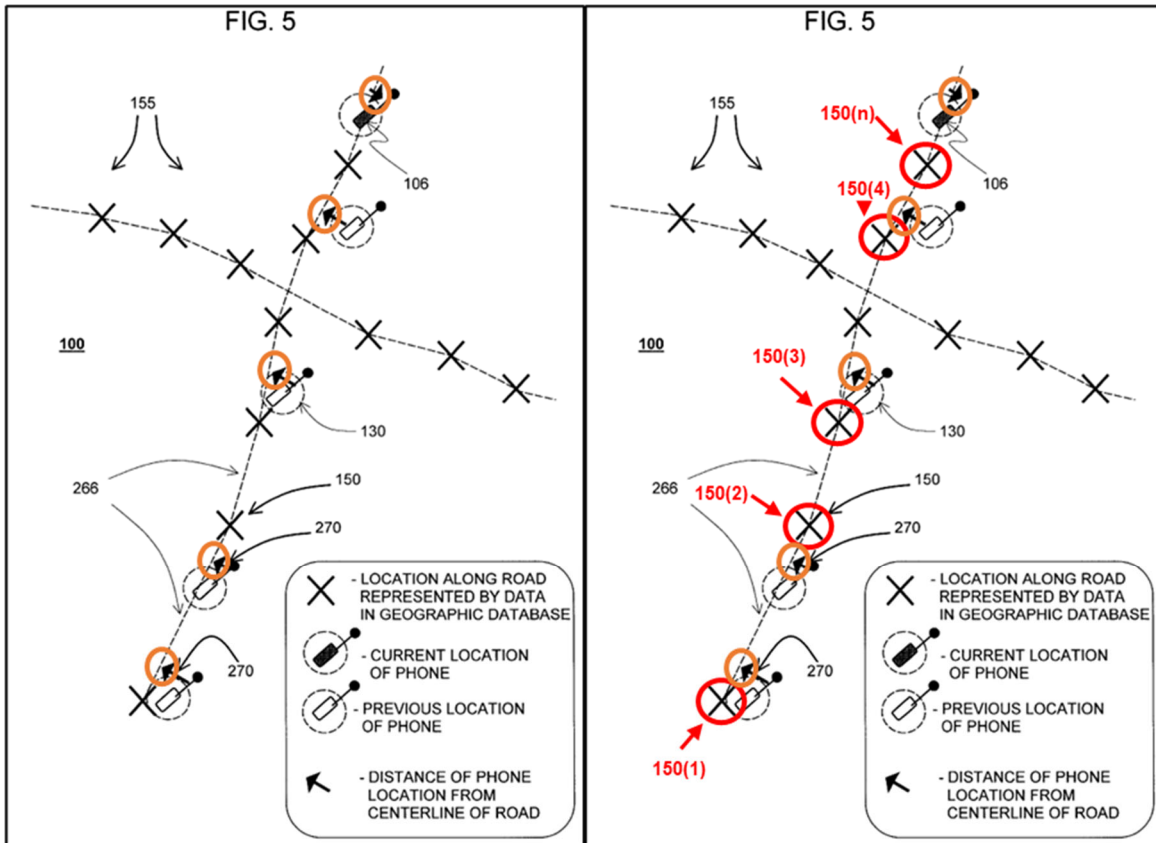
Crane discloses Element [1.8]. EX1008, ¶164.

Per Section VI.D., “determining a first point of said plural points that is in proximity to said first geographic location” encompasses determining a point from the location information database that is in proximity to the first geographic location. “In proximity” is indefinite as the bounds of the term are unclear. *See* Section VI.D, *supra*. Petitioner recognizes that “in proximity” encompasses where the “first point” and “said first geographic location” match (*e.g.*, the first point and said geographic location are the exact same location). Crane discloses determining a first point of the plural points that is in proximity to the first geographic location. EX1008, ¶165.

Crane describes a matching process where the “data collection system 200 matches the acquired cellular phone positions 140 to positions of roads 152 which are represented by the data 170 in the geographic database 172. Various techniques for map matching can be used. For example, map matching techniques are used in navigation systems to match geographic coordinates obtained by GPS systems to geographic data contained in geographic databases that define road positions.” EX1004, 3:59-67. Crane discloses a matching process 256 where, “the acquired cellular position data 140 indicate that the cellular phone is ***on or within a certain threshold distance of the position of a road 152.***” EX1004, 4:5-7 (emphasis added). Crane then discloses providing “straight dashed lines 266 that ***connect the points 150 that are located along the actual roads*** (152 shown in FIG. 3) and for which data (174 in FIG. 4) are included in the geographic database to represent the positions

of the roads.” EX1004, 4:10-14. “The straight dashed lines 266 in FIG. 5 approximate the actual paths of the roads represented by the points 150.” EX1004, 4:13-14. Per Element [1.7], Crane makes use of the matching process 256 and the dashed lines 266 to determine at least a first point of said plural points that exactly matches or is on a first geographic location. EX1008, ¶¶166-170.

In addition to using a location information database (*e.g.*, geographic database 172) to determine the points located on the most likely street as plural geographic locations, Crane determines corresponding plural points that are at least “in proximity” to the respective plural geographic locations by a plural point and a geographic location having a matching location determined by the matching process 256. *See* EX1004, 4:1-20. The claim elements and Crane’s corresponding disclosures are visualized in annotated versions of Crane’s Fig. 5:



EX1008, ¶¶171-172.

The left-hand panel discloses the determination of points located on the most likely street as plural geographic locations (orange circles). *See* Section VII.A.1.i. The right-hand panel discloses “a plurality of points 150 ... shown located along the roads 152.” EX1004, 3:38-39, Fig. 3. Further, “[t]he points 150 are positions along each of the roads 152.” EX1004, 3:39-40, Fig. 3. “Each of the points 150 is associated with geographic coordinates that define the location of the point in the geographic area 100.” EX1004, 3:40-42, Fig. 3. Each X circled in red in the right-hand panel is one of a “plurality of points within said region.” The plural geographic locations (orange circles) are illustrated as being “on or within a certain threshold

distance of the position of a road 152” and thus are “on or within a certain threshold distance” of a plural geographic location. EX1004, 4:7-8. Crane determines a plural point (red circles) to at least match a geographic location. EX1008, ¶¶173-176.

Crane discloses determining the plural points that are “in proximity” to the geographic locations because Petitioner recognizes that “in proximity” at least encompasses where the “first point” and “said first geographic location” match (*e.g.*, the first point and said geographic location are the exact same location). EX1004, 4:1-3, 4:61-63, Fig. 4; EX1008, ¶177.

Crane discloses each and every element of [1.8]. EX1008, ¶178.

- i. Element [1.9]: “entering said first point in said calibration database and associating the location data for the first one of said plural geographic locations determined by said wireless device with the first point.”**

Crane discloses Element [1.9]. EX1008, ¶179.

The term “calibration” encompasses “associating location data for a most likely street upon which a wireless device is located with latitude and longitude information from a location information database.” Crane discloses entering the first point (*e.g.*, corresponding to a wireless device location) into the geographic database to create a new, more accurate database (*i.e.*, a calibration database), from which additional database products can be derived. EX1008, ¶¶180-181.

For example, in Fig. 4 Crane illustrates entering the first point from the geographic database 172 into the data collection system 200 to generate new data.

EX1004, Fig. 4, 3:49 (“In FIG. 4, a data collection system 200 uses the data 140 collected by the cellular phone location determining system 104 in conjunction with the data 170 from the geographic database 172 to generate new data 201.”). In Fig. 8, the output of the data collection system 200 is supplied to database updating processes which update the geographic database 172 with new, more accurate data (*i.e.*, thereby creating a calibration database). The calibration database that is generated and curated by data collection system 200 makes use of new data 201 and can be used to make “derived database products [that] may include only portions of all the data in the master version of the [geographic] database.” EX1004, 4:66-5:3, 5:52-53, 6:62-65; EX1008, ¶¶182-183.

“Associating the location data for the first one of said plural geographic locations determined by said wireless device with the first point” encompasses associating, in a database (*e.g.*, the calibration database), the location data for a most likely street upon which a wireless device is located with a first point (*e.g.*, a wireless device location) that is determined to be proximate to the location data. For example, Fig. 8 illustrates generating a calibration database wherein “[f]rom the plural points in the location information database a first and second point may be determined that are proximate to a location in the location data (805). Using interpolation between the first and second points a third point may be determined (807). The third point may be entered into a calibration database as the location associated with the location

data for the geographic location (809).” EX1001, 8:48-54. Thus, an interpolated point is entered as a new point into the calibration database. EX1008, ¶¶184-185.

Fig. 9 illustrates generating a calibration database using a wireless device, wherein location data is obtained using a wireless device. “The status of the wireless device may be determined (905), and based upon the status, a most likely street upon which the wireless device is sited may be determined as the geographic location (907). A first point from the location information database may be determined that is in proximity to the first geographic location (909) and the first point may then be entered in the calibration database (911).” EX1001, 8:63-9:2. Thus, a first point representing a location of a wireless device is entered as a new point into the calibration database. EX1008, ¶186.

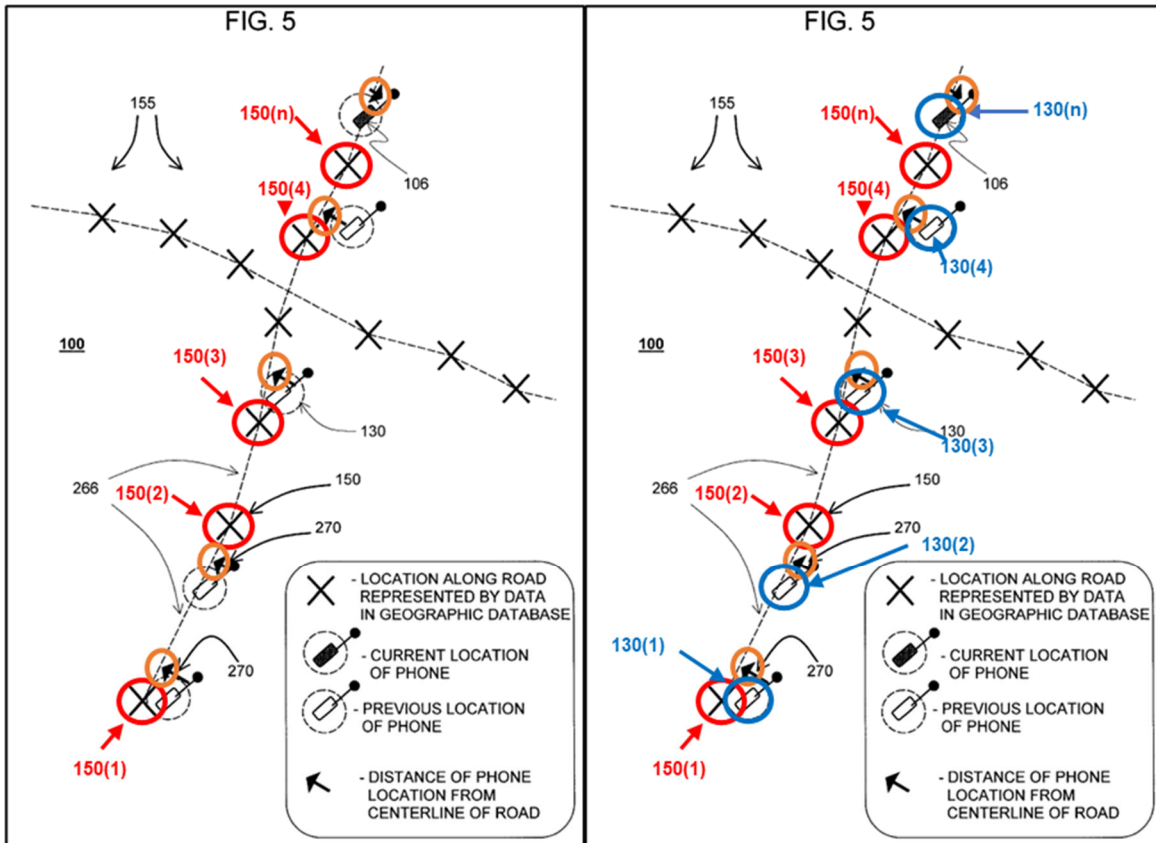
“Associating” also encompasses “matching,” “comparing,” and/or “modifying” in a database. For example, “[a] street database may be used as a supplemental data source to compare and/or check the integrity of collected location data.” EX1001, 3:42-44. “Checking the integrity of each retrieved ground truth location point may include matching each point to the closest street in the street database.” EX1001, 4:7-9. Additionally, “the location data points originally retrieved from a calibration data collection device may be replaced and/or modified with the data derived from the street database.” EX1001, 4:52-55; EX1008, ¶187.

Crane discloses associating the location data for the first one of the plural geographic locations determined by the wireless device (*e.g.*, location data of a most likely street upon which the wireless device is located) with the first point (*e.g.*, the wireless device location):

Referring to FIG. 4, the data collection system 200 includes a process 250 that acquires the data 140 indicating the positions of cellular phones in a geographic area [“location data”]. Then the data collection system 200 includes a process 256 that *matches* the acquired cellular phone positions 140 to positions of roads 152 [“plural points”] which are represented by the data 170 in the geographic database 172.

EX1004, 3:57-63 (emphasis added); EX1008, ¶188.

Each of Crane’s multiple measured location data points (*e.g.*, 130(1), 130(2), 130(n)) are associated/matched to points located on the most likely street (*e.g.*, 150) that are stored in the street database (*e.g.*, 172). EX1004, 3:15-56. To visualize Crane’s map matching process, annotated versions of Crane Fig. 5 are provided below, wherein cellular phone positions 130(1), 130(2), 130(4), and 130(n) (“location data”) are taken from Fig. 3 and superimposed onto Fig. 5 (see blue text, arrows and circles):



EX1008, ¶¶189-190.

The left-hand panel shows the determination of (i) points located on the most likely street as plural geographic locations (orange circles) and (ii) plurality of points located along the road (red circles, text, and arrows) that were determined to be in proximity to the plural geographic locations. See Section VII.A.1.h. EX1008, ¶191.

The right-hand panel shows each of the cellular phone locations (130(1), 130(2), 130(3), 130(4), and 130(n)) (*i.e.*, location data for the plural geographic locations) that is matched with respective positions (150(1), 150(2), 150(3), 150(4), and 150(n)) for which data are included in the geographic database to represent the positions of the roads (*i.e.*, plurality of points). EX1004, 4:9-14. EX1008, ¶192.

The combined data in the geographic database constitutes a new, more accurate database wherein mobile device location data is associated with road location data. Further, a POSITA would have understood from the '748 Patent that the location data for the plural geographic locations and the respective positions of such location data in the geographic database as taught by Crane and Spain could all be stored in the same database. EX1001, 3:48-50 (“[t]he street database data may be stored in the same database [] used to store the collected ground truth data.”); EX1008, ¶¶193-194.

Crane discloses each element of [1.9]. EX1008, ¶195.

2. Claim 2: “The method of claim 1 wherein said attribute is selected from the group consisting of: signal strength, Cell global identity, broadcast control channel, base station identity code.”

See Claim 1. Crane and Spain in combination disclose the subject matter of Claim 2. EX1008, ¶196.

Per Section VII.A.1.c., Spain discloses that one of its “signals and their parameters” may be a signal strength, broadcast control channel number, or a base station identity code: “In one embodiment, signal strength is used.... In yet another embodiment, the identity of the signal source (*e.g.*, channel number or station code) is used.” EX1005, ¶[0041]:3-8; EX1008, ¶197.

The use of Spain’s attribute for determining the location of the wireless device by the phone location determining system of Crane would have been implemented

in a routine manner with a high probability of success to yield a predictable result, and would have been obvious to a POSITA. EX1008, ¶255.

Crane and Spain in combination disclose each element of Claim 2. EX1008, ¶198.

3. Claim 10: “The method of claim 1 wherein said location database is a street database.”

See Claim 1. Crane and Spain in combination disclose the subject matter of Claim 10. EX1008, ¶199.

Crane discloses providing a “road network 155 [] represented by data 170 in a geographic database 172 [*i.e.*, location database].” EX1004, 3:37-38. “Included among the data 170 are data 174 representing the coordinates of the points along the roads 152 that form the road network 155 represented the geographic database 172.” EX1004, 45-47. Thus, Crane expressly discloses that a location database that is a street database. EX1008, ¶¶200-202.

Crane and Spain in combination disclose each element of Claim 10. EX1008, ¶203.

4. Claim 11: “The method of claim 1 wherein said status includes attributes selected from the group consisting of: direction of travel; speed of travel, and change in direction of travel.”

See Claim 1. Crane and Spain disclose the subject matter of Claim 11. EX1008, ¶204.

Per Section VII.A.1.g., Crane discloses a status of the cellular phone (*e.g.*, rate of travel and direction of travel). EX1004, 4:27-34; EX1008, ¶205.

Crane and Spain in combination disclose each element of Claim 11. EX1008, ¶206.

5. **Claim 12: “A system for generating a calibration database, comprising: a wireless device for determining location data at a plurality of geographic locations situated within a region, wherein said region contains plural streets and intersections of said plural streets, said wireless device receiving an attribute of a signal transmitted by a wireless transmitter to a mobile station in said region; a wireless device transmitter for transmitting from said wireless device said attribute to a controller unit; a location information database wherein said location database includes latitude and longitude information for each of a plurality of points within said region; circuitry for determining a status of said wireless device; circuitry for determining from said status a most likely one of said plural streets upon which said wireless device is located; circuitry for determining said most likely street as a first one of said plural geographic locations; circuitry for determining a first point of said plural points that is in proximity to said first geographic location; and circuitry for entering said first point in said calibration database; and associating the location data for the first one of said plural geographic locations determined by said wireless device with the first point.”**

Crane and Spain disclose the subject matter of Claim 12. EX1008, ¶¶207-242.

Crane discloses a system for generating the calibration database. EX1004, Abstract; *see also id.*, 2:39-33, 6:62-65; EX1008, ¶¶207-210.

Per Section VII.A.1.c., Crane discloses a wireless device. EX1008, ¶¶211-214.

As discussed in Section VII.A.1.c., Crane discloses a wireless device transmitter. EX1008, ¶¶215-220.

As discussed in Section VII.A.1.f., Crane discloses a location information database. EX1008, ¶¶221-223.

Crane also discloses circuitry for (i) determining a status of the wireless device; (ii) determining a mostly likely one of the plural streets upon which the wireless device is located based on the status of the wireless device; (iii) determining the most likely street as a first one of the plural geographic locations; (iv) determining a first point of the plural points that is in proximity to the first geographic location; and (v) entering the first point in the calibration database and associating the location data for the first one of the plural geographic locations determined by the wireless device with the first point. For example, Crane discloses that “[t]he cellular phone location determining system 104 may include appropriate *hardware* and software that are able to locate the positions of cellular phones 106 in the geographic area.” EX1004, 3:4-7 (emphasis added); EX1008, ¶¶224-241.

Fig. 1 of Crane illustrates that the data collection system 200 contains physical components (*e.g.*, circuitry) enabling it to (i) determine a status of the wireless device; (ii) determine a mostly likely one of the plural streets upon which the wireless device is located based on the status of the wireless device; (iii) determine the most likely street as a first one of the plural geographic locations; (iv) determine

a first point of the plural points that is in proximity to the first geographic location; and (v) enter the first point in the calibration database and associate the location data for the first one of the plural geographic locations determined by the wireless device with the first point. EX1004, 2:36-40; *see also* Sections VII.A.1.g.-k. in connection with Claim 1. EX1008, ¶¶224-241.

Crane and Spain in combination disclose each element of Claim 12. EX1008, ¶242.

6. **Claim 13: “The system of claim 12 wherein said attribute is selected from the group consisting of: signal strength, Cell Global identity, broadcast control channel, base station identity code.”**

See Claim 12. Crane and Spain in combination disclose the subject matter of Claim 13. EX1008, ¶243.

Per Section VII.A.1.c., Spain discloses that one of its “signals and their parameters” may be a signal strength, broadcast control channel number, or a base station identity code: “In one embodiment, signal strength is used.... In yet another embodiment, the identity of the signal source (*e.g.*, channel number or station code) is used.” EX1005, ¶[0041]:3-8; EX1008, ¶244.

The use of Spain’s attribute of a signal transmitted by a wireless transmitter to a wireless device for determining the location of the wireless device by the phone location determining system of Crane would have been implemented in a routine

manner with a high probability of success to yield a predictable result, and would have been obvious to a POSITA. EX1008, ¶255.

Crane and Spain in combination disclose each element of Claim 13. EX1008, ¶245.

7. Claim 21: “The system of claim 12 wherein said location database is a street database.”

See Claim 12. Crane and Spain disclose the subject matter of Claim 21. EX1008, ¶246.

Crane discloses providing a “road network 155 [] represented by data 170 in a geographic database 172 [*i.e.*, location database].” EX1004, 3:37-38. “Included among the data 170 are data 174 representing the coordinates of the points along the roads 152 that form the road network 155 represented the geographic database 172.” EX1004, 45-47. Thus, Crane expressly discloses that the location database is a street database. EX1008, ¶¶247-249.

Crane and Spain in combination disclose each element of Claim 21. EX1008, ¶250.

8. Claim 22: “The system of claim 12, wherein said status includes attributes selected from the group consisting of: direction of travel; speed of travel, and change in direction of travel.”

See Claim 12. Crane and Spain disclose the subject matter of Claim 22. EX1008, ¶251.

Per Section VII.A.1.g., Crane discloses a status of the cellular phone (*e.g.*, rate of travel and direction of travel). EX1004, 4:27-34; EX1008, ¶252.

Crane and Spain in combination disclose each element of Claim 22. EX1008, ¶253.

B. A POSITA Would Have Been Motivated to Implement Spain's Signal Attribute Conveyance in Crane's Methods and Systems

A POSITA would have been motivated to modify the methods and systems of Crane to incorporate (i) receiving a signal attribute from a wireless transmitter and (ii) sending a signal attribute to a controller unit, as taught by Spain.

Crane and Spain both seek to improve on geolocation by incorporating supplemental information. EX1004, 2:5-8, 3:11-13 (“any such technology that is presently available or that becomes available in the future may be suitable for the phone location determining system.”), 7:33-35; EX1005, ¶[0034]:5-7 (“the present invention complements existing location determining technologies and, when used in conjunction with them, augments their performance.”). The use of Spain's attribute of a signal transmitted by a wireless transmitter to a wireless device for determining the location of the wireless device by the phone location determining system of Crane would have been implemented in a routine manner with a high probability of success to yield a predictable result, and would have been obvious to a POSITA. EX1008, ¶254.

C. A POSITA Would Have Had a Reasonable Expectation of Successfully Implementing Spain’s Signal Attribute Conveyance Method in Crane’s Methods and Systems

A POSITA would have had a reasonable expectation of successfully modifying the methods and systems of Crane to incorporate (i) receiving a signal attribute from a wireless transmitter and (ii) sending a signal attribute to a controller unit, as taught by Spain. Neither prior art disclosure, either alone or in combination, requires additional infrastructure to affect a successful outcome. EX1004, 8:14-18 (“the present system and method provide for collecting geographical data using an existing infrastructure that covers all roads.”); EX1005, ¶[0034]:1-4 (“The present invention provides a new method for determining the location of mobile unit 10 which ... does not require any infrastructure modifications.”); EX1008, ¶255.

VIII. OTHER CONSIDERATIONS

A. Secondary Considerations

Petitioner is not aware of any secondary considerations evidence bearing any nexus to the purported claimed invention. Any purported evidence of secondary considerations that Owner may present in this proceeding would be insufficient to overcome the strong evidence of obviousness of the Challenged Claims. EX1008, ¶¶256-259.

B. Discretion to Institute

1. The Board should not deny this Petition under §314(a)

The '784 Patent has not been challenged in any prior AIA trial proceeding, and this Petition is not a “follow-on” petition. Events in the Related Litigation do not warrant denial, and application of the *Fintiv* factors weighs against discretionary denial as explained below.

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

The Related Litigation is ongoing and Petitioner will seek a pre-institution stay. At worst, this factor is neutral because the Board has declined to predict whether the district court will stay the related litigation. *Sand Revolution II v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB June. 16, 2020); *Apple Inc. v. Parus Holdings*, IPR2020-00686, Paper 9 at 10 (Sept. 23, 2020).

b. Factor 2: Proximity of the court’s trial date to the Panel’s projected statutory deadline for a final written decision

“The PTAB will weigh this factor against exercising discretion to deny institution under *Fintiv* if the median time-to-trial is around the same time or after the projected statutory deadline for the PTAB's final written decision.” Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA-Post Grant Proceedings with Parallel District Court Litigation*, USPTO, at 8-9 (June 21, 2022). Such is the

case here and trial has not yet been scheduled. Thus, this factor favors institution or at worst is neutral. *See Microsoft Corporation v. D3D Technologies, Inc.*, IPR2021-00703, Paper 10 at 12 (PTAB Oct. 12, 2021) (concluding that although the final written decision is projected to issue about a month after the trial date, *Fintiv* Factor 2 is neutral); *Laboratory Corporation of America Holdings v. Ravgen, Inc.*, IPR2021-01054, Paper 11 at 17 (Nov. 5, 2021) (“Given the present uncertainty on this record about when trial in the district court might occur for the Labcorp lawsuit, we determine that this factor does not weigh in favor of discretionary denial.”).

c. Factor 3: Investment in the parallel proceeding by the court and the parties

Discovery in the Related Litigation is ongoing. The parties have exchanged preliminary infringement disclosures, invalidity contentions, and opening expert reports. Contention discovery has been completed; however expert discovery is incomplete. A *Markman* order issued on July 19, 2023 (EX1028), which only marginally, if at all, weighs in favor of denial. *See Fintiv*, Paper 15 at 14-15 (finding that a *Markman* order, completed contention discovery, incomplete expert discovery and lack of substantive motion practice weighted somewhat in favor of denying institution); *Sand Revolution II*, Paper 24 at 11 (holding that *Fintiv* Factor 3 weighs only marginally, if at all, in favor of exercising discretion to deny institution.).

Petitioner’s diligence in filing its Petition outweighs any investment. *See Fintiv* at 11 (“If the evidence shows that the petitioner filed the petition expeditiously

... this fact has weighed against [denial]”). The preliminary identification of asserted claims occurred on March 27, 2023, which were subsequently amended on May 10, 2023 and June 12, 2023. Petitioner filed its Petition less than three months after being made aware of the full set of asserted claims. *Dish Network LLC v. Broadband iTV, Inc.*, IPR2020-01332, Paper 14 at 29 (Jan. 27, 2021) (finding that Petitioner diligently filed its Petition less than three months after receiving Owner’s full set of asserted claims). This factor is neutral.

d. Factor 4: Overlap between issues raised in the petition and in the parallel proceeding

Petitioner has not filed a stipulation in the Related Litigation. However, Petitioner reserves the right to file such a stipulation based on the contents of Owner’s Preliminary Response.

e. Factor 5: Whether the petitioner and the defendant in the parallel proceeding are the same party

Petitioner is the defendant in the district court proceeding. The PTAB has noted “it is far from an unusual circumstance that a petitioner in inter partes review and a defendant in a parallel district court proceeding are the same” *Sand Revolution II*, IPR2019-01393, Paper 24 at 12-13. This factor is neutral.

f. Factor 6: Other circumstances that impact the Panel’s exercise of discretion, including the merits

“[W]here the PTAB determines that the information presented at the institution stage presents a compelling unpatentability challenge, that determination

alone demonstrates that the PTAB should not discretionarily deny institution under Fintiv”. Interim Procedure at 4-5. Such is the case here. It is highly likely that Petitioner would prevail with respect to at least one challenged claim for the reasons explained in the above Grounds, and this favors institution under *OpenSky*. Thus, trial should be instituted given the compelling merits.

2. The Board should not deny this Petition under §325(d)

The factors recited in *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17 (PTAB Dec. 15, 2017) (precedential) weigh in favor of institution. *Id.* at 4. In the present Petition, aspects of the prior art and arguments not considered by the USPTO due to material error during prosecution warrant institution. *See Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8-9 (PTAB Feb. 13, 2020) (precedential).

In evaluating discretion under §325(d) for this Petition, the non-exclusive *Becton* factors favor institution:

(a) the similarities and material differences between the asserted art and the prior art involved during examination; (b) the cumulative nature of the asserted art and the prior art evaluated during examination; (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection; (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or Patent Owner distinguishes the prior art; (e) whether

Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art; and (f) the extent to which additional evidence and facts presented in the Petition warrant reconsideration of prior art or arguments.

Becton, Paper 8 at 17–18 (precedential).

Under the first prong of the *Becton* Factors (a), (b), and (d), Spain is the same prior art that the Examiner initialed in an Information Disclosure Statement. EX1002, p.64 (U.S. Patent No. 6,944,465, which is the issued patent stemming from Spain). The Board has found such consideration without further analysis to be insufficient to exercise its discretion to not institute. *See e.g., Amgen Inc. v. Alexion Pharm., Inc.*, IPR2019-00740, Paper 15 (P.T.A.B. August 30, 2019) (“The Board has consistently declined exercising its discretion under Section 325(d) when the only fact a Patent Owner can point to is that a reference was disclosed to the Examiner during the prosecution” and citing numerous other opinions); *Scientific Design Co. v. Shell Oil Co.*, IPR2021-01537, Paper 7 (P.T.A.B. Mar. 18, 2022) and IPR2022-00158, Paper 7 (P.T.A.B. Apr. 4, 2022) (both noting that “apart from initialing the asserted art in an IDS, [the Examiner] did not indicate a substantive evaluation of the asserted

art.”).⁴ This should end the inquiry with respect to Spain and the *Becton* Factors.

a. Factor (c)

Advanced Bionics confirms that Factor (c) “focuses on the record developed by the Office in previously reviewing the art or arguments. It *informs*, therefore, the petitioner’s showing under factors (e) and (f).” *Advanced Bionics* at 10 (emphasis added). The Prosecution History of the ’784 Patent is not only informative, it is definitive on the question of error by the Office.

⁴ The Examiner likewise considered and initialed without further analysis numerous other Application Publications and Issued Patents related and unrelated to Spain and also assigned to Polaris Wireless— Twenty-Six in Total. *See* EX1002, pp.431-434; 39-42 (First IDS of 2015-05-19 with no Polaris Wireless References); pp.424-430; 32-38 (Second IDS of 2015-05-19 with no Polaris Wireless References); pp.97-105; 62-70 (Third IDS of 2015-05-19 with a total of Seventy-One (71) References, of which are Twenty-Six (26) Polaris Wireless References related or unrelated biographically to Spain); pp.90-96; 55-61 (Fourth IDS of 2015-05-19 with single Polaris Wireless Reference unrelated to Spain of U.S. Patent Publication No. 2006/0240843); pp.81-89; 46-54 (Fifth IDS of 2015-05-19 with no Polaris Wireless References).

Before allowance, the Examiner proposed an Examiner's Amendment to independent Claims 1 and 12 during an interview and recited the Examiner's Amendment in a Notice of Allowance, citing Shkedi. EX1002, pp.22-31. The Examiner cited Shkedi for the "concept of collecting location fingerprints (*~claimed location data*) and GPS coordinates both corresponding to the same location and associating them in a database for calibration purposes" proposing to amend the claims to focus on a "most likely street" as a location. EX1002, pp.25-28. The Examiner recognized that Shkedi, as the only reference relied on by the Examiner during prosecution, did not focus on the use of "streets" or street locations. Owner agreed to the proposed Examiner Amendments. EX1002, p.30. In this respect, the Prosecution History makes clear the Examiner did not apply any references disclosing broad features of streets and street locations in the independent claims.

In a family application (U.S. Patent Application No. 2008/0188237) issuing as U.S. Patent No. 8,406,753 ("the '753 Patent"), related only to the '784 Patent by a common provisional application (Provisional Application Ser. No. 60/899,379), the Examiner applied U.S. Pat. No. 7,167,714 ("Dressler") to pending Claims 13 and 44 of the '753 Patent. Dressler is related to Spain through a common application, but Spain has additional relevant disclosure. *See* EX1005 (discussing continuity chain, including priority to 09/158,296 to which Dressler also claims priority); EX1016

(difference comparison). The Examiner’s rejection focused on aspects of Dressler that are also found in Spain, but that do not form any part of the Grounds.

Dressler was applied during examination of the ’753 Patent and the Examiner focused on the disclosure also present in Spain relating to the “adaptation algorithm”:

The adaptation algorithm also determines what measurements to collect to best calibrate the RF prediction model. Instead of collecting all measurements, only measurements that can provide the maximal information to support reduction of the prediction errors are collected. The specific choice of measurements to collect is based upon an analysis of the nature of the error and the desired accuracy of the prediction model.

EX1005, ¶[0053]:1-8.

This Petition does not rely on Spain’s “adaptation algorithm” and the above disclosure is not cited anywhere in this Petition. This Petition does rely on Spain’s disclosure of measuring signals and receiving attributes of a signal transmitted by a wireless transmitter to a wireless device for determining the location of the wireless device and populating an RF Fingerprint database (*see* Section VII.A.1.b, *infra*), which is independent from the “adaptation algorithm” relied upon by the Examiner in applying Dressler in the examination of the ’753 Patent.

b. Factors (e) and (f)

Advanced Bionics explains that “if the record of the Office’s previous consideration of the art is not well developed or silent, then a petitioner may show the Office erred by overlooking something persuasive under factors (e) and (f).” *Advanced Bionics* at 10. Here, the Examiner’s lack of consideration of Crane and lack of consideration of Spain’s content is “material error” because the Examiner overlooked the disclosure that is broadly applicable to the independent claims directed to a method and system for location determination. *Advanced Bionics* at 8 n.9 (“material error may include misapprehending or overlooking specific teachings of the relevant prior art where those teachings impact patentability of the challenged claims”). The Examiner did not have a chance to consider the disclosure of Crane, as this reference was not prior art of record in examination of the ’784 Patent.

By allowing claims based on limitations that were taught in the cited art of record, the Examiner overlooked teachings that had a significant impact on patentability. This petition’s grounds of unpatentability are not merely “a disagreement with a specific finding of record by the Office.” *Advanced Bionics* at 10-11.

The Board has consistently declined to discretionarily deny institution under similar facts. *See, e.g., DISH Network LLC v. Sound View Innovations, LLC*, IPR2020-01041, Paper 13, 22 (PTAB Jan 19, 2021) (granting institution where

“Petitioner has sufficiently shown Examiner error by pointing out specific teachings of the [previously-asserted] prior art that the Examiner overlooked”); *Roku, Inc. v. Universal Electronics, Inc.*, IPR2019-01615 (P.T.A.B. April 17, 2020) (granting institution where “Petitioner has pointed out sufficiently how the Examiner materially erred in its evaluation of [the Reference].”); *Trans Ova Genetics, LC v. XY, LLC*, IPR2018-00250, Paper 9, 18-19 (PTAB June 27, 2018) (granting institution where “the Examiner manifestly failed to appreciate [disclosures]...from [the previously-cited art]”).

With respect to factor (f), the Petition is supported by an expert declaration by Dr. Williams explaining how a POSITA would have understood Spain. *See, e.g.*, EX1008, ¶¶100-110; *see also* EX1009. This new evidence also weighs against discretionary denial. *See, e.g.*, *Puma N. Am., Inc. v. Nike, Inc.*, IPR2019-01058, Paper 10, 19 (PTAB Oct. 31, 2019) (instituting where petition presented “new non-cumulative evidence.... probative to issues of patentability and helpful to our consideration of a prior art combination that was not before the Examiner”).

Accordingly, the Board should not exercise its discretion to deny this petition under § 325(d).

Owner may attempt to assert the Examiner’s evaluation of U.S. Patent No. 7,433,695 (“Gordon”) in *ex parte* reexamination serial no. 90/012,694 of U.S. Patent

No. 7,561,104 (“the ’104 Patent”) is somehow relevant to any § 325(d) consideration. Gordon is related to Spain as a continuation-in-part of a continuation. *See* EX1017 (continuity data, claiming priority to U.S. 6,944,465, which is the issued patent stemming from Spain). The ’104 Patent is related to the ’784 Patent through a common provisional. *See* EX1018 (continuity data, claiming priority to U.S. Provisional Application Ser. No. 60/899,379). This is where any overlap ends.

Most succinctly, the Examiner indicated that Gordon failed to disclose, teach, or suggest the limitations of ’104 Patent Claim 1 of “...determining which of said first and second signal characteristic has greater magnitude” and “modifying said observed network measurement data using the greater magnitude signal characteristic.” *See* EX1019, p.7. The challenged ’784 Patent claims include no similar or related limitations.

Further in making the finding that Gordon was insufficient in the reexamination, the Examiner evaluated disclosure at column 13, lines 53-61; column 18, lines 13-17, column 11, lines 39-49, and column 16, lines 37-48 of Gordon. *Id.* at pp.7-8. None of this disclosure is present in Spain. This is further evident by the textual comparison of Gordon with Spain, provided as EX1020. For this additional reason, it cannot be said that the Examiner’s evaluation of Gordon has any relevance to the ’784 Patent under § 325(d).

Owner may also note the Examiner's analysis and rejection of the disclosure of U.S. 7,460,505 ("the '505 Patent"). The '505 Patent is not related to Spain but shares a common inventor. *See* EX1021 (inventor David Stephenson Spain). The Examiner found the '505 Patent's disclosure was insufficient with respect to the "modifying..." claim language discussed above. *See* EX1019, p.216. The Examiner evaluated disclosure at column 10, lines 51-60 and column 3, lines 31-32 of the '505 Patent. *Id.* (referring to proposed rejection present at pp.247-248). None of this disclosure is present in Spain. This is further evident by the textual comparison of Gordon with Spain, provided as EX1022. As such, it cannot be said that the Examiner's evaluation of the '505 Patent has any relevance to the '784 Patent under §325(d).

IX. CONCLUSION

Petitioner has shown a reasonable likelihood of success. Therefore, this Petition should be granted and the Board should institute trial.

Date: August 9, 2023

Respectfully submitted,

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APPENDIX A - LIST OF EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 9,097,784, issued on July 14, 2009 (“the ’784 Patent”)
1002	File History of U.S. Patent Application No. 14/518,868, filed on October 20, 2014 (“the ’868 Application”)
1003	U.S. Provisional Application No. 60/899,379, filed on February 5, 2007
1004	U.S. Patent No. 6,381,533, issued on April 30, 2002 to A. Crane <i>et al.</i> (“Crane”)
1005	U.S. Patent Publication No. 2003/0064735, published on April 3, 2003 to D. Spain <i>et al.</i> (“Spain”)
1006	Amendment filed in U.S. Patent Application No. 12/026,372 on July 28, 2014
1007	Amendment filed in U.S. Patent Application No. 12/026,372 on October 3, 2014
1008	Declaration of David Hilliard Williams
1009	<i>Curriculum Vitae</i> of David Hilliard Williams
1010	Geoscope’s Preliminary Infringement Contentions dated April 7, 2023 (without appendices), <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA)
1011	Appendix E to Geoscope’s Preliminary Infringement Contentions dated April 7, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA)

Exhibit No.	Description
1012	Complaint dated November 22, 2022, <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022 (“the Related Litigation”)
1013	Preliminary Identification of Asserted Claims dated March 27, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022
1014	<i>Not Assigned</i>
1015	<i>Not Assigned</i>
1016	Difference comparison between the text of the Specifications of the Dressler and Spain
1017	U.S. Patent No. 7,433,695, issued on October 7, 2008 to S. Gordon <i>et al.</i> (“Gordon”)
1018	U.S. Patent No. 7,561,104, issued on July 14, 2009 to M. Alles <i>et al.</i> (“the ’104 patent”)
1019	File History of Reexamination Control No. 90/012,694 (“the ’694 Reexamination”)
1020	Difference comparison between the text of the Specifications of the Gordon and Spain
1021	U.S. Patent No. 7,460,505, issued on December 2, 2008 to D. Spain (“the ’505 Patent”)
1022	Difference comparison between the text of the Specifications of the ’505 Patent and Spain
1023	Supplemental Stipulation Regarding Agreed Upon Claim Constructions dated May 25, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022

Petition for *Inter Partes* Review of U.S. Patent No. 9,097,784

Exhibit No.	Description
1024	<i>Not Assigned</i>
1025	Google LLC's Opening Claim Construction Brief dated May 26, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022
1026	<i>Not Assigned</i>
1027	Second Supplemental Stipulation Regarding Agreed Upon Claim Constructions dated July 10, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022
1028	Claim Construction Memorandum Opinion & Order dated July 19, 2023, <i>Geoscope Technologies Pte. Ltd. v. Google LLC f/k/a Google Inc.</i> , Civ. Action No. 1:22-cv-01331 (EDVA) filed on November 22, 2022

CERTIFICATE OF COMPLIANCE WITH 37 C.F.R. §42.24

The undersigned hereby certifies that the foregoing Petition totals 12,952 words, excluding the parts which are exempted by 37 C.F.R. §42.24(a)(1).

Date: August 9, 2023

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this 9th day of August, 2023, a true and correct copy of the foregoing **PETITION FOR *INTER PARTES* REVIEW FOR U.S. PATENT NO. 9,097,784 and EXHIBITS 1001-1013, 1016-1023, 1025, 1027, and 1028** are being served via overnight UPS on the correspondence address of record for **U.S. Patent No. 9,097,784** as follows:

Fogg & Powers LLC/Commscope
4600 W 77th St
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Minneapolis, MN 55435

and a courtesy copy is being served to Patent Owner's litigation counsel as follows:

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