

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of: Chris Pershing et al.
U.S. Patent No.: 9,135,737 Attorney Docket No.: 53317-0003IP1
Issue Date: September 15, 2015
Appl. Serial No.: 14/450,108
Filing Date: August 1, 2014
Title: CONCURRENT DISPLAY SYSTEMS AND METHODS FOR
AERIAL ROOF ESTIMATION

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**PETITION FOR *INTER PARTES* REVIEW OF UNITED STATES PATENT
NO. 9,135,737 PURSUANT TO 35 U.S.C. §§ 311–319, 37 C.F.R. § 42**

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EXHIBITS

NEARMAP-1001	U.S. Patent No. 9,135,737
NEARMAP-1002	File History for U.S. Patent No. 9,135,737
NEARMAP-1003	Declaration of Dr. David Forsyth
NEARMAP-1004	Heller et al., <i>The Site-Model Construction Component of the RADIUS Testbed System</i> , Proceedings: ARPA Image Understanding Workshop (1997) (“Heller”)
NEARMAP-1005	Quam et al., <i>The Radius Common Development Environment</i> , RADIUS: Image Understanding for Imagery Intelligence, O. Firschein and T. Strat, eds. (1997) (“Quam”)
NEARMAP-1006	U.S. Pub. No. 2006/0235611 (“Deaton”)
NEARMAP-1010	<i>Xactware Solutions, Inc. v. Eagle View Technologies, Inc.</i> , IPR2016-00592, Paper 50 (P.T.A.B. August 25, 2017) (Final Written Decision)
NEARMAP-1011	<i>Xactware Solutions, Inc. v. Eagle View Technologies, Inc.</i> , IPR2016-00592, Paper 1 (P.T.A.B. February 8, 2016) (Petition)
NEARMAP-1012	<i>Xactware Solutions, Inc. v. Eagle View Technologies, Inc.</i> , IPR2016-00592, Paper 50 (P.T.A.B. August 25, 2017) (Patent Owner’s Response)
NEARMAP-1013	District Court Scheduling Order
NEARMAP-1014	Overview for Brian Theadore Stewart of DUtah (Lex Machina)
NEARMAP-1015	<i>Xactware Solutions, Inc. v. Eagle View Technologies, Inc.</i> , IPR2016-00592, Paper 33 (P.T.A.B. November 23, 2016) (Decision on Patent Owner’s Motion to Seal)

NEARMAP-1016	<i>Xactware Solutions, Inc. v. Eagle View Technologies, Inc.</i> , Nos. 2018-1053, 2018-1055, 2018-1056, 2018-1110 (Fed. Cir. 2019) (non-precedential)
NEARMAP-1017 to 1018	Reserved
NEARMAP-1019	Ex. 2019 from IPR2016-00592
NEARMAP-1020	Ex. 2020 from IPR2016-00592
NEARMAP-1021	Ex. 2021 from IPR2016-00592
NEARMAP-1022	Ex. 2022 from IPR2016-00592
NEARMAP-1023	Ex. 2023 from IPR2016-00592
NEARMAP-1024	Ex. 2024 from IPR2016-00592
NEARMAP-1025	Ex. 2025 from IPR2016-00592
NEARMAP-1026	Ex. 2026 from IPR2016-00592
NEARMAP-1027	Ex. 2027 from IPR2016-00592
NEARMAP-1028	Ex. 2028 from IPR2016-00592
NEARMAP-1029	Ex. 2029 from IPR2016-00592
NEARMAP-1030	<i>Pictometry® Adopts the EagleView® Brand</i> , https://www.eagleview.com/government/pictometry-adopts-eagleview-brand (April 6, 2017)
NEARMAP-1031	<i>Pictometry® Roof Measurement Reports Now Available Through AccuLynx.com</i> , https://www.prnewswire.com/news-releases/pictometry-roof-measurement-reports-now-available-through-acculynxcom-139984893.html (Feb. 22, 2012)

- NEARMAP-1032 *Pictometry Demonstrates Aerial Imagery Solutions at International Roofing Expo*,
<https://www.businesswire.com/news/home/20110216006158/en/Pictometry-Demonstrates-Aerial-Imagery-Solutions-at-International-Roofing-Expo> (Feb. 16, 2011)
- NEARMAP-1033 *What's imagery got to do with it?*,
<https://www.professionalroofing.net/Articles/What-s-imagery-got-to-do-with-it--04-01-2012/2069> (Apr. 1, 2012)
- NEARMAP-1034 *Oblique Imagery: The New Kids on the Block*,
<https://geospatial-solutions.com/oblique-imagery-the-new-kids-on-the-block/> (July 2, 2013)
- NEARMAP-1035 *Merger years in the making*, Rochester Business Journal,
Vol. 28 No. 44 (Jan. 11, 2013)
- NEARMAP-1036 to 1039 Reserved
- NEARMAP-1040 Declaration of Jacob Munford

Nearmap US, Inc. (“Nearmap” or “Petitioner”) petitions for *Inter Partes* Review (“IPR”) of claims 1, 6, 7, 9, 10, 16, 17, 25, 26, and 34 (the “Challenged Claims”) of U.S. Patent No. 9,135,737 (the “’737 patent”). As explained in this Petition, there exists a reasonable likelihood that Petitioner will prevail with respect to at least one of the Challenged Claims. As such, Petitioner respectfully submits that an IPR should be instituted, and that the Challenged Claims should be canceled as unpatentable.

I. REQUIREMENTS FOR IPR

A. Grounds for Standing

Petitioner certifies that the ’737 patent is available for IPR. The present petition is being filed within one year of service of a complaint against Nearmap in *Eagle View Technologies et al. v. Nearmap US, Inc.*, 2-21-cv-00283 (D. Utah).¹ Nearmap is not barred or estopped from requesting this review challenging the Challenged Claims on the below-identified grounds.

B. Challenge and Relief Requested

The Challenged Claims are invalid over the grounds identified in the table below, as further explained in this Petition. Accompanying explanations and support are provided in the Declaration of Dr. David Forsyth (NEARMAP-1003). NEARMAP-1003, [13]-[137]. Authentication and public availability evidence for

¹ Patent Owner served Nearmap with the complaint on May 10, 2021.

selected prior art references is included in the Declaration of Jacob Munford. *See* NEARMAP-1040.

Ground	'737 Patent Claims	Basis for Rejection
1	1, 6, 7, 9, 10, 16, 17, 25, 26, and 34	Obviousness (§103) over Heller in view of Quam
2	1, 6, 7, 9, 10, 16, 17, 25, 26, and 34	Obviousness (§103) over Heller and Quam in view of Deaton

Each applied reference pre-dates U.S. provisional application 61/197,904, filed on October 31, 2008, which is the earliest filed application from which the '737 patent claims priority. Petitioner does not take a position as to whether the '737 patent is entitled to the priority date of October 31, 2008 ("Critical Date" or "Earliest Effective Filing Date"), but has applied references that pre-date the Critical Date and qualify as prior art, as shown in the table below. NEARMAP-1003, [15].

Reference	Date	Section
Heller	12/31/1997 (published)	102(b)
Quam	12/31/1997 (published)	102(b)
Deaton	10/19/2006 (published)	102(b)

II. THE '737 PATENT

A. Brief Description

The '737 patent, entitled "Concurrent Display Systems and Methods for Aerial Roof Estimation", describes "a roof estimation system that provides a user

interface configured to facilitate roof model generation based on one or more aerial images of a building roof.” NEARMAP-1001, Abstract.

Claim 1 is representative, and recites (reference numbers in bold are used to refer to the limitation in the analysis below):

1. **[1.0]** A computer-implemented method in a roof estimate report system including at least one processor and a memory coupled to the at least one processor, the method comprising:

[1.1] displaying, by the at least one processor of the roof estimate report system, a plurality of aerial images of a roof at the same time, each of the aerial images providing a different view, taken from a different angle of the same roof;

[1.2] displaying, by the at least one processor of the roof estimate report system, respective line drawings representing features of the roof, the respective line drawings overlying a first and a second aerial image of the plurality of aerial images of the roof, the line drawing overlying the first aerial image of the roof having features in common with the line drawing overlying the second aerial image of the roof;

[1.3] in response to user input, changing, by the at least one processor of the roof estimate report system, the line drawing representing a feature of the roof that overlies the first aerial image of the roof;

[1.4] in response to the changing, making corresponding changes, by the at least one processor of the roof estimate report system, to the line drawing overlying the second aerial image; and

[1.5] generating and outputting a roof estimate report using a

report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

B. Prosecution History

The application that eventually issued as the '737 patent was filed on August 1, 2014, and claims priority (through a string of continuations) to a provisional application filed on October 31, 2008. On December 30, 2014, the Examiner issued the only Office Action in this case, which rejected all claims as obvious. Applicant responded on June 1, 2015, stating that the Examiner had agreed to allow the case during an interview if “allowable subject matter from the parent application ... regarding generating and outputting a roof estimate report” was included in the claims, and amended the independent claims to recite the “generating and outputting a roof estimate report” limitations. NEARMAP-1002, 190-191. The Examiner subsequently issued a Notice of Allowance, and the patent issued on September 15, 2015. NEARMAP-1003, [15].

C. Level of Ordinary Skill in the Art

A person of ordinary skill in the art at the time of the '737 patent (a “POSITA”) would have had at least a Bachelor’s Degree in an academic area emphasizing the design of electrical, computer, or software technologies, or a

similar discipline, and at least two years of experience related to computerized image analysis and three-dimensional modeling. NEARMAP-1003, [16].

Superior education could compensate for a deficiency in work experience, and vice-versa. *Id.*

D. Claim Construction under 37 C.F.R. §§ 42.104(b)(3)

Petitioner submits that all claim terms should be construed according to the *Phillips* standard. *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005); 37 C.F.R. § 42.100. Besides the claim terms discussed below, Petitioner submits that, based on the evidence presented herein and the prior art's description of the claimed elements being similar to that of the '737 patent specification, no formal claim constructions are necessary in this proceeding because "claim terms need only be construed to the extent necessary to resolve the controversy." *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011); NEARMAP-1003, [17].²

² Petitioner does not concede that each challenged feature satisfies all statutory requirements such as 35 U.S.C. § 112. As this is an IPR petition, the present Petition presents only prior art-based grounds. Petitioner reserves the right to present arguments in other proceedings concerning grounds that cannot be raised in IPR (*e.g.*, § 112, § 101, etc.).

**1. “generating and outputting a roof estimate report...”
(independent claims 1, 12, 16, and 26)**

Independent claims 1, 12, 16, and 26 each recite a form of the following limitation:

generating and outputting a roof estimate report using a report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

NEARMAP-1001, claim 1. These limitations are directed to generating printed matter that has no function or structural relation to the substrate on which it is printed or displayed. Thus, these limitations are entitled to no patentable weight. *See In re DiStefano*, 808 F.3d 845, 850 (Fed. Cir. 2015).

In its Final Written Decision in a prior IPR challenge³ to the '737 patent by a different petitioner, the Board considered these limitations, held that the “the detailed requirements as to the contents of the roof estimate report” recited in these limitations “are *not entitled to patentable weight*.”⁴ NEARMAP-1010, 18.

³ *Xactware Solutions, Inc. v. Eagle View Technologies, Inc.*, IPR2016-00592, (P.T.A.B. August 25, 2017).

⁴ All emphasis added unless indicated otherwise.

Specifically, the Board reasoned that the “roof report is *merely a printed description* of the method’s output and it *adds no functional or structural elements to the paper or computer screen on which the report appears.*” *Id.*, 17.

In other words, the “the content of the information” in the generated report “does not modify or otherwise affect the underlying computer or paper, nor does it represent a new and non-obvious relationship with the substrate.” *Id.*, 17-18.

“Thus, *the claimed content of the information is not entitled to weight in the patentability analysis.*” *Id.*, 18 (citing *In re Ngai*, 367 F.3d 1336, 1338 (Fed. Cir. 2004); *Ex parte Nehls*, 88 USPQ2d 1883, 1887–90 (BPAI 2008) (precedential) (discussing non-functional descriptive material)). The Board explains that “what the content of the information, graphical or textual” in the generated roof estimate report “may convey to the human mind does not change the functionality of the computer-implemented method and fails to distinguish over generating and displaying any graphical or textual information.” NEARMAP-1010, 18.

The Board’s prior holding is correct, and in the present proceeding the Board should similarly interpret the “roof estimate report” limitations as having “no patentable weight.” *Id.*, 18. Petitioner acknowledges that the present panel is not explicitly bound by prior Board decisions that, like the ’592 FWD, are not designated as precedential. But Petitioner is aware of no change in circumstances or any other reason that would compel the Board to deviate from this prior holding

with respect to the same claim language in the same patent. Further, as explained below, collateral estoppel prevents Patent Owner from the relitigating this issue in the present case.

a) Collateral estoppel precludes Patent Owner from arguing that these limitations are entitled to patentable weight

In addition, collateral estoppel precludes Patent Owner from arguing that the “roof estimate report” limitations should be given patentable weight. *See, e.g., Rimfrost v. Aker Biomarine Antarctic*, IPR2018-01178, Paper 34 at 31-33 (P.T.A.B. January 13, 2020) (hereinafter “Rimfrost”). “Collateral estoppel protects a party from having to litigate issues that have been fully and fairly tried in a previous action and adversely resolved against a party-opponent.” Rimfrost, 31 (quoting *Ohio Willow Wood Co. v. Alps South, LLC*, 735 F.3d 1333, 1342 (Fed. Cir. 2013) (citing *Pharmacia & Upjohn Co. v. Mylan Pharm., Inc.*, 170 F.3d 1373, 1379 (Fed Cir. 1999))). “It is well established that collateral estoppel, also known as issue preclusion, applies in the administrative context.” Rimfrost, 31 (quoting *MaxLinear, Inc. v. CF CRESPE LLC*, 880 F.3d 1373, 1376 (Fed. Cir. 2018) (citations omitted); *Webpower, Inc. v. WAG Acquisition, LLC*, IPR2016-01239, Paper 21 at 26–28 (PTAB Dec. 26, 2017) (Final Written Decision)).

The Federal Circuit explained that collateral estoppel precludes a party from relitigating an issue if: “(1) prior action presents an identical issue; (2) the prior

action actually litigated and adjudged that issue; (3) the judgment in that prior action necessarily required determination of the identical issue; and (4) the prior action featured full representation of the estopped party.” *VirnetX Inc. v. Apple, Inc.*, 909 F.3d 1375, 1377 (Fed. Cir. 2018) (quoting *Stephen Slesinger, Inc. v. Disney Enters., Inc.*, 702 F.3d 640, 644 (Fed. Cir. 2012)). All of these factors are satisfied in the present case.

First, the prior action (IPR2016-00592, the “’592 IPR”) presents an identical issue. In the ’592 IPR, the Board considered the same claim language (“generating and outputting a roof estimate report...”) of the same claims (1, 12, 16, and 26) in the same patent (U.S. Patent No. 9,135,737, the “’737 patent”) at issue in the present IPR. *See* NEARMAP-1010, 1, 15-18. To the extent Patent Owner argues that the PTAB’s change from the broadest reasonable interpretation to the *Phillips* standard of claim construction in the interim would somehow have affected the result, Petitioner asserts that construing the term under *Phillips* would not change the outcome. The “roof estimate report” limitations add no functional or structural elements to the paper or computer screen on which the report appears, regardless of which claim construction standard is applied.

Second, the ’592 IPR actually litigated and adjudged that issue. As noted in the ’592 FWD,” the Board previously considered and rejected several arguments presented by Patent Owner on this issue. *See* NEARMAP-1010, 15-18 (citing

NEARMAP-1012, 24-29 (cited as “PO Resp.”)).

Third, the judgment in the ’592 IPR necessarily required determination of this identical issue. During an IPR, the Board is required to construe the claims to the extent necessary to resolve the controversy. 37 CFR § 42.100 (“In an *inter partes* review proceeding, a claim of a patent ... shall be construed[.]”); *Wellman*, 642 F.3d at 1361 (“claim terms need only be construed to the extent necessary to resolve the controversy.”). In the ’592 IPR, that petitioner argued that the roof estimate report limitations “should be afforded no patentable weight,” which Patent Owner contested. NEARMAP-1011 (’592 IPR Petition), 31, 58; NEARMAP-1012 (’592 PO Response), 24-29. Thus, a controversy existed over the interpretation of the “roof estimate report” limitations in the ’592 IPR, and thus the judgment necessarily required the Board to determine whether the limitations were entitled to patentable weight. *See* NEARMAP-1010, 15-18.

Fourth, the ’592 IPR featured full representation of the estopped party. The presumptive Patent Owner in the present case (“Eagle View Technologies, Inc,” the current assignee of the ’737 patent) fully participated in the ’592 IPR. *See* NEARMAP-1012 (’592 PO Response), Cover Page. Thus, prior ’592 IPR featured full representation of Patent Owner, the estopped party.

Accordingly, for at least the reasons discussed above, the Board should find, as it did in the ’592 IPR, that the “generating and outputting a roof estimate report”

limitations that appear in all the independent claims (1, 11, 16, 26) are entitled to no patentable weight. *See* NEARMAP-1010, 15-18. In addition, the Board should not allow Patent Owner to relitigate this issue, because collateral estoppel precludes such arguments.

2. “transmitting roof measurement information” (claim 9)

Claim 9 recites “transmitting roof measurement information based . . . on the change of the line drawing.” NEARMAP-1001, claim 9. For the purposes of the present proceeding, this limitation should be interpreted broadly enough to encompass transmitting roof measurement information between components of the same computer system, consistent with the Board’s interpretation of the term in the prior IPR challenge to the ’737 patent. *See* NEARMAP-1010, 18-20. Notably, this claim term does not specify any particular source or destination for the transmission, thereby indicating that transmission within the same computer system is contemplated. *See id.* In addition, the ’737 patent’s specification contemplates this type of transmission. *See, e.g.,* NEARMAP-1001, 16:15–17, FIG. 8 (“Some portion of the contents, some of, or all of the components of the RES 810 may be stored on and/or transmitted over the other computer-readable media 805”); *see* NEARMAP-1010, 20. Accordingly, interpreting this claim term to encompass transmission of roof measurement information between components of the same computer system is proper because 1) it is consistent with the plain and

ordinary meaning the term would have had to a POSITA; 2) it is consistent with the '737 patent's specification; and 3) it is consistent with the Board's prior finding with respect to this term. NEARMAP-1003, [21]; *see, e.g.*, NEARMAP-1010, 18-20; NEARMAP-1001, 16:15–17, FIG. 8.

In addition, for at least the same reason discussed above with respect to the “roof estimate report” limitations, collateral estoppel precludes Patent Owner from relitigating this construction in the present IPR. *See* Section II.D.1(a), *supra*.

III. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. GROUND 1: Claims 1, 6, 7, 9, 10, 16, 17, 25, 26, and 34 are obvious over Heller in view of Quam

1. Overview of Heller⁵

Heller describes various aspects of the “RADIUS” system, a software platform that enables the “creation of a 3-dimensional model that captures the basic geometry of [a] site under examination,” such as a house or a commercial building, based on analysis of one or more images of the site. NEARMAP-1004, 1. Heller describes that the “RADIUS Testbed System” (RTS) includes both “manual and semi-automatic tools for site model construction.” *Id.* “[M]anual

⁵ General descriptions provided for the references and combinations are incorporated into each subsection addressing/applying those references, as are the discussions of combinations.

techniques [are] those in which the 3-dimensional model of a feature is projected into one or more images and the operator adjusts the model to align it with was is seen in the images,” whereas “semi-automatic techniques [are] those which require an operator to provide an initial rough estimate of a feature’s position, size and topology and the system then refines or extends the model of the object using information extracted from the image(s).” *Id.*; NEARMAP-1003, [22].

Heller describes a number of “primitive shapes” or “primitives” used to “model buildings and structures” in RTS. NEARMAP-1004, 3. “To add a structure, the model builder” selects a shape to “approximate a structure found in the image, e.g., cylinders for towers, or rectangular wireframes for buildings.” *Id.* “The primitive shape is placed at the approximate position and orientation of the image feature to be modeled” and the “RADIUS Testbed System then adjusts the shape, placement, orientation, and size of the primitive to better fit the image.” *Id.*

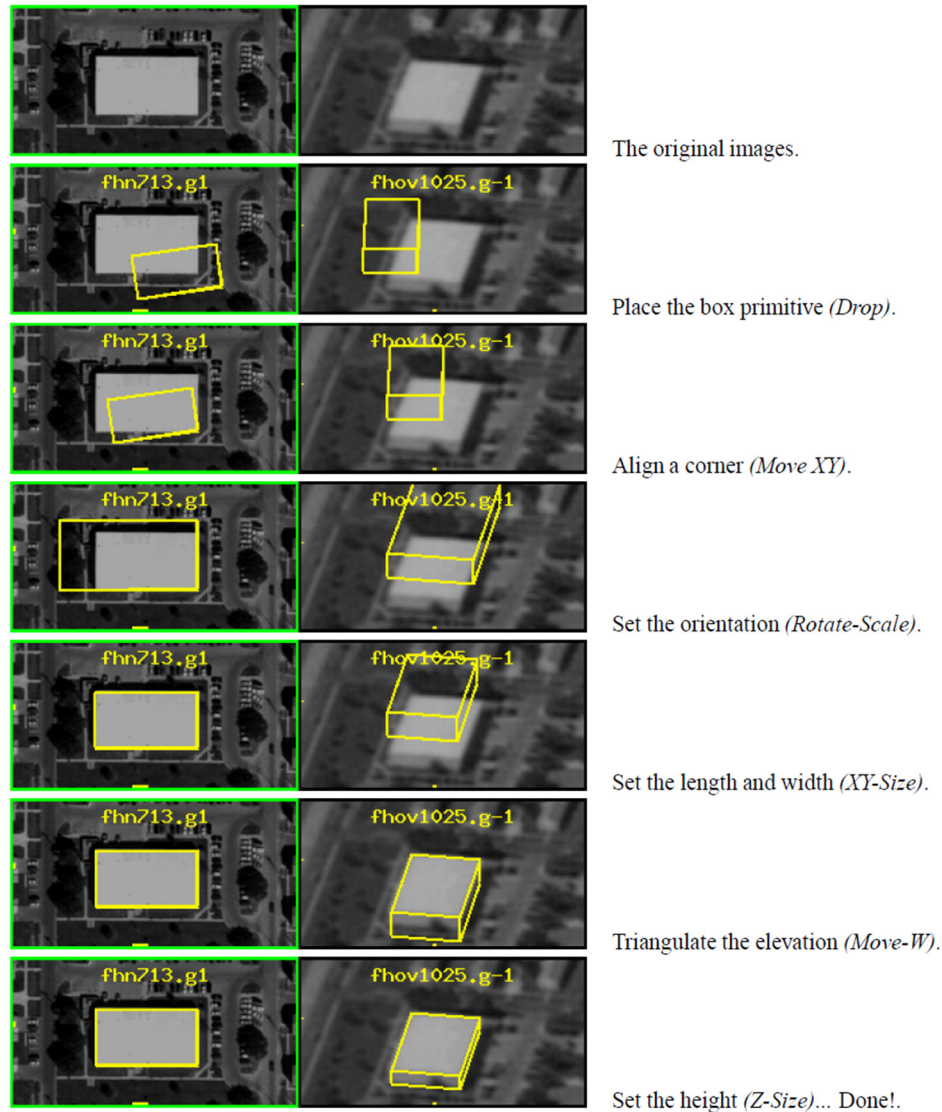
Heller describes that “[m]ost buildings are modeled using the following primitives:

- Boxes which are simple rectangular solids.
- Houses which are boxes with sloped roofs. The system currently supports three kinds of roofs: gable, shed, or hip. The slope of the roof can be adjusted as well as the amount of overhang.

[...]

- Extrusions which are a curve that typically defines the (flat) roof line which is extended to the ground to form the sides of the building.” *Id.*

FIG. 4 from Heller shows the steps to manually model a building using the Box primitive. NEARMAP-1003, [24]-[25]:



NEARMAP-1004, FIG. 4

As shown, a wireframe of the box primitive is overlaid on a pair of images showing different views of the building to be modeled. *Id.*, 4, FIG. 4. The user

manipulates the wireframe model using various operations until the wireframe matches the outline of the building in both views. *See id.* Notably, a change made to the wireframe of one of the pair of images will be reflected in the wireframe overlaying the other image in the pair. *See id.*; NEARMAP-1003, [26].

2. Overview of Quam

Quam describes the “RADIUS Common Development Environment (RCDE),” a portion of the RADIUS platform that “provides the foundation for the RADIUS Testbed System” or “RTS” described in Heller. *See* NEARMAP-1005, 1; NEARMAP-1004, 1. The RCDE “provides a system to carry out interactive cartographic modeling of three-dimensional scenes from multiple images, as well as to provide an infrastructure to support the research in, and implementation of, image-understanding-based algorithms for this and other tasks.” NEARMAP-1005, 1.

Quam provides additional details on various aspects of the RADIUS platform described in Heller. *Id.*; NEARMAP-1003, [28]. For example, Quam describes implementation and deployment details of the RADIUS platform, such as that it is implemented as “over 200,000 lines of Lisp/CLOS and 6,000 lines of C,” “runs on both SunMicrosystems and Silicon Graphics RISC-based workstations, under the UNIX operating system,” and “represents over 20 person years of continuous development of software environments for image understanding,

cartographic feature extraction, and visualization at SRI's Artificial Intelligence Center." NEARMAP-1005, 2. Quam also describes the "image registration" process used in RADIUS, and provides descriptions and screenshots of the "Registration Tool" that "lead[s] the user through the necessary steps to register a new image, without detailed knowledge of the intricacies of photogrammetry." *Id.*, 14-15, FIGS. 8, 9, 10; NEARMAP-1003, [28].

3. The combination of Heller and Quam

As previously discussed, Heller describes using the "RADIUS Testbed System" (RTS) to create three-dimensional models of buildings and other structures through the analysis of one or more images of the structures. NEARMAP-1004, 1. As also previously discussed, Quam describes the "RADIUS Common Development Environment (RCDE)," a portion of the RADIUS platform that "provides the foundation for the RADIUS Testbed System" or "RTS" described in Heller. NEARMAP-1005, 1. In the combination, Heller's "RADIUS Testbed System" (RTS) is implemented using the advantageous implementation details and other information about the "RADIUS Common Development Environment (RCDE)" described by Quam, providing a beneficial implementation environment for the site modeling operations described in Heller. NEARMAP-1003, [29]; *see, e.g.*, NEARMAP-1004, 1; NEARMAP-1005, 1.

4. Reasons to combine Heller and Quam

A POSITA would have been motivated and found it obvious to implement Heller's "RADIUS Testbed System (RTS)" using the implementation details and other information about the "RADIUS Common Development Environment (RCDE)" described by Quam, in order to benefit from Quam's advantageous implementation environment for the site modeling operations described in Heller. As previously discussed, Heller and Quam both describe portions of the "RADIUS" site modeling platform. *See* NEARMAP-1003, [30]; NEARMAP-1004, 1 (Heller describing the "RADIUS Testbed System (RTS)"); NEARMAP-1005, 1 (Quam describing the "RADIUS Common Development Environment (RCDE)"). Quam describes that the RCDE "*provides the foundation for the RADIUS Testbed System (RTS)*" described in Heller. NEARMAP-1005, 1; NEARMAP-1003, [30]. A POSITA reading Heller would have been motivated to determine practical implementation details of the system, regarding, for example, the computing hardware necessary to run the RADIUS Testbed System, technologies used to implement the system, as well as information on the tools provided by the system to perform common image analysis tasks such as image registration—all of which are not specified in Heller. NEARMAP-1003, [30]; *see, generally*, NEARMAP-1004. A POSITA would have been motivated to determine these additional implementation details for Heller's system, for example, in order

to assess the cost, impact, and desirability of implementing Heller's system, and to define the operational capabilities of Heller's system to render it suitable for use on particular projects or tasks. NEARMAP-1003, [30]; *see, e.g.*, NEARMAP-1004, 1, 4, 5, FIGS. 4-5; NEARMAP-1005, 1, 2, 14, 15, FIGS. 8, 9, 10.

Further, a POSITA would have found it obvious to modify Heller based on Quam's teachings because doing so entails the use of known solutions to improve similar systems and methods in the same way. NEARMAP-1003, [31]. Here, "when a patent 'simply arranges old elements with each performing the same function it had been known to perform' and yields no more than one would expect from such an arrangement, the combination is obvious." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). A POSITA would have recognized that applying Quam's teachings to augment Heller would have led to predictable results without significantly altering or hindering the functions performed by Heller's system. NEARMAP-1003, [31].

In fact, a POSITA would have been motivated to incorporate the well-known techniques of Quam into Heller to achieve the predictable benefits described in Quam. NEARMAP-1003, [32]; *see, e.g.*, NEARMAP-1005, 1 (describing several benefits of the RCDE, including its "seamless integration and high level of interoperability between and among" different functions related to "modeling of three-dimensional scenes from multiple images."), 34; NEARMAP-

1006, [0009], [0012], [0013]. Indeed, a POSITA would have had a reasonable expectation of success incorporating Quam's teachings into Heller, because Quam specifically teaches such incorporation. *See* NEARMAP-1005, 1 (Quam stating that the RCDE "provides the foundation for the RADIUS Testbed System (RTS)" described in Heller.).

Accordingly, for at least these reasons, augmenting Heller's description with the teachings of Quam would have been routine and straightforward to a POSITA, and it would have been clear that such a combination would predictably work and provide the expected results. *Id.*; NEARMAP-1003, [33].

5. Analysis

a) Claim 1

[1.0]: A computer-implemented method in a roof estimate report system including at least one processor and a memory coupled to the at least one processor, the method comprising:

To the extent the preamble is deemed a limitation, the Heller-Quam combination renders it obvious. In the combination, Heller describes "a suite of manual and semi-automatic tools for site-model construction" that are part of the "RADIUS Testbed System." NEARMAP-1004, 1. Heller describes that the RADIUS Testbed System (also referred to as "RTS") allows for the "***creation of a 3-dimensional model that captures the basic geometry of the site under examination***" based on analysis of one or more aerial images of the site. *Id.*, 1, Figure 5; NEARMAP-1003, [34]. Heller teaches that the RTS can model

“*[h]ouses*” having “*three kinds of roofs: gable, shed, or hip.*” NEARMAP-1004, 3.

Also in the combination, Quam describes features of the “RADIUS Common Development Environment (RCDE),” which “provides the foundation for the RADIUS Testbed System” described in Heller. NEARMAP-1005, 1; NEARMAP-1004, 1. Quam describes the RADIUS system as an “an extensible, interactive, object-oriented, workstation-based image processing system” that “represents over 20 person years of continuous development of *software environments* for image understanding, cartographic feature extraction, and visualization at SRI’s Artificial Intelligence Center.” NEARMAP-1005, 2. “The current implementation” of RADIUS “comprises over *200,000 lines of Lisp/CLOS* and *6,000 lines of C*,” which confirms that RADIUS is a software program. *See id.*; NEARMAP-1003, [35]. Quam describes that RADIUS “runs on both SunMicrosystems and Silicon Graphics RISC-based workstations,” which indicates that the RADIUS software is executed by the processors of these workstations. *Id.*; *see also* 2, 5, 8, 10 (several references to computation, which indicates operations performed by a processor); NEARMAP-1003, [35]. Quam also makes clear that the RADIUS system utilizes “*memory*” when performing computations, such as using a “[t]iled memory layout for image storage.” NEARMAP-1005, 17; *see also* 4, 5, 8, 16; NEARMAP-1003, [35].

As described in greater detail below (*see* [1.5], *infra*), the combined system of Heller and Quam produces a roof estimate report.

Accordingly, the Heller-Quam combination renders obvious “computer-implemented method in a roof estimate report system including at least one processor and a memory coupled to the at least one processor.”

[1.1]: displaying, by the at least one processor of the roof estimate report system, a plurality of aerial images of a roof at the same time, each of the aerial images providing a different view, taken from a different angle of the same roof;

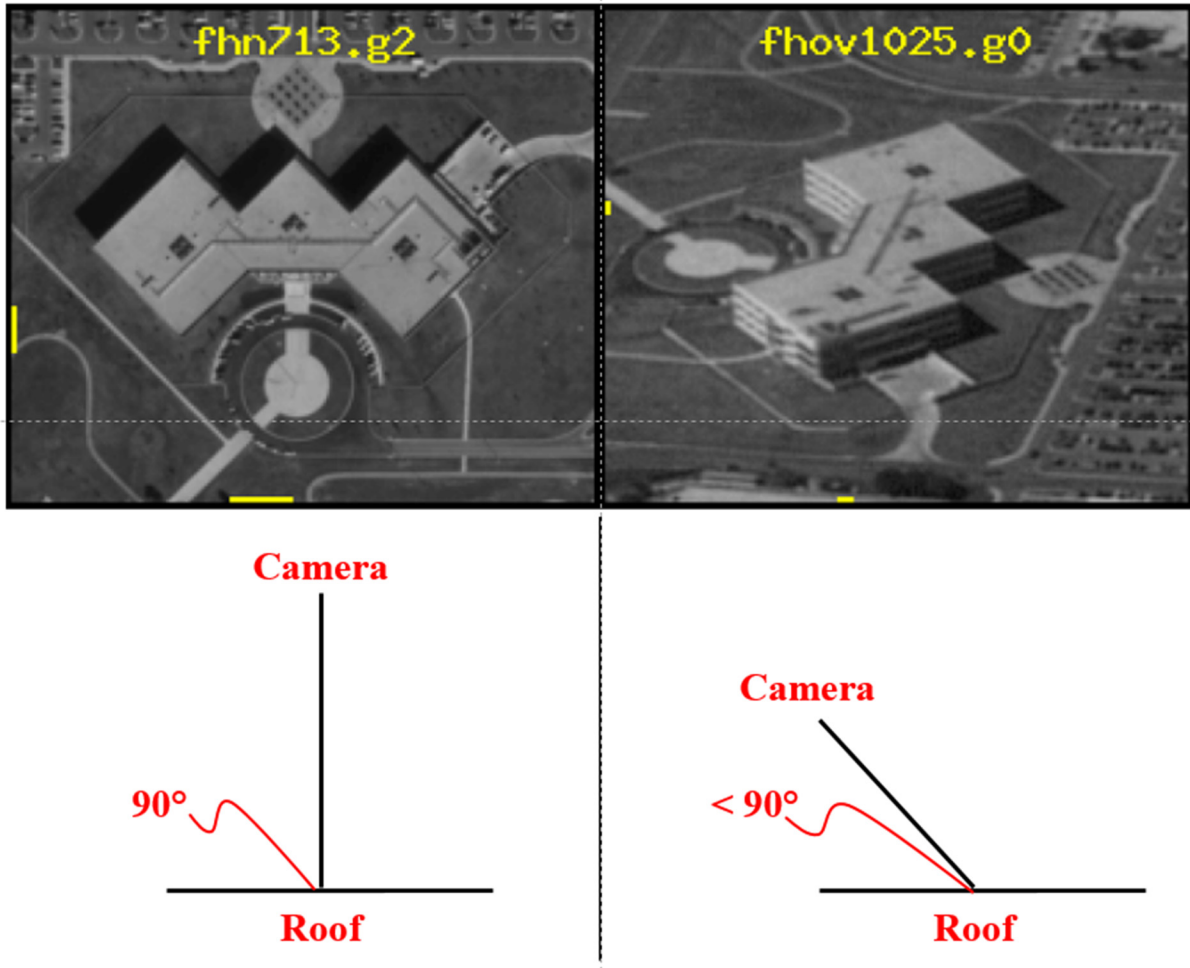
The Heller-Quam combination renders this limitation obvious. In the combination, Heller’s “Figure 5 shows the sequence of operations used in modeling a complex-shaped building with an extrusion primitive and the MBO” (Model-Based Optimization) “system” included in the RTS. NEARMAP-1004, 5. The following detail of Figure 5 is a screenshot of the RTS showing the original images before the modeling process begins. *See id.*, 6; NEARMAP-1003, [38]:



NEARMAP-1004, Detail of FIG. 5

As shown in the figure, Heller teaches displaying two aerial images of the same roof (note the identical roof shape in both images), and that both images are displayed at the same time. NEARMAP-1004, 5, FIG. 5; NEARMAP-1003, [39]. Heller further describes that “the 3-dimensional model of a feature is projected into *one or more images* and the operator adjusts the model to align it with [what] is seen in *the images*.” NEARMAP-1004, 1 (note 2).

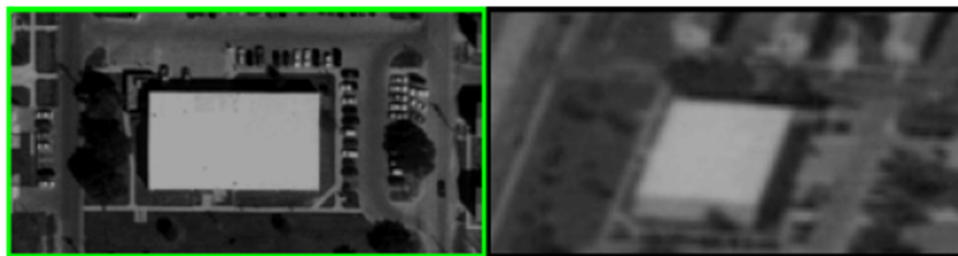
Heller further teaches that each displayed image provides a different view of the same roof taken at a different angle. As depicted in FIG. 5, the left image was taken from overhead at roughly a right angle relative to the roof. *Id.* The right image was taken from an acute angle, which is different from the angle of the left image. *See id.*; NEARMAP-1003, [40]. The following annotated FIG. 5 from Heller illustrates the different angles for the two images. NEARMAP-1003, [40]:



NEARMAP-1004, Detail of FIG. 5 (annotated)

In addition, Heller describes another example of modeling a building with a simpler shape than that shown in FIG. 5. Similar to FIG. 5, the following detail of FIG. 4 of Heller shows two aerial images of the same roof, displayed at the same time, each taken from different angles and providing a different view.

NEARMAP-1003, [41]:



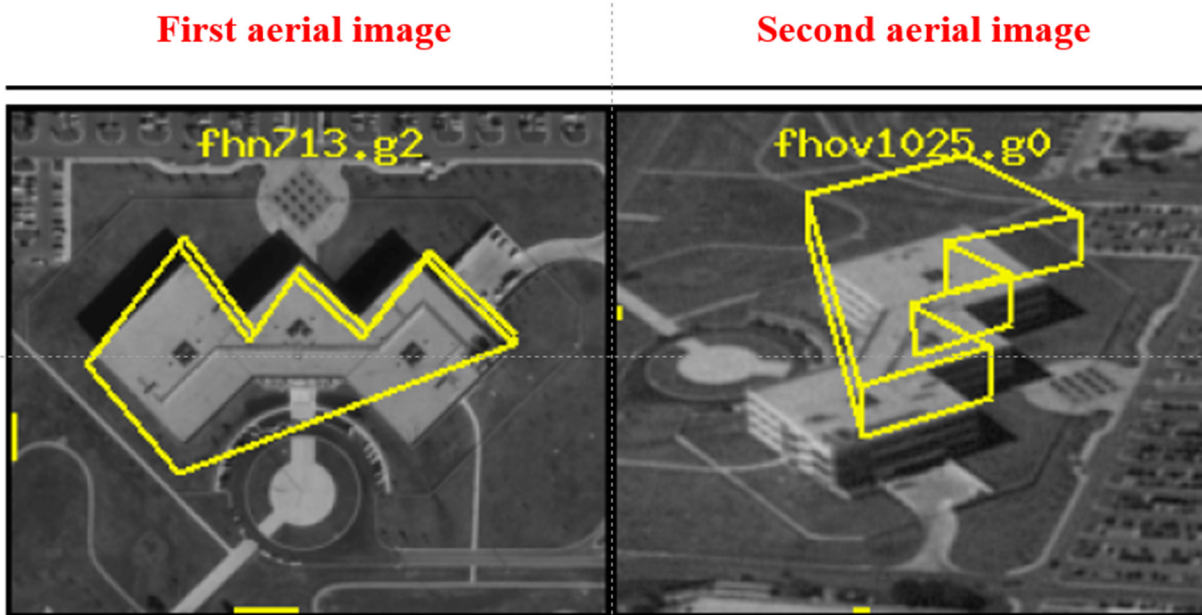
NEARMAP-1004, Detail of FIG. 4 (annotation in original)

Heller describes that the system performs the same basic operations to model “simple box objects” like the one shown in FIG. 4—which uses a “box primitive” as its base model—as it does to model “a complex-shaped building” like the one shown in FIG. 5—which uses an “extrusion primitive” as the base model. *See* NEARMAP-1004, 5 (“In the construction procedures for both simple box objects and extrusions, semi-automatic assistance can be invoked by a user using the Model-Based Optimization system.”) (“Modeling a building with a house primitive follows the same sequence of steps [as a box primitive], followed by setting the roof type (gabled, hip, shed), pitch, and overhang.”); NEARMAP-1003, [42].

Accordingly, the Heller-Quam combination renders obvious “displaying, by the at least one processor of the roof estimate report system, a plurality of aerial images of a roof at the same time, each of the aerial images providing a different view, taken from a different angle of the same roof.”

[1.2]: displaying, by the at least one processor of the roof estimate report system, respective line drawings representing features of the roof, the respective line drawings overlying a first and a second aerial image of the plurality of aerial images of the roof, the line drawing overlying the first aerial image of the roof having features in common with the line drawing overlying the second aerial image of the roof;

The Heller-Quam combination renders this limitation obvious. In the combination, the following annotated FIG. 5 from Heller depicts a first and second aerial image of the building roof, each overlaid with a yellow wireframe (*i.e.*, a “line drawing”). NEARMAP-1003, [44]; *see, e.g.*, NEARMAP-1004, 3 (“A shape is selected to approximate a structure found in the image, e.g., cylinders for towers, or rectangular wireframes for buildings. The primitive shape is placed at the approximate position and orientation of the image feature to be modeled.”):

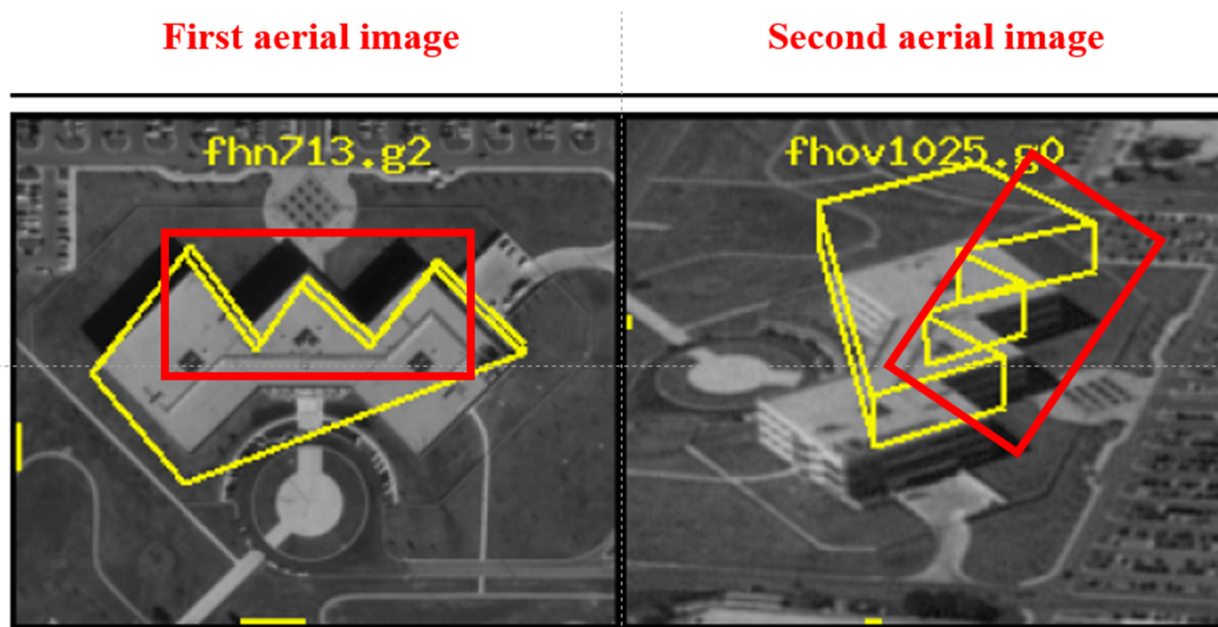


NEARMAP-1004, Detail of FIG. 5 (annotations in original)

As shown, the yellow line drawings overlaying the first and second images

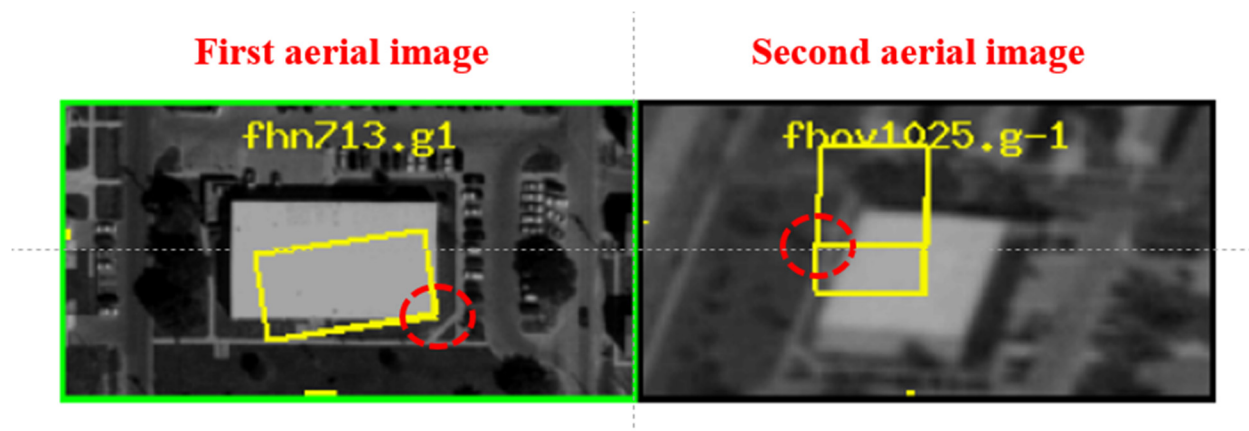
have “features in common” as the claim recites. For example, as shown in the following annotated FIG. 5, the “W” shape of the roof contour at the top of the first image is present in the yellow line drawings in both the first and second images.

See id.; NEARMAP-1003, [45]:



NEARMAP-1004, Detail of FIG. 5 (annotated)

The simple “box” example from FIG. 4 of Heller similarly depicts a first and second aerial image of the building roof, each overlaid with a yellow wireframe (i.e., a “line drawing”). *Id.*, 5, FIG. 4. Like FIG. 5, the first and second aerial images of FIG. 4 also have “features in common,” such as the aligned corner denoted in red in both images below. NEARMAP-1003, [46]:



NEARMAP-1004, Detail of FIG. 4 (annotated)

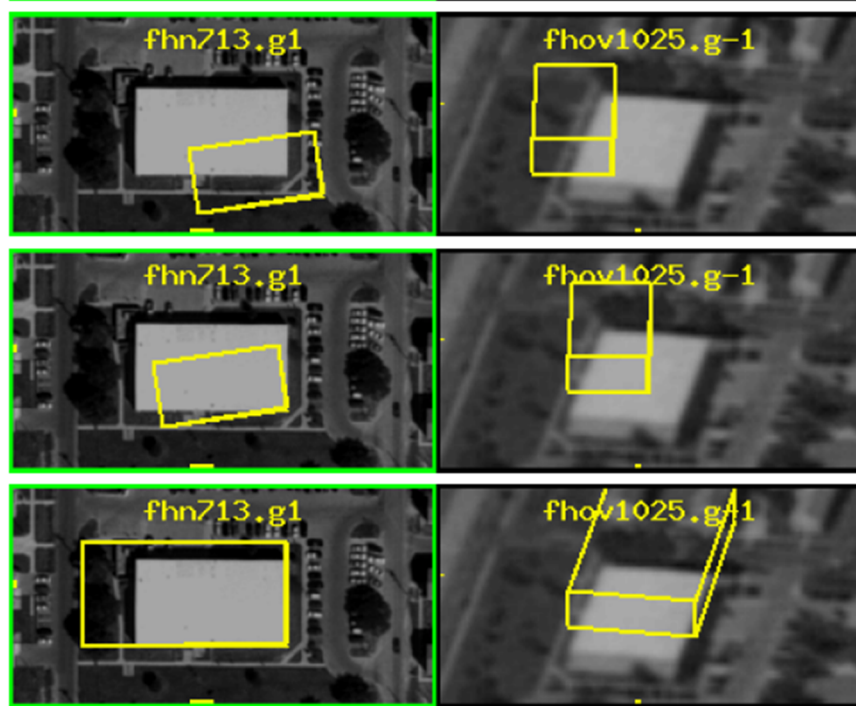
Accordingly, the Heller-Quam combination renders obvious “displaying, by the at least one processor of the roof estimate report system, respective line drawings representing features of the roof, the respective line drawings overlying a first and a second aerial image of the plurality of aerial images of the roof, the line drawing overlying the first aerial image of the roof having features in common with the line drawing overlying the second aerial image of the roof.”

[1.3]: in response to user input, changing, by the at least one processor of the roof estimate report system, the line drawing representing a feature of the roof that overlies the first aerial image of the roof;

The Heller-Quam combination renders this limitation obvious. In the combination, Heller describes the operations for modeling a structure with a simple shape using the “box primitive.” NEARMAP-1004, 4-5. Heller states that “[a]fter the primitive is added to the scene, *the user grabs an upper corner of the object*” (i.e., user input) “*and adjusts the pose and size of the box to match the building being modeled.*” *Id.*, 4; see also 1, note 2 (“we define manual techniques as those

in which the 3-dimensional model of a feature is projected into one or more images and the operator adjusts the model to align it with what is seen in the images.”).

This operation is shown in the following detail of FIG. 4. NEARMAP-1003, [48]:



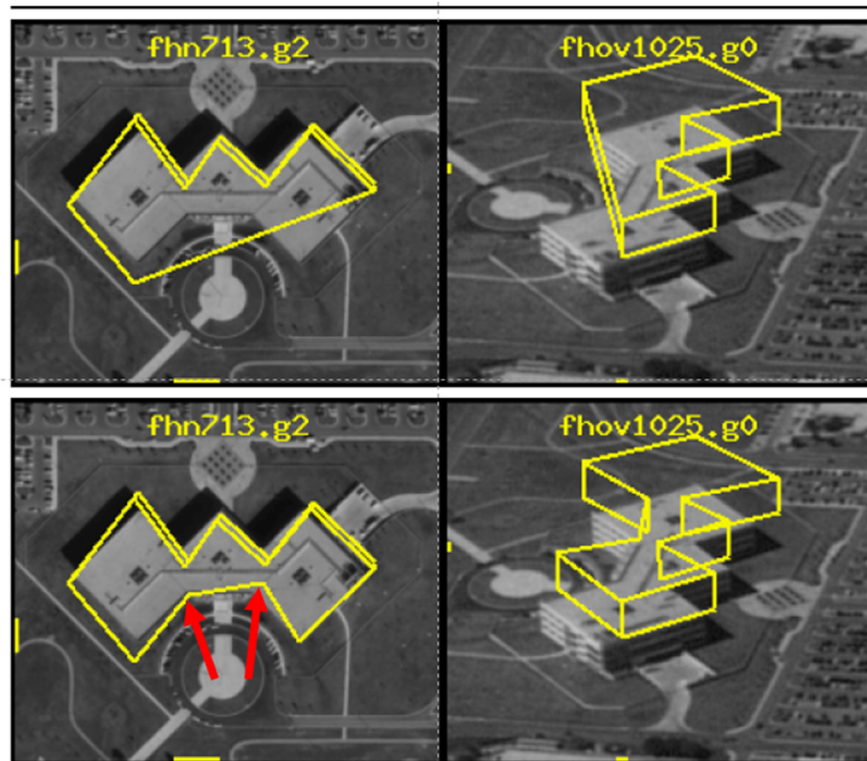
NEARMAP-1004, Detail of FIG. 4

The first row shows what is displayed “after the [box] primitive” (the yellow wireframe or “line drawing”) “is added to the scene.” *Id.*, 4. In the next two rows, the yellow line drawing is manipulated based on input from the user, such as the user “grab[bing]” with a mouse “an upper corner of the object and adjust[ing] the pose and size of the box to *match the building being modeled*” (*i.e.*, “representing a feature of the roof”), *Id.*, 4; NEARMAP-1003, [49]. As described, the line drawing’s orientation with respect to each image (*i.e.*, its “pose”) changes from the

first row of images to the second in response to user input. NEARMAP-1003, [49]; *see, e.g.*, NEARMAP-1004, 4, FIG. 4. In addition, the line drawing's size with respect to each image changes from the second row of images to the third row, again in response to user input (e.g., the user "grabbing" and dragging a corner of the line drawing to change its size). NEARMAP-1003, [49]; *see, e.g.*, NEARMAP-1004, 4, FIG. 4.

As discussed above (*see* [1.1]), Heller describes that these same operations (e.g., grabbing a corner of the line drawing and resizing it) are also performed with respect to buildings with more complex shapes, like that shown in FIG. 5.

NEARMAP-1004, 5, FIG. 5; NEARMAP-1003, [50]. As shown in the following annotated version of FIG. 5 from Heller, the user interacts with the overlaid line drawing to add vertices, making the shape of the line drawing more closely match the shape of the roof in the images. NEARMAP-1004, 5, FIG. 5; NEARMAP-1003, [50]:



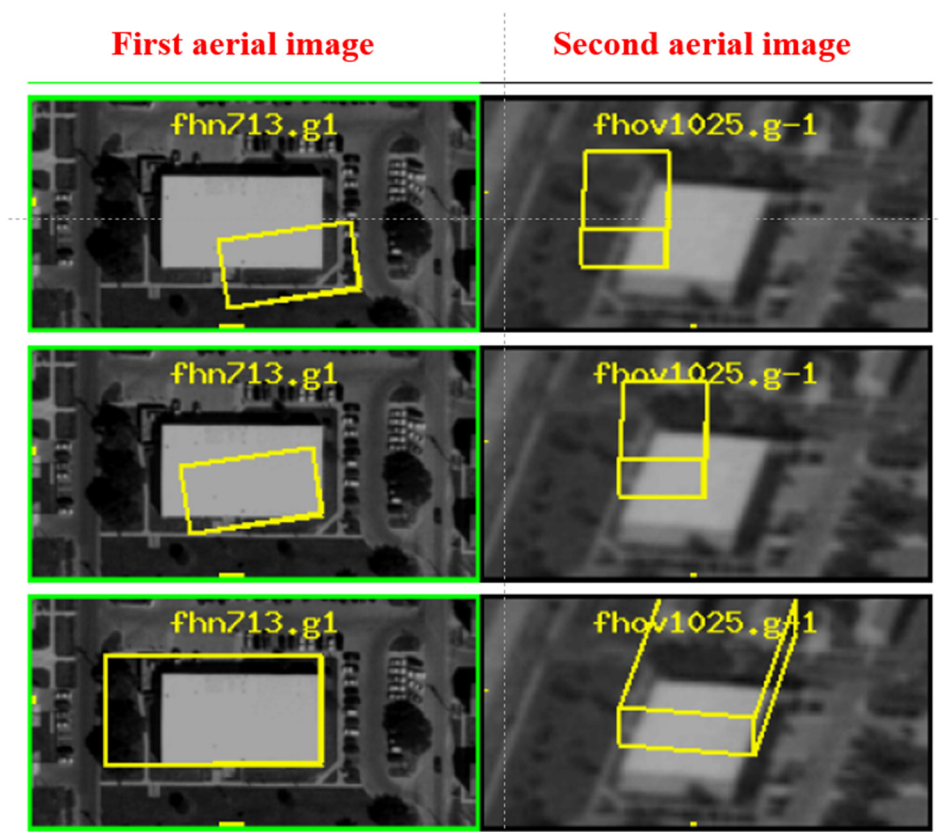
NEARMAP-1004, Detail of FIG. 5 (annotated)

Accordingly, the Heller-Quam combination renders obvious “in response to user input, changing, by the at least one processor of the roof estimate report system, the line drawing representing a feature of the roof that overlies the first aerial image of the roof.”

[1.4]: in response to the changing, making corresponding changes, by the at least one processor of the roof estimate report system, to the line drawing overlying the second aerial image; and

In the combination, Heller teaches that the line drawing overlying the second aerial image is updated in response to changes to the line drawing overlying the first aerial image. See NEARMAP-1004, 2, 3, FIG. 4, FIG. 5; NEARMAP-1003,

[52]. This operation is shown in the following detail of FIG. 4:



NEARMAP-1004, Detail of FIG. 4

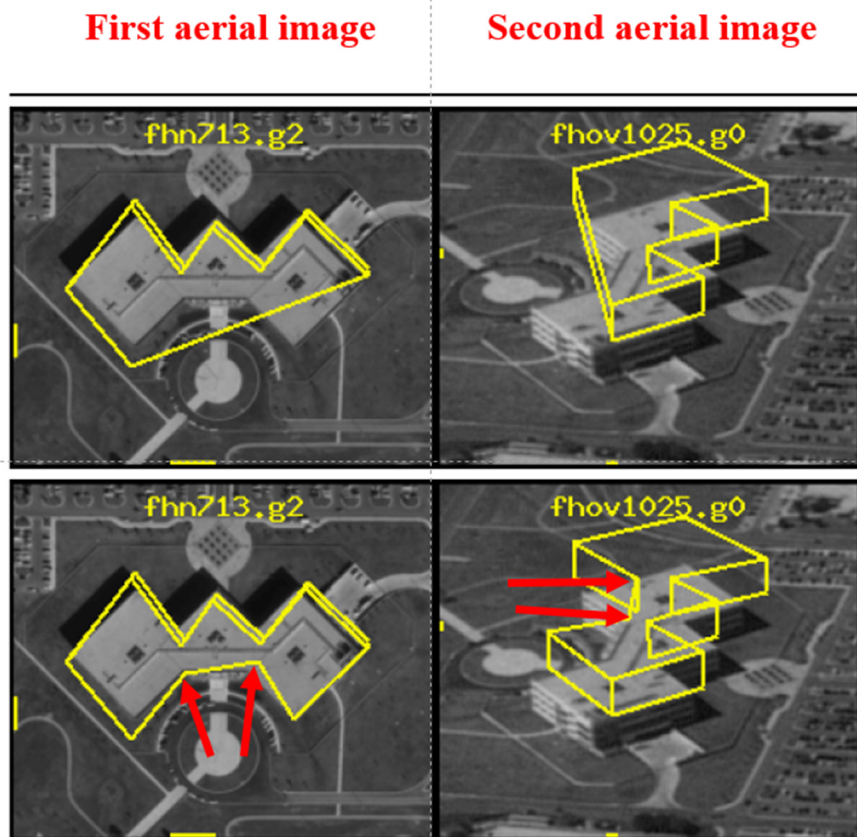
As previously discussed (*see* [1.3]), the line drawing overlying the first aerial image changes position and size in response to user input. As shown in FIG. 4, the line drawing overlying the second image also changes position and size as we progress down from the top row. NEARMAP-1003, [53]; NEARMAP-1004, FIG. 4. In his declaration, Dr. Forsyth explains how a POSITA would have understood Heller's system to operate:

In Heller's FIG. 4, the changes in position and size of the line drawing in the second aerial image correspond to the changes to the line

drawing in the first aerial image. For example, comparing the first row of images to the second row, the line drawing on the first aerial image has been shifted up and to the left so that one of its corners aligns with a corner of the building in the image. The line drawing on the second aerial image has also been shifted, but in a different direction relative to the frame to account for the different view of the building shown in the second aerial image. Similarly, in the third row of the detail from FIG. 4 above, the line drawing over the second aerial image clearly becomes larger, just as the line drawing over the first aerial image does in the third row.

NEARMAP-1003, [54] (citations omitted); *see, e.g.*, NEARMAP-1004, 2, 3 (“The results of the semi-automated site model construction are continuously displayed to the model builder.”), 4, 5 (“The Move W operation *moves the box* along the camera ray of the selected image and *along the corresponding epipolar lines in the other images.*”), FIG. 4.

FIG. 5 from Heller depicts the same behavior. As discussed above (*see* [1.3]), FIG. 5 shows vertices being added to the line drawing overlying the first aerial image. As illustrated in the following annotated figure, the line drawing over the second aerial image is also changed to add these two vertices (denoted by red arrows). NEARMAP-1004, 5, FIG. 5; NEARMAP-1003, [55]:



NEARMAP-1004, Detail of FIG. 5 (annotated)

Accordingly, the Heller-Quam combination renders obvious “in response to user input, changing, by the at least one processor of the roof estimate report system, the line drawing representing a feature of the roof that overlies the first aerial image of the roof.”

[1.5]: generating and outputting a roof estimate report using a report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

As previously discussed in Section II.D.1, *supra*, “the detailed requirements as to the contents of the roof estimate report” recited in these limitations “are not

entitled to patentable weight.” NEARMAP-1010 (’592 FWD), 18. Specifically, “the content of the information” in the generated report “does not modify or otherwise affect the underlying computer or paper, nor does it represent a new and non-obvious relationship with the substrate,” and thus “***the claimed content of the information is not entitled to weight in the patentability analysis.***” *Id.*, 17-18.

Since the specific information content of the report described in the claim is not limiting, it follows that a showing of “generating and displaying any graphical or textual information” is sufficient to meet the claim. *Id.*, 18.

In the combination, Quam describes that “every entity represented in the RCDE has an associated local coordinate system” and are “tied together through a flexible and efficient network of coordinate transformations.” NEARMAP-1005, 1. “***This allows each type of data to be*** represented, manipulated, and ***displays*** in the most convenient and precise form, without sacrificing functionality or generality, in addition to enabling the fusion of different types of geometric data.” *Id.*; NEARMAP-1003, [59].

Quam also teaches that “functionality can be exercised by using the mouse to click on an image being displayed by the RCDE,” which, in response, “***displays both the image coordinates and apparent 3-D coordinates of the selected point.***” NEARMAP-1005, 11.

Quam further describes a “ContourMap” object that “displays a set of

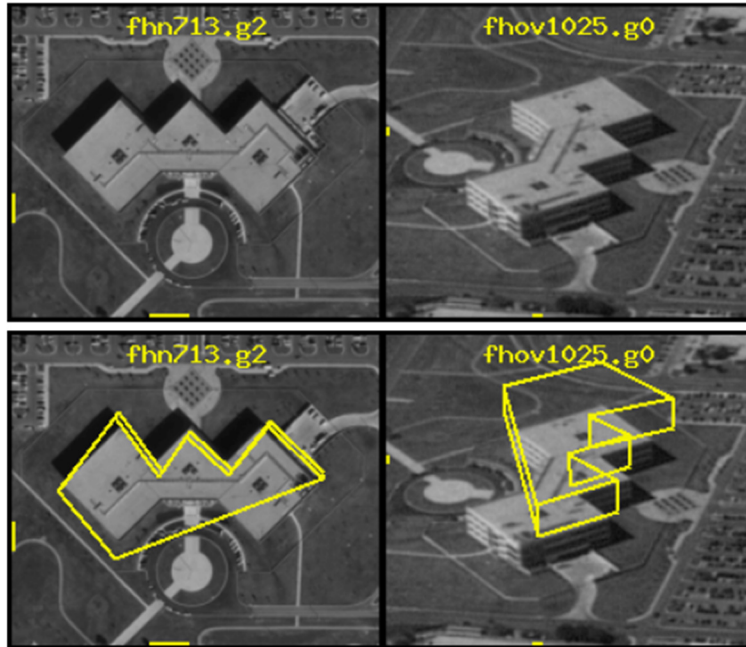
contours of constant elevation computed from a digital terrain model,” a “Map Grid” object that “displays lines of constant latitude and longitude or UTM coordinates,” and a “Text” object that “displays a string of text at a 3-D location in a site.” *Id.*, 8.

Any of these or the many other teachings in Quam and Heller of displaying data is sufficient to address the limitation in question. *See* NEARMAP-1010, 18; NEARMAP-1003, [62]. Accordingly, The Heller-Quam combination renders this limitation obvious.

b) Claim 6

[6.0]: The method of claim 1 wherein the displaying the respective line drawings includes initiating display of a line on the first and second image.

In the combination, Heller teaches displaying the yellow wireframe overlays (line drawings, *see* [1.2]) on the first and second aerial images, as shown in the following detail from FIG. 5. NEARMAP-1003, [63]:



NEARMAP-1004, Detail of FIG. 5

As shown in the figure, the first and second aerial images are first displayed without the line drawings overlayed, in the first row. In the second row, display of the overlaid line drawings is initiated (i.e., the overlay starts displaying) for both the first and second aerial images. *See* NEARMAP-1004, FIG. 5; NEARMAP-1003, [64].

c) Claim 7

[7.0]: The method of claim 1 wherein the first image provides a substantially top plan view of the roof of the building,

In the combination, Heller teaches that the first image provides a substantially top plan view of the roof of the building, as shown in FIG. 5.

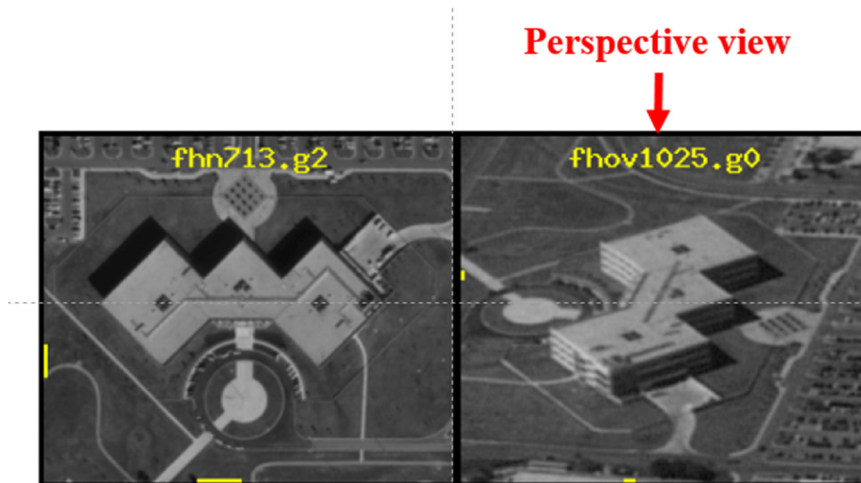
NEARMAP-1003, [65]:



NEARMAP-1004, Detail of FIG. 5 (annotated)

[7.1]: and wherein the second image provides a perspective view of the roof of the building.

In the combination, Heller teaches that the second image provides a perspective view of the roof of the building, as shown in FIG. 5. NEARMAP-1003, [66]:



d) Claim 9

[9.0]: The method of claim 1 further comprising: transmitting roof measurement information based at least in part on the change of the line drawing representing a feature of the roof that overlies the first aerial image of the roof.

As previously discussed (*see* Section II.D.2, *supra*), for the purposes of the present proceeding, “transmitting roof measurement information” should be interpreted broadly enough to encompass transmitting roof measurement information between components of the same computer system, consistent with the Board’s interpretation of the term in the prior IPR challenge to the ’737 patent. *See* NEARMAP-1010, 18-20.

In the combination, Heller teaches “captur[ing] low level information from the RTS user interface about individual actions taken by the analyst.” NEARMAP-1004, 5. “Every mouse motion associated with making *adjustments to object parameters*, and every mouse click is *captured into an event history*.” *Id.* Heller describes that the event history captures “Object Adjustment Events,” which include an “Object ID” identifying the manipulated object, an “Adjustment type: (for example: vertex-xy, vertex-z, vertex-width, ...),” and a “Sequence of time deltas and mouse position deltas of the form: (delta-t dx dy).” *Id.*

A POSITA would have understood or at least found it obvious that the object adjustment events in the event history include roof measurement information. NEARMAP-1003, [69]; *see, e.g.*, NEARMAP-1004, 5. The object

adjustment events represent, for example, the user adjusting the size of the wireframe overlays (the line drawings, *see* [1.2]), because Heller refers to the wireframes as “objects.” NEARMAP-1004, 4 (“After the primitive is added to the scene, the *user grabs an upper corner of the object* and adjusts the pose and size of the box to match the building[.]”). The “mouse-position deltas” in the event represent the movement of the mouse during the adjustment, which includes the starting and ending position of the mouse. NEARMAP-1003, [69]; *see, e.g.*, NEARMAP-1004, 5. The mouse movement during the adjustment represents the change in the size of the line drawing during the adjustment. *Id.* Because the line drawings are used to model the roof structure of a building (*see* [1.2]-[1.4]), a change in the size of the line drawing represents a change in the measurements of the roof represented by the model. *Id.* Thus, the object adjustment events in the event history include roof measurement information, and that information is transmitted to the event history when an adjustment to a wireframe is made (*i.e.*, based at least in part on the change of the line drawing). NEARMAP-1003, [69]; *see, e.g.*, [1.2]-[1.4]; NEARMAP-1004, 4, 5, FIG. 4, FIG. 5.

Accordingly, the Heller-Quam combination renders obvious “transmitting roof measurement information based at least in part on the change of the line drawing representing a feature of the roof that overlies the first aerial image of the roof.”

e) **Claim 10**

[10.0]: The method of claim 1 further comprising: displaying a marker operable to specify a point on an image;

In the combination, Quam describes that the “primary object used for image registration is the conjugate point” which “has both 2-D and 3-D components.” NEARMAP-1005, 14. “It is used to enter both image-to-ground correspondences (ground control points) and image-to-image correspondences (tie points) and to specify the a priori error estimates for these quantities.” *Id.* Quam describes that the “3-D component of the conjugate point is drawn as a “+”-shaped crosshair whose image overlay position is computed by projecting its 3-D coordinates through the image’s current camera model into the coordinate system of the image.” *Id.* “The 2-D component is drawn as *an “X”-shaped crosshair*” (a marker) “*whose image overlay position is set manually through mouse interactions*” (operable to specify a point on an image). *Id.*; NEARMAP-1003, [71].

[10.1]: receiving, via the marker, an indication of a point on the first aerial image; and

As previously discussed (*see* [10.0]), in the combination, Quam teaches a marker operable to specify a conjugate point on the first aerial image (“X”-shaped crosshair”). Quam describes that the “*image overlay position*” of the marker “*is set manually through mouse interactions.*” NEARMAP-1005, 14. The user manually setting the image overlay position of the marker—for example by

clicking the marker and dragging it to overlay a conjugate point in the first aerial image—provides an indication of a point in the first aerial image via the marker.

NEARMAP-1003, [72]; *see, e.g.*, NEARMAP-1005, 4, 5, 14, FIG. 4, FIG. 5; [1.2]-[1.4].

[10.2]: registering, based on the received indication of the point, the aerial image to a reference grid corresponding to a three-dimensional model of the roof.

In the combination, Quam describes that “***[i]mage registration*** is the process of determining and/or refining the internal and external parameters (e.g., position, orientation) of the sensor used to acquire the image.” NEARMAP-1005, 14 (in section “3.6 Image Registration”). Quam describes that the “***primary object used for image registration is the conjugate point***,” and that the “‘X-shaped crosshair’ (the marker, *see* [10.1]) represents the “2-D component” of the conjugate point. NEARMAP-1005, 14. Quam describes that the “primary interface to” the registration “functionality” of RADIUS “is the Registration Tool.” *Id.* “The tool is designed to lead the user through the necessary steps to ***register a new image***, without detailed knowledge of the intricacies of photogrammetry.” *Id.*

“The Registration Tool is shown in Figures 8, 9, and 10” of Quam. *Id.* “The main panel contains three image display panes” that “show the full image being operated on and enlarged views of the current conjugate point” which includes the “‘X-shaped crosshair’ (the marker, *see* [10.1]) “on both the image being registered

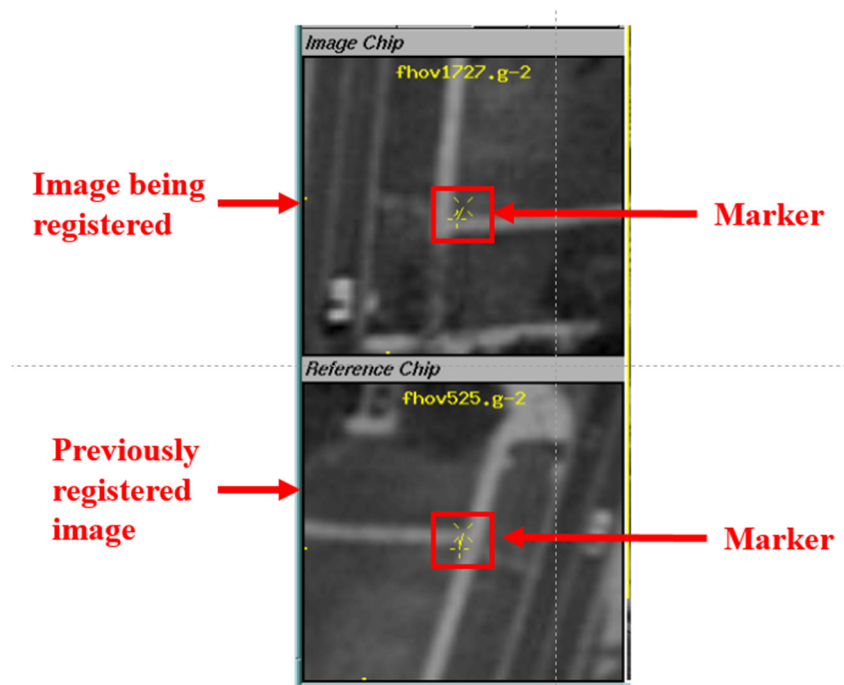
and a previously registered reference image.” *Id.*; NEARMAP-1003, [74]. FIG. 8 from Quam shows the Registration Tool registering an image based on the point in the image indicated by the marker (the X-shaped crosshair). NEARMAP-1005, 15; NEARMAP-1003, [74]:



NEARMAP-1005, FIG. 8

The following detail of FIG. 8 from Quam shows the two image panes at the bottom left of the figure, which display “enlarged views of the current conjugate point on both the image being registered and a previously registered reference

image.” NEARMAP-1005, 15. An X-shaped crosshair is displayed on both images indicating the “current conjugate point.” *Id.*; NEARMAP-1003, [75]:



NEARMAP-1005, Detail of FIG. 8 (annotated)

Also in the combination, Quam teaches that RADIUS provides for “[r]egistration of multiple data sources, including stereographic or multiple images, terrain elevation models, and 3-D object models, to the same world coordinate system.” NEARMAP-1005, 5. A POSITA would have understood the “world coordinate system” described in Quam to be a “reference grid.” NEARMAP-1003, [76]; NEARMAP-1005, 5; *see also* 1 (“every entity represented in the RCDE has an associated local coordinate system.”), 5 (RADIUS provides “[r]egistration of local coordinate systems to Universal Transverse Mercator (UTM), latitude-longitude, and other cartographic coordinate representations.”), 8

(“Map Grid This object displays lines of constant latitude and longitude or UTM coordinates.”), FIG. 4.

Accordingly, The Heller-Quam combination renders this limitation obvious.

f) Claim 16

[16.0]: A non-transitory computer-readable storage medium, having computer executable instructions stored thereon that, when executed by at least one computer processor, cause the at least one processor to enable a computing system to generate a roof estimate report for a building having a roof, by performing a method comprising:

See [1.0].

[16.1]: overlaying a line drawing on corresponding locations of a roof feature of the roof on first and second aerial images of the roof, wherein the first aerial image provides a first view of the roof of the building and the second aerial image provides a second view of the roof of the building;

See [1.1], [1.2]

[16.2]: in response to changes in the line drawing overlaid on the first aerial image, displaying corresponding changes to the line drawing overlaid on the second aerial image; and

See [1.3], [1.4]

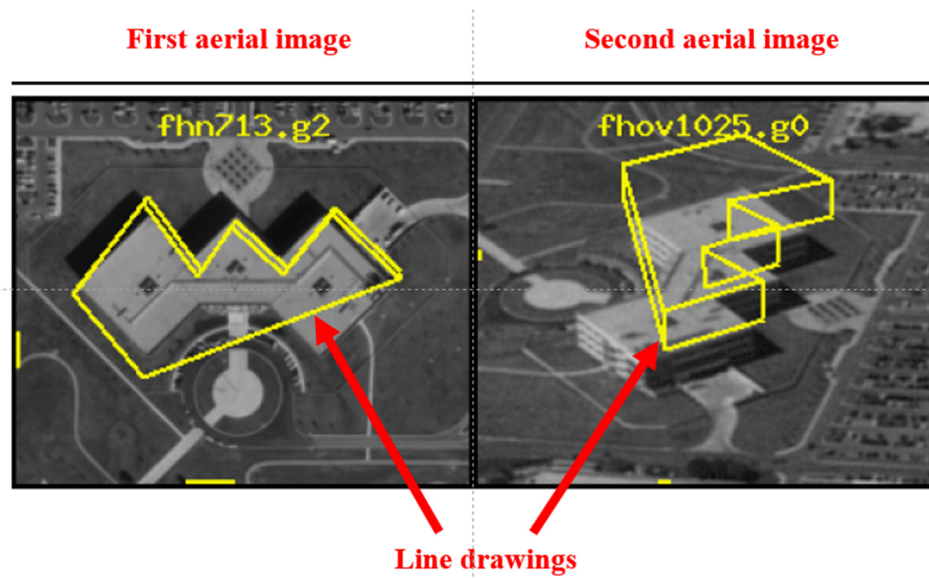
[16.3]: generate and output a roof estimate report using a report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

See [1.5]

g) Claim 17

[17.0]: The non-transitory computer-readable storage medium of claim 16 wherein the method further comprises modifying a three-dimensional model of the roof by adding a planar roof section to the three-dimensional model.

In the combination, Heller describes that the “central component in the RADIUS model-supported image exploitation paradigm, is the creation of a **3-dimensional model** that captures the basic geometry of the site under examination.” NEARMAP-1004, 1. A POSITA would have understood that the yellow wireframes (line drawings) discussed with respect to limitations [1.2] to [1.4], and shown here in FIG. 5, are visual representations of Heller’s “3-dimensional models.” NEARMAP-1003, [82]; NEARMAP-1004, 1, 4, 5:



NEARMAP-1004, Detail of FIG. 5 (annotated)

Thus, Heller’s teaching of changing the line drawings based on user input, as discussed at [1.2]-[1.4], also modifies the three-dimensional model. NEARMAP-

1003, [83]; *see, e.g.*, [1.2]-[1.4]; NEARMAP-1004, 4, 5, FIG. 4, FIG. 5.

Heller provides several examples of different types of base models (i.e., primitives) that can be used to model a building shown in the first and second aerial images, such as, for example, the “box primitive” used in FIG. 4, and the “extrusion primitive” used in FIG. 5. *See* NEARMAP-1004, 4, 5, FIG. 4, FIG. 5. In addition to these, Heller also describes a “house primitive” which it describes as a “box primitive” with a “sloped roof[.]” NEARMAP-1004, 4. Heller describes that “[m]odeling a building with a house primitive follows the same sequence of steps” taken to model a building with a box primitive ***“followed by setting the roof type (gabled, hip, shed), pitch, and overhang.”*** *Id.*, 5. Also in the combination, Quam teaches that “[h]ouses are boxes with ***one (shed), two (gable), or four (hip) sloping roof surfaces in place of the top face.***” NEARMAP-1005, 6. A POSITA would have understood or found it obvious for the house primitive to have the simplest type of roof—the “shed” type having a single “sloping roof surface” (planar roof section)—when first created. NEARMAP-1003, [84]; *see, e.g.*, NEARMAP-1004, 5; NEARMAP-1005, 6. Defaulting to the “shed” roof type is consistent with the modeling using a “house primitive follow[ing] the same sequence of [initial] steps” as modeling using a box primitive, because the “shed” roof type makes the added house primitive most similar to a box primitive, thereby making it easier to “follow[] the same sequence of steps” used with a box

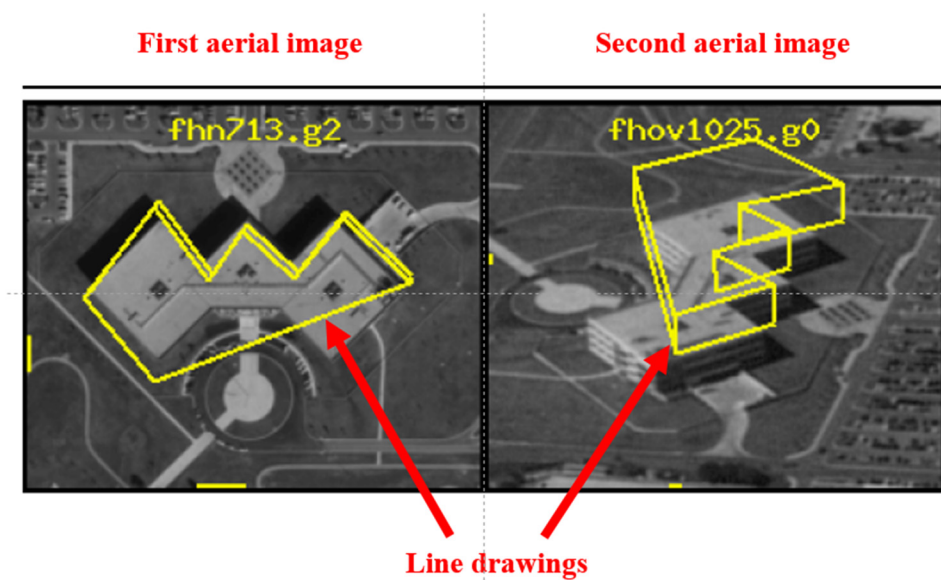
primitive. *Id.* In addition, a POSITA would have understood that “setting the roof type” to either to either “gable” or “hip” after “following the same sequence of steps” used with a box primitive would result in a particular number of “sloping roof surface[s]” being added to the existing “shed” roof having a single sloping roof surface” (planar roof section). *Id.* In particular, setting the roof type to “gable” would result in a single sloping roof surface (planar roof section) being added to the three dimensional model, bringing the total number of sloping roof surface to two. *Id.* Setting the roof type to “hip” would result in three additional sloping roof surfaces (planar roof sections) being added to the three dimensional model, bringing the total number of sloping roof surface to four. *Id.*

a) Claim 25

[25.0]: The non-transitory computer-readable storage medium of claim 16 wherein the method further comprises: modifying a three dimensional model of the roof based at least on the modification of the line drawing overlaid on the first aerial image.

In the combination, Heller describes that the “central component in the RADIUS model-supported image exploitation paradigm, is the creation of a **3-dimensional model** that captures the basic geometry of the site under examination.” NEARMAP-1004, 1. Heller describes that, in the RADIUS program, “**the 3-dimensional model of a feature is projected into one or more images** and **the operator adjusts the model** to align it with [what] is seen in the images.” *Id.* A POSITA would have understood that the “3-dimensional models”

Heller refers to are the yellow wireframes (line drawings) discussed with respect to limitations [1.2] to [1.4], and shown here in FIG. 5. NEARMAP-1003, [85]; NEARMAP-1004, 1, 4, 5:



NEARMAP-1004, Detail of FIG. 5 (annotated)

Thus, Heller's teaching of changing the line drawings based on user input, as discussed at [1.2]-[1.4], also modifies the three-dimensional model. NEARMAP-1003, [86]; *see, e.g.*, [1.2]-[1.4]; NEARMAP-1004, 4, 5, FIG. 4, FIG. 5.

b) Claim 26

[26.0]: A computer-implemented method in a roof estimate report system including a computer system and a memory coupled to the computer system, the method comprising:

See [1.0].

[26.1]: changing, by the computer system of the roof estimate report system, a line in a first line drawing representing a feature of a roof that overlies a first aerial image of the roof;

See [1.1], [1.2], [1.3].

[26.2]: changing, by the computer system of the roof estimate report system, a line in a second line drawing that corresponds to the same feature in the first line drawing that was changed, the change in the second line drawing being made by the computer system in response to the change that was made in the first line drawing; and

See [1.4].

[26.3]: generating and outputting a roof estimate report using a report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

See [1.5].

c) Claim 34

[34.0]: The method of claim 26 further comprising: displaying roof measurement information on the same display concurrently with the first line drawing being displayed.

As previously discussed (*see [10.0]-[10.2]*), in the combination, Quam describes registering and aerial image to a reference grid. Quam further describes a “**Map Grid**” that “**displays lines of constant latitude and longitude or UTM coordinates**” when added to a site model. NEARMAP-1005, 8. Displaying this “Map Grid” as an overlay of the first aerial image and the first line drawing, as taught by Quam, teaches displaying roof measurement information. *See id.*; NEARMAP-1003, [91]. In the prior IPR of the ’737 patent, the Board found that

“displaying a roof in a local coordinate system,” such as the Map Grid taught by Quam, disclosed “displaying roof measurement information.” *See* NEARMAP-1010, 19 (“We agree with Petitioner that Avrahami displays ‘roof measurement information’ by displaying a roof in a local coordinate system, even though Avrahami does not label its measurement units.”).

Accordingly, the Heller-Quam combination renders this limitation obvious.

B. GROUND 2: Claims 1, 6, 7, 9, 10, 16, 17, 25, 26, and 34 are obvious over Heller and Quam in view of Deaton

1. Overview of Deaton

Deaton describes “a roof inspection system” that generates and outputs various reports. NEARMAP-1006, [0010]. For example, Deaton describes a “project report” that “provides specification details and work items for repairing or replacing the infrastructure” (the roof) “in accordance with the conditions identified.” *Id.*, [0107]. The project report can include numerical values for “lengths (e.g. linear feet of metal flashing)” and “areas (e.g. square footage of roofing membrane)” associated with the roof. *Id.*

2. The combination of Heller, Quam, and Deaton

In the combination, the combined system of Heller and Quam is modified to produce a roof estimate report, as taught by Deaton, based on the site models described in Heller and Quam. NEARMAP-1003, [94].

3. Reasons to combine Heller, Quam, and Deaton

A POSITA would have been motivated and found it obvious to modify the combined system of Heller and Quam to produce the roof estimate report described in Deaton. As described in the Deaton, the “project report...provides specification details and work items for repairing or replacing the infrastructure” (the roof) “in accordance with the conditions identified,” and including the production of such a report in the system resulting from the combination of Heller and Quam would advantageously enable the site models described in Heller and Quam to be utilized to plan and execute maintenance, repair, and new construction projects, thereby increasing the utility of the combined system. NEARMAP-1006, [0107]; NEARMAP-1003, [95].

Further, a POSITA would have found it obvious to modify the Heller-Quam combination based on Deaton’s teachings because doing so entails the use of known solutions to improve similar systems and methods in the same way. NEARMAP-1003, [96]. Here, “when a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). A POSITA would have recognized that applying Deaton’s teachings to augment the Heller-Quam system would have led to predictable results without significantly altering or

hindering the functions performed by the Heller-Quam system. NEARMAP-1003, [96].

In fact, a POSITA would have been motivated to incorporate the well-known techniques of Deaton into Heller-Quam to achieve the predictable benefits described in Deaton. NEARMAP-1003, [97]; *see, e.g.*, NEARMAP-1005, 34; NEARMAP-1006, [0009], [0012], [0013]. Indeed, a POSITA would have had a reasonable expectation of success incorporating Deaton's teachings into Heller-Quam, because Deaton's report is produced based on similar models to those in Heller-Quam. NEARMAP-1003, [97]; *see, e.g.*, NEARMAP-1006, [0070] (Deaton describing that "data collected representing these spatial relationships" between roof components "can assist in providing graphical models of a particular target").

Accordingly, for at least these reasons, modifying the Heller-Quam system based on the teachings of Deaton would have been routine and straightforward to a POSITA, and it would have been clear that such a combination would predictably work and provide the expected results. *Id.*

4. Analysis

a) Claim 1

Limitations [1.0]-[1.4] are rendered obvious for the same reasons discussed in Ground 1, and the analysis of those limitations is hereby incorporated by

reference.

[1.5]: generating and outputting a roof estimate report using a report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

As previously discussed in Section II.D.1, *supra*, “the detailed requirements as to the contents of the roof estimate report” recited in these limitations “***are not entitled to patentable weight.***” NEARMAP-1010 (’592 FWD), 18. However, to the extent this limitation is found to be entitled to patentable weight, it is nonetheless rendered obvious by the Heller-Quam-Deaton combination.

In the combination, Deaton describes “a roof inspection system” that generates and outputs various reports. NEARMAP-1006, [0010]. For example, Deaton describes a “project report” that “provides specification details and work items for repairing or replacing the infrastructure” (the roof) “in accordance with the conditions identified.” *Id.*, [0107]. The project report can include numerical values for “lengths (e.g. linear feet of metal flashing)” and “areas (e.g. square footage of roofing membrane)” associated with the roof. *Id.*; NEARMAP-1003, [101].

To the extent EagleView argues that Deaton produces its three-dimensional roof models based on on-site measurements of the roof using GPS rather than based on image analysis, a POSITA would understand that Deaton’s techniques for

generating a roof estimate report based on a three-dimensional model would operate in the same manner regardless of how the particular three-dimensional model was originally generated. NEARMAP-1003, [102].

Accordingly, the Heller-Quam-Deaton combination renders this limitation obvious.

b) Claims 6, 7, 9, and 10

Claims 6, 7, 9, and 10 are obvious for the same reasons discussed in the analysis of Ground 1, which is hereby incorporated by reference.

c) Claim 16

Limitations [16.0]-[16.2] are rendered obvious for the same reasons discussed in Ground 1, and the analysis of those limitations is hereby incorporated by reference.

[16.3]: generate and output a roof estimate report using a report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

See [1.5]

d) Claims 17 and 25

Claims 17 and 25 are obvious for the same reasons discussed in the analysis of Ground 1, which is hereby incorporated by reference.

e) Claim 26

Limitations [16.0]-[16.2] are rendered obvious for the same reasons

discussed in Ground 1, and the analysis of those limitations is hereby incorporated by reference.

[26.3]: generating and outputting a roof estimate report using a report generation engine, wherein the roof estimate report includes numerical values for corresponding slope, area, or lengths of edges of at least some of a plurality of planar roof sections of the roof, wherein the generated roof estimate report is provided for repair and/or constructing the roof structure of the building.

See [1.5].

f) Claim 34

Claim 34 is obvious for the same reasons discussed in the analysis of Ground 1, which is hereby incorporated by reference.

IV. SECONDARY CONSIDERATIONS OF NONOBVIOUSNESS

The Board has “cautioned petitioners in prior proceedings that petitions may be denied if they do not address known evidence of secondary considerations.”

See, e.g., *Stryker v. KFX*, IPR2019-00817, Paper at 28-29 (P.T.A.B. September 16, 2019). Consistent with this guidance, the sections below address secondary considerations arguments and evidence presented by Patent Owner in IPR2016-00592—an IPR challenge to the ’737 patent brought by petitioner Xactware (the “Xactware IPR”). See *id.* In summary, the publicly available evidence from the Xactware IPR is insufficient to establish a nexus between the Challenged Claims and the evidence of secondary considerations.

A. Patent Owner previously presented evidence of secondary considerations for the '737 patent

In the Xactware IPR, Patent Owner presented arguments and evidence related to secondary considerations of non-obviousness. *See* NEARMAP-1012, 49-71. The Board “considered” the petitioner’s “evidence and arguments about the asserted prior art’s teachings and the reasons why one skilled in the art would combine them,” and “also weighed the objective indicia of non-obviousness presented by Patent Owner.” NEARMAP-1010, 34; *see also* 26-35. The Board noted that it found “certain aspects of” the petitioner’s “obviousness allegations to be at best a close call.” *Id.*, 34. The Board also faulted the petitioner for failing to present any evidence to rebut Patent Owner’s positions on secondary considerations. *Id.*, 29-34. The Board ultimately found that petitioner had not shown any of the challenged claims⁶ to be unpatentable. *Id.*, 34-36.

Patent Owner filed most of this material under seal in the Xactware IPR. *See* NEARMAP-1015, 6. Thus, much of the record (especially portions related to the “nexus” requirement) is heavily redacted, and several exhibits (again those related to “nexus”) are sealed with no version available to the public. *See, e.g.*, NEARMAP-1012, 52-65 (showing redactions, and citing to, *e.g.*, the “Bajaj Declaration” (Exhibit 2031), which is unavailable). As a result, Petitioner is

⁶ The prior IPR challenged claims 1, 9, 10, 16, 19, 22, 25–28, 31, and 34–36.

unable to fully evaluate and address Patent Owner's contentions and evidence regarding secondary considerations from the prior IPR. *See id.*

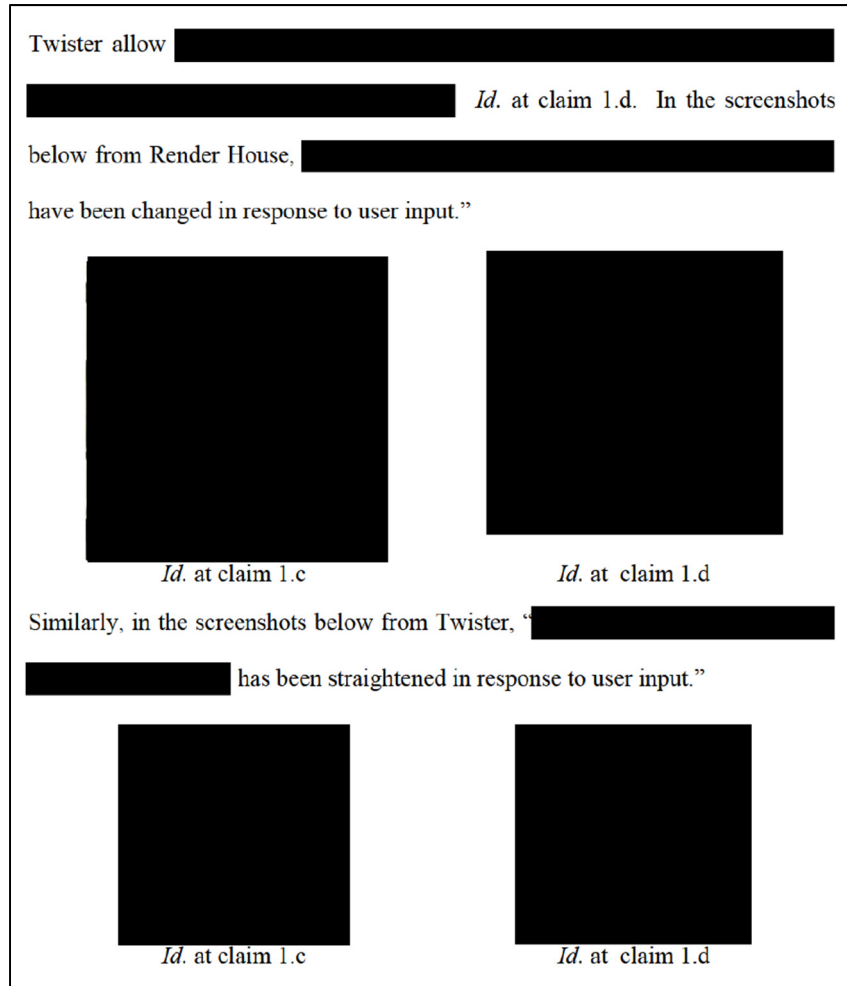
B. The redacted materials from the Xactware IPR are insufficient to establish a nexus between the evidence of secondary considerations and the Challenged Claims

“For objective indicia of nonobviousness to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.” *Lectrosonics Inc. v. Zaxcom*, IPR2018-00129, Paper 33 at 31 (P.T.A.B. Jan. 24, 2020) (precedential) (hereinafter “*Lectrosonics*”) (citing *ClassCo, Inc., v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016)). “[T]here is no nexus unless the evidence presented is reasonably commensurate with the scope of the claims.” *Lectrosonics*, 32 (quoting *Rambus Inc. v. Rea*, 731 F.3d 1248, 1257 (Fed. Cir. 2013)) (internal quotes omitted).

The publicly available Xactware IPR materials are insufficient to establish the required nexus. As noted above, in the case, Patent Owner filed its secondary considerations evidence under seal. *See* NEARMAP-1015, 6. Patent Owner presented evidence purporting to show commercial success and industry praise related to two of its software products: Twister and Render House. NEARMAP-1012, 50-51. Patent Owner also presented evidence describing the operation of the Twister and Render House products, which it attempted to map to the claims of the ’737 patent to establish a nexus between the alleged commercial success and

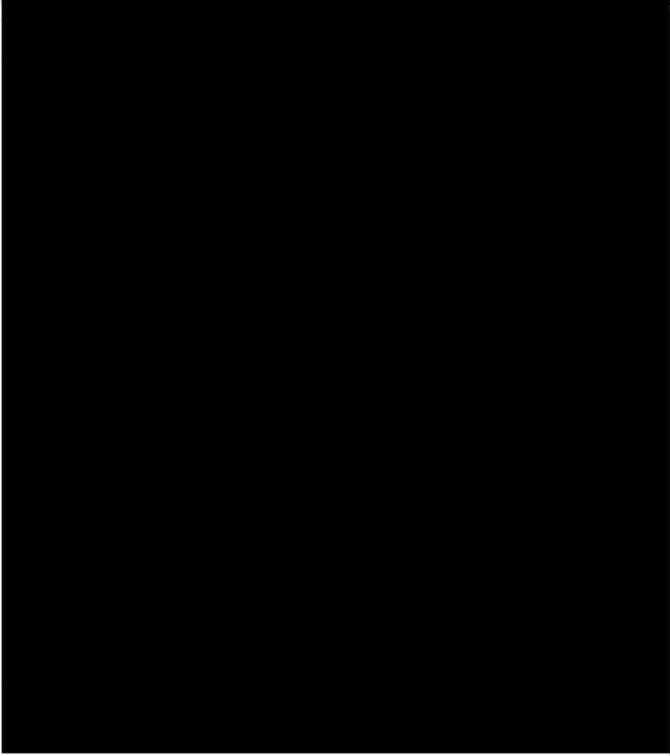
industry praise, and the claimed invention. *See id.*, 52-66.

In the Xactware IPR, Patent Owner filed its Patent Owner Response and the evidence describing the operation of Twister and Render House under seal. *See #SealMotion*, 6. All quotations and discussions of the operation of Twister and Render House are redacted in the publicly available version of the Patent Owner Response. *See* NEARMAP-1012, 52-66. For example, page 54 from the Response is typical:



NEARMAP-1012, Detail of p. 54

The supporting expert declaration of Dr. Bajaj is similarly redacted, as shown below:

Claim Terms in U.S. Patent 9,135,737	<u>Patent Owner's Twister and Render House Products¹</u>
Claim 1 [1.a]: A computer- implemented method in a roof estimate report system including at least one processor and a memory coupled to the at least one processor, the method comprising:	

IPR2016-00592, Ex. 2008, Detail of p. 43

Much of the redacted material is from Exhibit 2007 (“Reference Guide: Twister, 10/1 5/2008 (EV000144)”) and Exhibit 2030 (“Reference Guide: For Measuring Technicians, 10/15/2008 (EV000236)”). *See* NEARMAP-1012, v-vii (Exhibit List). No public version of either exhibit is available.

The publicly available materials in the Xactware IPR are insufficient to establish the required nexus between the evidence of secondary considerations and

the Challenged Claims. NEARMAP-1003, [119]. The available exhibits do not provide any information on the operations of the Twister and Render House products, and the arguments in the Patent Owner Response do not explain how those products are alleged to embody the Challenged Claims. *See* NEARMAP-1012, 52-66; NEARMAP-1003, [119].

Without an established nexus between the evidence and the challenged claims, the evidence of commercial success and industry praise presented by Patent Owner in the Xactware IPR⁷ is irrelevant to the present proceeding, and thus should not be considered at this stage of the present proceeding. *See Lectrosonics*, 31; *ClassCo*, 838 F.3d at 1220.

C. The publicly available evidence of industry praise and commercial success is not tied to the Challenged Claims

The lack of evidence or explanation of a nexus between the secondary considerations evidence and the Challenged Claims should end the inquiry into secondary considerations at this stage of the proceeding. *See Lectrosonics*, 31-32. However, to the extent the Board continues its inquiry, Petitioner submits that the industry praise and commercial success described in the publicly available evidence (*see* NEARMAP-1019 – NEARMAP-1029) results from factors other

⁷ Exhibits 2019-2029 in IPR2016-00592, which are provided as exhibits NEARMAP-1019 through NEARMAP-1029 in the present proceeding.

than of the purported invention embodied by the Challenged Claims of the '737 patent.

Similar to the evidence and arguments related to nexus, much of Patent Owner's evidence of commercial success—specifically its revenue numbers—are redacted from the Patent Owner's Response and the referenced Exhibits (2012 through 2015) are sealed. *See* NEARMAP-1012, 67 (note 2) (“Revenue data comes from the gross revenue from roof reports found in Patent Owner's financial records. Exs. 2012 at 3; 2013 at 7; 2014 at 6; 2015 at 12.”), 68 (redacted discussion of revenue growth). Patent Owner attributes whatever commercial success is shown in these confidential materials to the “Render House and Twister products,” which allegedly “embody the claimed invention of the '737 Patent to create roof reports that are then transmitted to customers.” *Id.*, 66. Patent Owner's simplistic (and self-serving) analysis proclaims that its “success is directly tied to the” '737 patent, a conclusion which strains credulity. *Id.*; NEARMAP-1003, [122].

1. Patent Owner ties its commercial success and industry praise to more accurate roof measurements

Patent Owner states that the “inventiveness of [its] process generates *more consistently accurate roof measurements* than could be achieved using older methods.” NEARMAP-1012, 66. Patent Owner similarly ties much of its industry praise to increased accuracy, stating again, without explanation, that “a feature of the patented invention is the *increased accuracy of roof measurements* by

modifying and displaying line drawings overlaid over aerial images of the roof.”

NEARMAP-1012, 70 (citing NEARMAP-1001, claim 1). “Not surprisingly,”

Patent Owner continues, “*the industry praises the accuracy of Patent Owner’s*

roof reports, which is a direct result of the innovative features.” *Id.* Patent Owner

reproduces several quotes praising the accuracy of its reports, and simply

concludes, without explanation, that this is a result of the claimed techniques. *Id.*

One particularly hyperbolic bit of praise states that its system “produced *more*

precise estimates than workers with tape measurers.” *Id.*, 71.

But Patent Owner provides no explanation of how its claimed techniques lead to more accurate measurements, and the claims do not describe any feature as resulting in increased accuracy. *See, e.g.*, NEARMAP-1001, claim 1; NEARMAP-1003, [124]. And, as explained below, several other factors (e.g., quality of user input, resolution of the aerial images) are responsible for the improvements in accuracy—not the operations recited in the Challenged Claims. NEARMAP-1003, [124].

2. Higher resolution aerial images lead to more accurate reports

One factor that would affect the accuracy of the measurements is the resolution of the “first and second aerial images.” *See, e.g.*, NEARMAP-1001, claim 1; NEARMAP-1003, [125]. Any measurements of the roof features in the Challenged Claims are produced based on the first and second aerial images, and

the maximum accuracy of the roof measurements is thus limited by the resolution of these aerial images. NEARMAP-1003, [125]; *see, e.g.*, NEARMAP-1030, 1 (Eagle View reports are “derived from Pictometry imagery.”). Notably, the Challenged Claims do not recite any limitations related to capturing the first and second aerial images. *See id.*

Patent Owner recognized the importance of “high-resolution imagery” to its commercial success when it merged with “Pictometry International Corp.” (hereinafter “Pictometry”) in 2013. *See* NEARMAP-1030, 1. In a 2017 press release, Patent Owner described Pictometry as “a leading provider of aerial imagery and the originator of technology for aerial oblique image capture.” *Id.* Others in the industry similarly recognized Pictometry as “***the expert in high resolution aerial imagery***” as early as 2012—noting that it “produces imagery that is among the highest quality, highest resolution imagery in the world.” NEARMAP-1031, 1-2; *see also* NEARMAP-1032, 1 (Pictometry uses “high resolution aerial images to accurately obtain roof measurements”); NEARMAP-1033, 3 (“For the past decade, Pictometry International Corp., Rochester, N.Y., has used its fleet of more than 60 aircraft to systematically collect intelligent imagery of locations around the world.”); NEARMAP-1034, 2 (“Pictometry has been the dominant force in oblique imagery capture for more than a decade, thanks partially to patents and surrounding technology the company has developed.”);

NEARMAP-1003, [126].

Patent Owner described its “aerial roof measurements and property data reports” as being “*derived from Pictometry imagery.*” See NEARMAP-1030, 1. In that same 2017 press release, Patent Owner described “Pictometry imagery” as “*a core offering,*” touting its “fleet of 115 aircraft” as allowing it to offer “more coverage and third-party integrations than any other aerial imagery provider.” See *id.*, 2; NEARMAP-1003, [127]. From these statements, and from its decision to merge with Pictometry, it is clear that Patent Owner recognized the contribution of “high-resolution imagery,” which is not covered by the Challenged Claims, to its commercial success. NEARMAP-1003, [127]; *see, e.g.*, NEARMAP-1030, 1-2.

Accordingly, the increased accuracy of the roof reports Patent Owner alleges were responsible for its commercial success resulted from the use of higher resolution aerial images, and not the systems and methods recited in the Challenged Claims. NEARMAP-1003, [128]; *see, e.g.*, NEARMAP-1030, 1-2.

3. The techniques recited in the Challenged Claims are not responsible for the increased accuracy of the reports

As explained above, Patent Owner does not explain how anything recited in the Challenged Claims would lead to more accurate roof reports. See NEARMAP-1012, 66-71. To the extent Patent Owner argues that the claimed “line drawings representing features of the roof” are initially placed more accurately than prior systems, the claims require “changing” the line drawings “in response to user

input.” *See, e.g.*, NEARMAP-1001, claim 1; NEARMAP-1003, [129]. Thus, the ultimate accuracy of the roof measurement depends on the quality of the input from the individual user, and not on anything covered by the Challenged Claims. NEARMAP-1003, [129].

4. Additional factors contributed to Patent Owner’s alleged success

Patent Owner does not acknowledge or examine the contributions of any additional factors besides the techniques claimed in the ’737 patent to its alleged commercial success and industry praise. *See* NEARMAP-1012, 66-71. In addition to the factors discussed above, strategic business decisions undoubtedly contributed to Patent Owner’s alleged success. NEARMAP-1003, [130].

For example, as discussed above, in 2013 Patent Owner made the strategic business decision to merge with Pictometry. *See* NEARMAP-1030, 1; NEARMAP-1035, 1-2. This merger gave Patent Owner control over the “high resolution aerial oblique imagery” its roof estimate reports are “derived from,” which undoubtedly contributed to Patent Owner’s commercial success. NEARMAP-1030, 1 (“Patent Owner’s “aerial roof measurements and property data reports” are “derived from Pictometry imagery”); NEARMAP-1031, 2 (“Pictometry ... specializes in the capture of high resolution aerial oblique imagery. Using its patented capture technology, Pictometry produces imagery that is among the highest quality, highest resolution imagery in the world.”);

NEARMAP-1003, [131].

The merger with Pictometry also eliminated a clear competitor to Patent Owner's roof estimate reports. NEARMAP-1003, [132]. A press release from 2012 describes Pictometry as providing "the most precise and comprehensive roof measurement reports on the market today," and as having "the best coverage in the industry." NEARMAP-1031, 1. The release continues:

Pictometry creates highly accurate Roof Measurement Reports with data derived from Pictometry imagery. Pictometry imagery is captured using a patented process that geo-references images, attributing a latitude/longitude coordinate to each pixel and enables users to make highly accurate remote measurements of structures and land features including area, height, distance, elevation, bearing, pitch and more – directly on imagery.

Id., 2. Patent Owner's merger with Pictometry thus eliminated a clear competitor from the roof estimate report market, and therefore undoubtedly contributed to Patent Owner's alleged commercial success. *See id.*; NEARMAP-1003, [132].

Other business factors also contributed to Patent Owner's alleged success. Assuming that customers did not break down its doors to obtain its roof reports, much of Patent Owner's alleged commercial success is likely due to its business relationships (*e.g.*, with the insurance companies that use its reports), as well as efforts in the areas of marketing, sales, customer support, and other areas that are commonly necessary to operate a profitable business. NEARMAP-1003, [133].

D. The Board’s prior decision on secondary considerations in the Xactware IPR does not prevent Petitioner from presenting counter arguments and evidence in the present IPR

As previously discussed, in the Xactware IPR, the Board found that “objective indicia of non-obviousness” were “decisive” in the case, and that the petitioner had not shown any of the challenged claims of the ’737 patent to be unpatentable. NEARMAP-1010, 34-36. Petitioner in the present case was not involved in the Xactware IPR, and, due to the incompleteness of the publicly available record for that case, has not been afforded the opportunity to fully evaluate Patent Owner’s evidence of secondary consideration, much less to present evidence and argument to rebut said evidence. *See Dell v. Acceleron*, 818 F.3d 1293, 1301 (Fed. Cir. 2016) (Under the APA, the PTAB “must provide all interested parties opportunity for the submission and consideration of facts and arguments § 554(c), and must allow a party to submit rebuttal evidence as may be required for a full and true disclosure of the facts.”) (citing 5 U.S.C. § 554(c), 556(d)). Patent Owner is certainly permitted to present evidence and arguments in the present case regarding secondary considerations, but it should not be permitted to leverage its victory over a different petitioner in a different IPR proceeding to prevent Petitioner from countering those allegations with its own arguments and evidence. *See id.*

In addition, it is notable that the Board faulted the petitioner for providing

only arguments in response to Patent Owner’s evidence of secondary considerations. *See* NEARMAP-1010, 32 (“patent challenger cannot successfully rebut the presumption with argument alone—it must present evidence”). The Federal Circuit similarly faulted the petitioner for not presenting evidence to counter Patent Owner’s evidence. *See* NEARMAP-1016, 2 (“In its Reply, Xactware merely challenged the credibility of Eagle View's expert and argued that the expert's testimony failed to demonstrate that the products actually practiced the claimed inventions. The evidentiary showing necessary to earn the presumption of nexus was simply not at issue before the Board.”). Thus, both decisions note errors by the prior petitioner, and fall well short of treating Patent Owner’s evidence secondary considerations as unassailable. That is, any prior consideration on the obviousness of the Challenged Claims that was a “close call at best” was decided in a proceeding in which a party only presented attorney arguments without any of the corroborating evidentiary record. *See* NEARMAP-1010, 32. Accordingly, the Board should not saddle the present Petitioner with the errors of the prior petitioner, and should allow Petitioner to address the full secondary considerations evidence if Patent Owner decides to raise the issue in the present IPR.

V. PTAB DISCRETION SHOULD NOT PRECLUDE INSTITUTION

Consistent with Congressional intent and goals of *NHK-Fintiv*, Petitioner asks the Board alone to consider challenges raised in this Petition. *Apple Inc. v.*

Fintiv, Inc., IPR2020-00019, Pap. 11, 6 (PTAB Mar. 20, 2020) (precedential).

Unlike *NHK*, there is no basis for discretionary denial of this Petition under § 325(d), which would only be appropriate if the same or substantially the same art or arguments were previously presented to the Office. *Advanced Bionics LLC v. MED-EL Elektromedizinische Gerate GmbH*, IPR2019-01469, Pap. 6, 8-10 (PTAB Feb. 13, 2020) (precedential). The arguments advanced in this Petition are premised on combinations of references that were never presented to the Office in connection with the '737 patent. *See, generally*, NEARMAP-1002.

Moreover, and as explained below, *Fintiv* favors institution. *Fintiv*, Pap. 11, 6; *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019 Pap. 12 at 20-21 (PTAB Dec. 1, 2020) (precedential) (“we are not persuaded that that the interests of the efficiency and integrity of the system would be best served by invoking our authority under 35 U.S.C. §314(a) to deny institution of a meritorious petition”); *Snap, Inc. v. SRK Technology LLC*, IPR2020-00820 Pap. 15 at 19 (PTAB Oct. 21, 2020) (precedential).

A. Factor 1: Institution will increase likelihood of stay

The companion litigation is at a very early stage. The Court has not yet set a date for the claim construction hearing, and the scheduling order indicates that it will not set a trial date until 14 days after its claim construction ruling. *See* NEARMAP-1013. Final infringement and invalidity contentions are not due until

June 30 and July 14, respectively. Claim construction briefing is not scheduled to begin until August. *See id.* Institution would thus enable the Board to resolve validity, and a finding of invalidity would advance judicial efficiency by relieving the Court of the need to conduct trial on the '737 patent.

The very early stage of the proceedings and the potential for simplification of issues increases the likelihood that the court will stay the case in view of IPR institution. *See, e.g., 454 Life Sciences Corp. v. Ion Torrent Systems, Inc., et al.*, C.A. No. 15-595-LPS at 5-8, 11 (D. Del. Nov. 7, 2016) (Judge Stark) (granting motion for stay in view of the “very early” stage of the case and the “very strong likelihood that...IPR proceedings will simplify the issues for trial”).

Stay of the companion litigation pending the Board’s final written decision (“FWD”) would weigh strongly in favor of institution. *Snap*, 8-9.

B. Factor 2: The Board’s final written decision will issue in advance of any foreseeable trial

As described above, the District Court has not yet set a date for the claim construction hearing, and the scheduling order indicates that it will not set a trial date until 14 days after its claim construction ruling. *See* NEARMAP-1013. Thus, any comparison of a projected FWD date against potential trial dates is, at best, speculative.

However, based on the May 4, 2021 complaint filing date and a median time-to-trial of over three years for Judge Stewart in the District of Utah, the

earliest that trial might possibly be expected to begin is May of 2024.

NEARMAP-1014, 4. Based on the 18-month IPR schedule, a FWD in an IPR arising from the present Petition would issue as early as September of 2023, many months in advance of any potentially foreseeable district court trial date.

Moreover, as in *NHK*, district court trial dates shift, even in normal times. *Mylan Pharma. Inc. v. Sanofi-Aventis Deutschland GMBH*, IPR2018-01680, Pap. 22, 17 (PTAB 2019). And, as the Board found when granting institution in *Juniper Networks, Inc. et al. v. Packet Intelligence LLC*, “it is more likely that the District Court will incur delays due to the COVID-19 pandemic than the Board.” IPR2020-00388 Pap. 22 at 14 (Sept. 9, 2020); *see also Sand Revolution II, LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-01393 Pap. 24 (PTAB Jun. 16, 2020) (informative) (“even in the extraordinary circumstances under which the entire country is currently operating because of the COVID-19 pandemic, the Board continues to be fully operational”).

For at least these reasons, *Fintiv* factor two favors institution. *Sand Revolution*, 8-10.

C. Factor 3: Petitioner’s Diligence and Investment in IPR Outweighs the Parties’ Minimal Investment in Litigation to Date

As noted above, the companion litigation is at a very early stage, with the vast majority of work relating to invalidity remaining to be done. *See* NEARMAP-1013. Moreover, Petitioner’s diligence and substantial investment in IPR far

outweighs the parties' minimal investment of resources in the co-pending litigations. Indeed, Patent Owner did not assert the '737 patent against Petitioner until May 4, 2021, and Petitioner prepared and filed the instant petition challenging the '737 patent over a month ahead of the statutory period provided by Congress under § 315(b). Petitioner's diligence in filing this and related petitions within that timeframe further weighs in favor of institution. *Sotera*, 16-17; *Snap*, 11-13.

D. Factor 4: The FWD will issue before trial, thereby negating the effect of any overlapping issues on the present proceeding

As described above, the FWD will issue several months before the earliest projected trial date. Thus, any overlap between the grounds raised in the IPR and the district court will not affect the IPR since it will complete first. Accordingly, *Fintiv* factor 4 is at least neutral. *See, e.g., Fintiv*, 12-13; *Snap*, 13-16; *Sand Revolution II*, 11-12.

E. Factor 5: The Petitioner in the present IPR and Defendant in District Court are the same party

Petitioner's status as defendant in the district court action is a neutral factor. *See Snap*, 16. Moreover, institution would serve overall efficiency and integrity by relieving the district court of the need to conduct trial.

F. Factor 6: Other circumstances support institution

As *Fintiv* noted, "the factors...are part of a balanced assessment of all the relevant circumstances in the case," and, "if the merits of a ground raised in the petition seem particularly strong...the institution of a trial may serve the interest of

overall system efficiency and integrity....” *Fintiv*, 14-15. As demonstrated in the Petition with reference to Dr. Forsyth’s testimony, institution would result in invalidation of the Challenged Claims. Accordingly, *Fintiv* factor 6 favors institution. *See Snap*, 16-19.

VI. CONCLUSION

The cited prior art reference(s) identified in this Petition contain pertinent technological teachings (both cited and uncited), either explicitly or inherently disclosed, which were not previously considered in the manner presented herein, or relied upon on the record during original examination of the ’737 patent. In sum, these references provide new, non-cumulative technological teachings which indicate a reasonable likelihood of success as to Petitioner’s assertion that the Challenged Claims of the ’737 patent are not patentable pursuant to the grounds presented in this Petition. Accordingly, Petitioner respectfully requests institution of an IPR for those claims of the ’737 patent for each of the grounds presented herein.

VII. PAYMENT OF FEES – 37 C.F.R. § 42.103

Petitioner authorizes the Patent and Trademark Office to charge Deposit Account No. 06-1050 for the fee set in 37 C.F.R. § 42.15(a) for this Petition and further authorizes payment for any additional fees to be charged to this Deposit

Account.

VIII. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8(a)(1)

A. Real Parties-In-Interest Under 37 C.F.R. § 42.8(b)(1)

Nearmap US, Inc. is the real parties-in-interest.

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

Petitioner is not aware of any disclaimers, reexamination certificates, or petitions for *inter partes* review for the '737 patent. The '737 patent is the subject of ongoing litigation in *Eagle View Technologies et al. v. Nearmap US, Inc.*, 2-21-cv-00283 (D. Utah).

C. Lead And Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation of counsel.

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D. Service Information

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service by email at IPR53317-0003IP1@fr.com

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Respectfully submitted,

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(Trial No. IPR2022-00734)

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for *Inter Partes* Review totals 13,919, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i).

Respectfully submitted,

Dated: 3/21/2022

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(4)(i) *et seq.* and 42.105(b), the undersigned certifies that on March 22, 2022, a complete and entire copy of this Petition for *Inter partes* Review and all supporting exhibits will be provided via USPS Priority Express, to the Patent Owner by serving the correspondence address of record as follows:

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