Trials@uspto.gov
571.272.7822

Paper No. 14
Filed: August 15, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

XACTWARE SOLUTIONS, INC.,
Petitioner,

v.

EAGLE VIEW TECHNOLOGIES, INC.,
Patent Owner.

Case IPR2016-00587
Patent 9,129,376 B2

Before HOWARD B. BLANKENSHIP, BRYAN F. MOORE, and STACEY G. WHITE, *Administrative Patent Judges*.

WHITE, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. Background

Xactware Solutions, Inc. ("Petitioner") filed a Second Corrected Petition (Paper 9, "Pet.") seeking to institute an *inter partes* review of claims 11, 13, 14, 16–20, 22, and 23 of U.S. Patent No. 9,129,376 B2 (Ex. 1001, "the '376 patent") pursuant to 35 U.S.C. §§ 311–319. Eagle View Technologies, Inc. ("Patent Owner") filed a Preliminary Response. (Paper 10, "Prelim. Resp."). We have jurisdiction under 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted "unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition."

Petitioner contends the challenged claims are unpatentable under 35 U.S.C. § 103 on the following specific grounds (Pet. 8–57):

References	Claims Challenged
Aerowest[1] and Verma[2]	11, 13, 14, 17–20, 22, and 23
Hsieh[3], Verma, and Applicad[4]	11, 13, 14, 16–20, 22, and 23
Verma and Applicad	17–19

For reasons discussed below, we do not institute *inter partes* review of the '376 patent.

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[1] European Patent No. 1 010 966 B1, pub. Oct. 23, 2002, and Certified Translation thereof ("Aerowest") (Ex. 1003).

[2] U.S. Pub. No. 2006/0061566 A1, pub. Mar. 23, 2006 ("Verma") (Ex. 1005).

[3] Yuan Hsieh, DESIGN AND EVALUATION OF A SEMI-AUTOMATED SITE MODELING SYSTEM, Carnegie Mellon, Nov. 1995 ("Hsieh") (Ex. 1006).

[4] AppliCad, PRODUCT BULLETIN – NOVEMBER 2002: KEY FEATURES OF OUR ROOFING SOFTWARE, Nov. 2002 ("Applicad") (Ex. 1007).

B. Related Proceedings

Petitioner informs us that the ’376 patent is involved in *Eagle View Technologies, Inc., v. Xactware Solutions, Inc.*, No. 2:15-cv-07025 (D.N.J.). Pet. 1. In addition, there are pending petitions seeking to institute *inter partes* review of a number of related patents, U.S. Pat. Nos. 8,818,770 B2 (IPR2016-00590); 8,825,454 B2 (IPR2016-00589); 8,823,732 B2 (IPR2016-00593); 8,542,880 B2 (IPR2016-00594); 8,209,152 B2 (IPR2016-00591); 8,170,840 B2 (IPR2016-00586); 8,078,436 B2 (IPR2016-00582); and 9,135,737 B2 (IPR2016-00592). *See id*.

C. The ’376 Patent

The ’376 patent relates to systems and methods for determining roof measurement information based on one or more aerial images of a roof. Ex. 1001, 1:7–12. The embodiment described in the specification of the ’376 patent is the Roof Estimation System (“RES”) that provides a roof estimate report for a building. *Id.* at 2:46–49. Figure 1 of the ’376 patent is reproduced below.

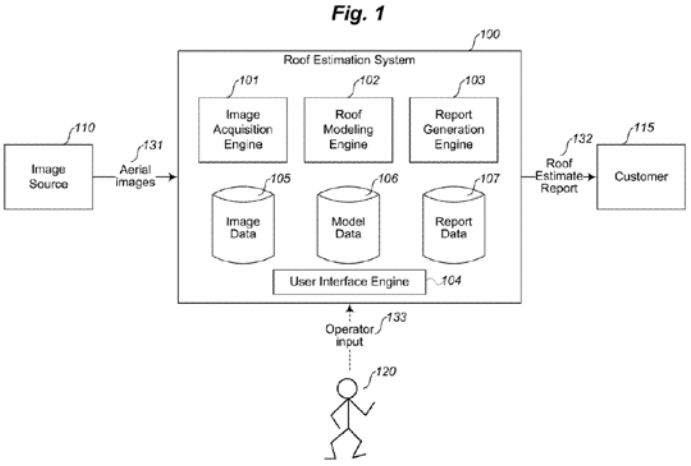

Figure 1 is a block diagram illustrating an embodiment of the RES. *Id.* at 2:15–16. RES 100 generates roof estimate report 132 for a specified building based on aerial images 131. *Id.* at 3:53–55. Roof modeling engine

102 generates a three-dimensional ("3D") model of the roof of the specified building. *Id.* at 4:19–22. As part of the process of generating a model, the pitch of one or more sections of the roof must be determined. *Id.* at 5:64–66. The pitch determination process may be an interactive process by which an operator can provide input via user interface engine 104. *Id.* at 9:11–16; *see also id* at Fig. 5A (depicting user interface screen 400). Specifically, an operator may manipulate a pitch determination marker to specify the pitch of a planar section of a roof. *Id.* at 12:26–30, 12:38–41.

Figures 5B and 5D are reproduced below.

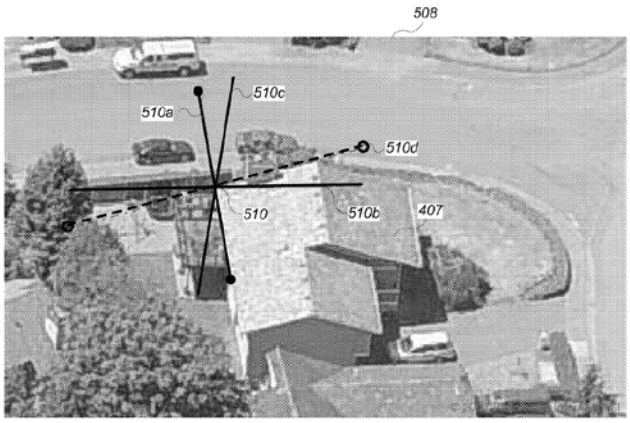

Fig. 5B

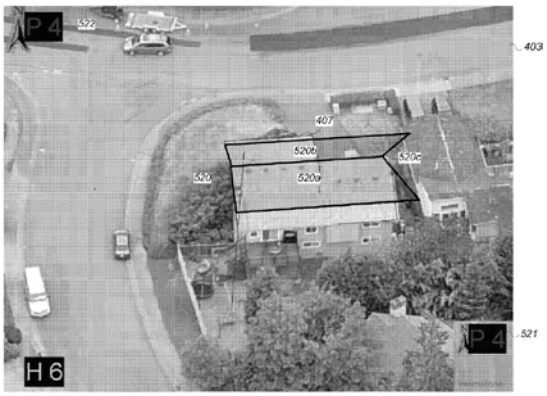

Fig. 5D

Figures 5B and 5D depict exemplary pitch determination markers. *Id.* at 2:25–26. As described in the specification, the pitch determination marker may take different forms. One form is a protractor tool by which an operator may specify roof pitch by adjusting the arms of the tool to align with the major axes (X, Y, and Z) of the roof. *Id.* at 12:42–55; *see also id* at Fig. 5B (depicting a protractor tool). Another form of pitch determination marker is an envelope tool. *Id.* at 13:4–6. This tool may be moved or adjusted to lay substantially atop two adjacent planar sections of a roof. *Id.* at 13:9–12; *see also id* at Fig. 5D (depicting an envelope tool).

D. Illustrative Claim

As noted above, Petitioner challenges claims 11, 13, 14, 16–20, 22, and 23 of the '376 patent, of which claims 11, 17, and 20 are independent. Claims 11 is illustrative of the challenged claims and is reproduced below:

> 11. A computer-implemented method in a roof estimation system, the method comprising:
>
> displaying on a visual display a photographic aerial image of a roof of a building, the roof having a pitch;
>
> displaying a pitch determination marker on the visual display overlying the photographic aerial image;
>
> adjusting the pitch determination marker in response to manipulation of the pitch determination marker by a user so that at least a portion of the pitch determination marker substantially aligns with at least a portion of a planar roof section of the roof in the aerial image;
>
> calculating, by the computer system, the pitch of the roof based on the adjustment of the pitch determination marker;
>
> storing the calculated pitch; and
>
> generating and outputting a roof estimate report using a report generation engine, wherein the roof estimate report includes one or more top plan views of a model of the roof annotated with 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.

Ex. 1001, 24:64–25:19.

II. CLAIM CONSTRUCTION

In an *inter partes* review, "[a] claim in an unexpired patent shall be given its broadest reasonable construction in light of the specification of the

patent in which it appears." 37 C.F.R. § 42.100(b); *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–46 (2016). Under this standard, we construe claim terms using "the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in the applicant's specification." *In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). We presume that claim terms have their ordinary and customary meaning. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). This presumption, however, may be rebutted if the specification defines the claim term with "reasonable clarity, deliberateness, and precision." *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner seeks construction of the terms "aerial image" and "pitch determination marker." Pet. 6–8. Patent Owner opposes Petitioner's constructions and provides a construction for "pitch determination marker" while arguing that no construction is necessary for aerial image. Prelim. Resp. 5–11. Based on the issues currently before us, we do not discern a need to provide express construction for the any term of the '376 patent. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011).

III. ANALYSIS

We turn to Petitioner's asserted grounds of unpatentability to determine whether Petitioner has met the threshold of 35 U.S.C. § 314(a). Petitioner alleges three grounds of unpatentability under 35 U.S.C. § 103. Each of these grounds relies upon the disclosures of Verma to teach the pitch determination marker recited in each challenged independent claim. For

reasons described below, we are not persuaded by Petitioner's assertions regarding the teachings of Verma.

A. Overview of Verma

Verma is directed to a method and apparatus for automatically generating a 3D computer model from a point cloud created by a laser radar ("LIDAR") system. Ex. 1005, Abstract. LIDAR data collection system 102 scans a scene and produces a point cloud representation of the scene. *Id.* ¶ 24. Each point within the point cloud represents an (x,y) coordinate and a depth from the LIDAR unit. *Id.* The point cloud is processed by the system to extract information about the structure of the roof of a building and that information is further processed to generate a roof model. *Id.* ¶ 10. Figure 2 is reproduced below.

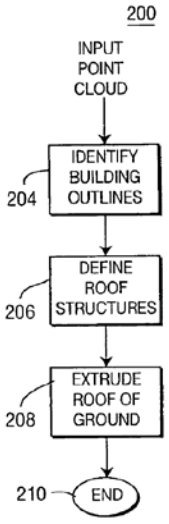

FIG. 2

Figure 2 is a flow diagram of a method for generating a 3D model of a building in an outdoor scene. *Id.* ¶ 14. At step 204, the point cloud is analyzed to identify building. *Id.* at Fig. 2. Verma describes two techniques that may be used to perform this step, (1) conventional edge detection and (2) a two dimensional ("2D") drawing interface that is used manually to

draw outlines of roof structures present. *Id.* ¶¶ 34–36. At step 206, the roof structures are defined and two techniques are described that may perform this step. *Id.* ¶¶ 37–39. First, the roof can be defined by one or more planes that are fit to the regions of the point cloud. *Id.* ¶ 37. The planes reveal the outline of the roof structure and that outline is represented by polygons. *Id.* The planes may be rotated or otherwise manipulated into alignment to form complex roof structures such as gable roofs. *Id.* The second technique is described in reference to Figure 3, which is reproduced below.

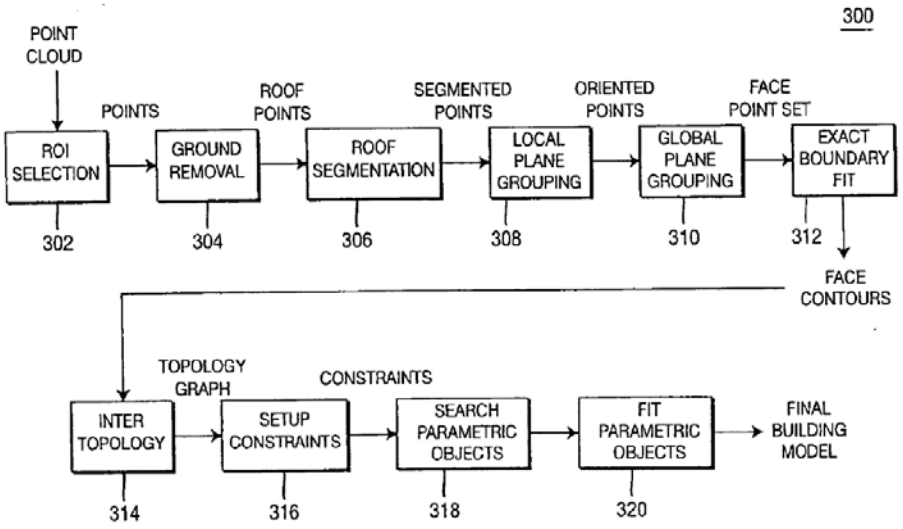

FIG. 3

Figure 3 depicts a method for modeling a roof structure using parametric shapes applied to that point cloud. *Id.* ¶¶ 38, 40. As described in Verma, this technique simplifies the modeling process and mitigates the processing used in the above described technique that utilized rotated planes and attached polygons. *Id.* ¶ 38. The process used in this technique may be automated so that the point cloud is processed in segments and the system may select a region of interest based on the content of the point cloud. *Id.* ¶ 41. At step 304, points related to the ground, objects in the scene that are not part of the building (cars, tree, and other objects), and groups of points

that have too few points to be a roof are discarded from the analysis and the remaining points are considered to belong to the roof. *Id.* ¶¶ 42–43. The remaining points then are organized into parametric shapes. At step 320, those shapes may be manipulated to better fit the data. *Id.* ¶¶ 60–63. The shapes are laid over the LIDAR data so that the user can see where the model is not representing the data accurately. *Id.* ¶ 62.

> Since the roofs are composed of prismatic shapes that are specified using very few parameters, the roof shapes can be altered by directly modifying the parameter values of these prismatic shapes. A user interface is provided in the form of handles on the parametric shapes that can be dragged to alter the shape.

Id. ¶ 62. The parametric shapes also "can be edited intuitively by operations such as push a wall, change the height, change the slope of the gable roof, and the like." *Id.* ¶ 63.

B. Teachings of Verma as Applied to the Claimed Pitch Determination Marker

Independent claims 11, 17, and 20 each recite a pitch determination marker. Ex. 1001, 25:1–11 (claim 11), 25:54–67 (claim 17), 26:31–39 (claim 20). In short, the pitch determination marker in each claim is recited as being displayed overlying a photographic aerial image,[5] adjusted to substantially align with at least a portion of the roof, and used in the calculation of the pitch of the roof. *Id.* at 25:1–11. We are not persuaded by Petitioner's arguments that Verma teaches each of these aspects of the recited pitch determination marker.

[5] The image recited in claim 17 is not described as a "photographic" aerial image; instead, it is referred to as an "aerial image."

As part of the obviousness inquiry, we analyze whether a person of ordinary skill would have been motivated to combine the cited art to achieve the claimed invention and whether there would have been a reasonable expectation of success. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360 (Fed. Cir. 2006). Petitioner cites to several different portions of Verma without sufficiently explaining how these teachings come together. *See* Pet. 13. It is not enough to say that these disparate teachings could have been combined; instead, Petitioner is charged with demonstrating that they would have been combined by a person of ordinary skill in the art. *See Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015). As noted above, Verma describes two separate techniques for defining roof structures present in that point cloud. Ex. 1005 ¶¶ 37 (attaching polygons to planes and aligning the planes to form complex roof structures) 38–56, 60–63 (fitting parametric shapes to the point cloud and manipulating those shapes to fit the data).

Petitioner relies upon both of the techniques described for defining roof structures to teach the recited pitch determination marker. Specifically, Petitioner relies upon Verma's use of handles (Pet. 19–20 (citing Ex. 1005 ¶ 62)) and operations to alter parametric shapes (*id.* at 20 (citing Ex. 1005 ¶ 63)) and it also relies upon the manipulation of polygons attached to planes (*id.* at 20 (citing Ex. 1005 ¶ 37)). Petitioner, however, does not provide sufficient explanation as to how these different techniques would interact or why they would be combined. Verma describes the rotation of polygons and their attached planes as a technique different from the manipulation of parametric shapes. Ex. 1005 ¶ 38 ("[fitting parametric shapes to a point cloud] simplifies the rooftop modeling process and mitigates the processing

used to align the abutting edges of the roof region planes that was used in the foregoing technique."). Thus, it is not clear why "[a] person of ordinary skill in the art would have found it obvious to combine the 'handle' user interface element and model manipulation tools (e.g., planar rotation functionality) of Verma" with each other. *See* Pet. 16. Petitioner's declarant, Mr. Harold Schuch, describes these two methods (Ex. 1008 ¶ 49), but does not explain how they would work together or why one or ordinary skill would combine them. *See also* Prelim. Resp. 41–43 (arguing that Verma's teachings do not teach a pitch determination marker). It is not sufficient for Petitioner to point out different teachings that were available in the prior art; instead, Petitioner must sufficiently articulate a rationale for the combination. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

Similarly, Verma describes the use of both handles and operations to manipulate parametric shapes. Ex. 1005 ¶¶ 62–63. Petitioner cites both Verma's handles and operations without explaining sufficiently how these elements would interact. Pet. 13, 19–20. Mr. Schuch simply cites the "operations such as push a wall, change the height, **change the slope of the gable roof,** and the like" and states that parametric shapes can have their slopes altered by handles. Ex. 1008 ¶ 50. Verma does not describe any interaction between the described handles and operations and thus, it is unclear how or why these elements would be integrated to create the recited pitch determination marker.

Under Petitioner's asserted grounds, the functionality of the pitch determination marker is taught by combining these disparate elements of Verma, but without more explanation we are not persuaded that one of ordinary skill in the art would have combined these teachings and as such

been taught the claimed pitch determination marker. The other cited references, Aerowest, Hsieh, and Applicad, are not asserted to provide the user interface and model manipulation elements allegedly found in the various aspects of Verma. Thus, we are not persuaded that Petitioner has put forth sufficient arguments and evidence to meet the threshold of 35 U.S.C. § 314(a), and therefore, we do not institute *inter partes* review of any of the challenged claims.

IV. CONCLUSION

After reviewing the information presented in the Petition and the Preliminary Response, as well as the evidence of record, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing that claims 11, 13, 14, 16–20, 22, and 23 of the '376 patent are unpatentable.

V. ORDER

Accordingly, it is

ORDERED that the Petition is *denied* at to all challenged claims of the '376 patent.

PETITIONER:

Mark E. Nikolsky
Timothy P. Homlish
Joseph G. Monaghan
Amit R. Parikh
Vadim Cherkasov
MCCARTER & ENGLISH, LLP
mnikolsky@mccarter.com
thomlish@mccarter.com
jmonaghan@mccarter.com
aparikh@mccarter.com
vcherkasov@mccarter.com

PATENT OWNER:

Gianni Cutri
Jared Barcenas
KIRKLAND & ELLIS LLP
gianni.cutri@kirkland.com
jared.barcenas@kirkland.com