

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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XACTWARE SOLUTIONS, INC.,  
Petitioner,

v.

EAGLE VIEW TECHNOLOGIES, INC.,  
Patent Owner.

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Case IPR2016-00589  
Patent 8,825,454 B2

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Before BRYAN F. MOORE, STACEY G. WHITE, and GARTH D. BAER,  
*Administrative Patent Judges.*

WHITE, *Administrative Patent Judge.*

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

## I. INTRODUCTION

### *A. Background*

Xactware Solutions, Inc. (“Petitioner”) filed a Corrected Petition (Paper 5, “Pet.”) seeking to institute an *inter partes* review of claims 26–28 and 33–36 of U.S. Patent No. 8,825,454 B2 (Ex. 1001, “the ’454 patent”) pursuant to 35 U.S.C. §§ 311–319. Eagle View Technologies, Inc. (“Patent Owner”) filed a Preliminary Response. (Paper 9, “Prelim. Resp.”). Based on our review of these submissions, we instituted *inter partes* review of claims 26–28 and 34–36 of the ’454 patent pursuant to Petitioner’s allegation that these claims would have been obvious over Avrahami<sup>1</sup> and Applicad.<sup>2</sup> Paper 13 (“Dec.”), 19.

Patent Owner filed a Patent Owner’s Response<sup>3</sup> (Paper 31, “PO Resp.”), and Petitioner filed a Reply (Paper 34, “Reply”). An oral hearing was held on April 24, 2017. Paper 42 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, Petitioner has not demonstrated by a

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<sup>1</sup> Avrahami et al., *Extraction of 3D Spatial Polygons Based on the Overlapping Criterion for Roof Extraction from Aerial Images*, INT’L ARCHIVES OF PHOTOGRAMMETRY, REMOTE SENSING & SPATIAL INFORMATION SCI, Aug. 29–30, 2005 (“Avrahami”) (Ex. 1004).

<sup>2</sup> Appli-Cad, PRODUCT BULLETIN – NOVEMBER 2002: KEY FEATURES OF OUR ROOFING SOFTWARE, 2002 (“Applicad”) (Ex. 1005).

<sup>3</sup> Patent Owner also filed a confidential version of its Patent Owner Response (Paper 31). We refer to the public version, Paper 32, unless noted otherwise.

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preponderance of the evidence that claims 26–28 and 34–36 of the ’454 patent are unpatentable.

*B. Related Proceedings*

Petitioner informs us that the ’454 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. 8,078,436 (IPR2016-00582); 8,170,840 (IPR2016-00586); 9,129,376 (IPR2016-00587); 8,818,770 (IPR2016-00590); 8,209,152 (IPR2016-00591); 9,135,737 (IPR2016-00592) 8,823,732 (IPR2016-00593); and 8,542,880 (IPR2016-00594). *See id.*

*C. The ’454 Patent*

The ’454 patent relates to systems and methods for determining roof measurement information based on one or more aerial images of a roof. Ex. 1001, 1:19–23. The embodiment described in the specification of the ’454 patent is the Roof Estimation System (“RES”) that provides a roof estimate report for a building. *Id.* at 2:57–60. Figure 1 of the ’454 patent is reproduced below.

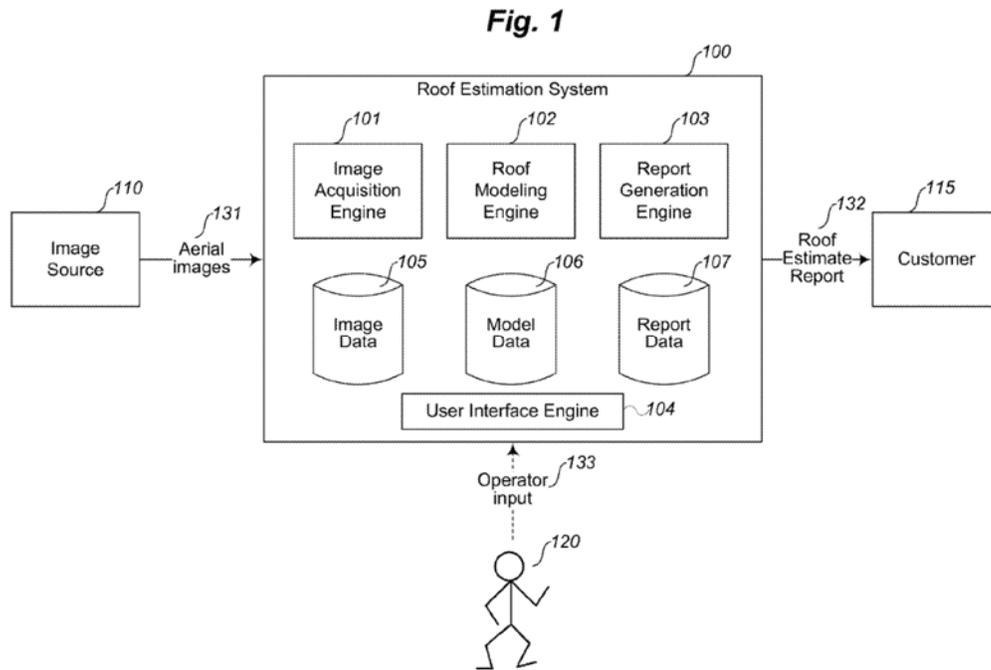


Figure 1 is a block diagram illustrating an embodiment of the RES. *Id.* at 2:15–16. Roof modeling engine 102 generates a three-dimensional (“3D”) model of the roof of the specified building. *Id.* at 4:19–22. In one embodiment, the generation of the 3D model is based at least in part on the correlation between two aerial images 131. *Id.* at 4:44–46. An operator inputs an indication on at least one of the images and the indication identifies which points of the images correspond for model generation purposes. *Id.* at 4:49–52. Roof modeling engine 102 uses these indications as part of its process to reconstruct the 3D geometry of the element of the image in question. *Id.* at 5:16–19. The operator may indicate various features of the roof by drawing or painting them on the image and the model may be updated to reflect this information. *Id.* at 5:59–63. A first and second image may be presented to the operator and if the operator indicates a feature in the first image that feature is automatically presented in the second image. *Id.* at 5:64–6:4. Report generation engine 103 generates

report data 107 based on the model. *Id.* at 6:40–46. Finally, roof estimate report 132 is generated for the specified building. *Id.* at 3:53–55.

*D. Illustrative Claim*

As noted above, we instituted *inter partes* review of claims 26–28 and 34–36 of the '454 patent, of which claim 26 is independent. Claim 26 is illustrative of the challenged claims and is reproduced below:

26. 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:

displaying, by the computer system of the roof estimate report system, a first aerial image of a roof on a single display;

displaying, by the computer system of the roof estimate report system, a second aerial image of the same roof on the same single display, the second aerial image providing a different view than the first aerial image, taken from a different angle of the same roof;

displaying, by the computer system of the roof estimate report system, a first line drawing representing features of the roof overlaid on the first aerial image of the roof;

displaying, by the computer system of the roof estimate report system, a second line drawing representing features of the roof overlaid on the second aerial image of the roof, the second line drawings having features in common with and that correspond to features in the first line drawing;

in response to user input, changing, a line in the first line drawing representing a feature of the roof that overlies the first aerial image of the roof;

changing, by the computer system of the roof estimate report system, a line in the second line drawing that corresponds to the same feature in the first line drawing that was

changed by the user, the change in the second line drawing being made by the computer system in response to the change that was made by the user in the first line drawing; 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 the edges of at least some of the plurality of planar roof sections of the model of the roof.

## 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).

Petitioner seeks construction of the term “wire frame.” Pet. 5–6. Patent Owner argues that no construction is necessary for this term. PO Resp. 5. Based on the issues currently before us, we do not discern a need to provide express construction for the any term of the ’454 patent. *See Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011).

### III. ANALYSIS

#### A. Asserted Obviousness over Avrahami and Applicad

##### 1. Overview of Avrahami

Avrahami is a paper titled “Extraction of 3D Spatial Polygons Based on the Overlapping Criterion for Roof Extraction from Aerial Images.” Ex. 1004, 43. It discusses semi-automatic algorithms for extracting a 3D image from an aerial image. *Id.* at Abstract. The algorithm discussed in Avrahami has the following steps: (1) the operator manually points to the center of the left space area (2) the left space area is segmented and a bounding polygon is extracted; (3) estimated height is calculated; (4) the right space area is segmented and a bounding polygon is extracted; and (5) an iterative process is performed that matches both polygons followed by extraction of the spatial polygon. *Id.* at 43. The algorithm is semi-automatic because the first step is performed manually and the rest of the steps are performed automatically. *Id.* Figure 1 of Avrahami is reproduced below.

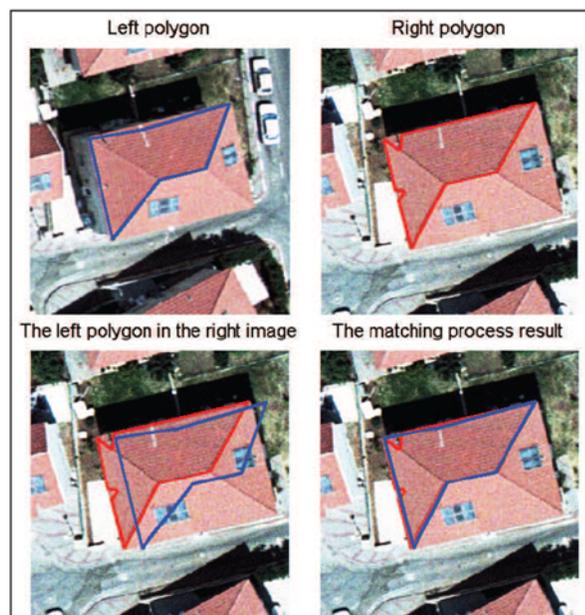


Figure 1. Result of the iterative matching process between the polygons in the right image space

Figure 1 depicts the results of Avrahami's matching process. *Id.* at 45. The top two images show the left and right polygons and the lower two images show the process of matching the polygons from the left and right images. *Id.*

## 2. *Overview of Applicad*

Applicad is a product bulletin for a roofing software product. Ex. 1005, 1. As described in the reference, the software uses a computer aided design ("CAD") system to draw roof outlines in 3D. *Id.* at 3. That drawing is then used to calculate the amount of building material necessary for the roof. *Id.* The software also generates a detailed quotation breakdown that may include forms for presentation to customers or for internal use. *Id.* The user enters the dimensions of the roof and the software generates a model so that the user can verify the dimensions. *Id.* at 4. Users also have the option of uploading a previous CAD drawing or digitizing a hard copy of a roof plan and using that as the input for the software. *Id.* at 5. The user may update the roof by adding features and the software will automatically update its model. *Id.* at 13–14. Applicad also discusses allowing the user to print quotation letters, quotation forms, quotation details, and other reports. *Id.* at 40, 41 (displaying sample reports).

### *B. Analysis of Asserted Ground of Obviousness of Independent Claim 26*

Petitioner asserts that independent claim 26 is unpatentable as obvious over Avrahami and Applicad, relying on the references' disclosures and the Declaration of Mr. Harold Schuch (Ex. 1006). Petitioner provides a detailed claim chart and pointing out where each claim limitation is considered to be taught by the references. Pet. 28–37.

Petitioner's arguments as to independent claim 26 may be summarized as follows: Avrahami teaches a roof estimation method for displaying two aerial images. *Id.* at 30 (citing Ex. 1004, Abstract, 43, 46, Figs. 1, 3). The claimed first and second line drawings overlaid on first and second aerial images are taught by Avrahami's discussion of the user indicating areas on the left image with seed points and the system transferring those seed points to the right image. *Id.* at 30–31 (citing Ex. 1004, 43–45). Petitioner contends that Avrahami teaches the changing of a line drawing through its discussion of seed points and polygons that are generated automatically on the right image based on the user's input on the left image. *Id.* at 31–32 (citing Ex. 1004, 45, Figs. 1, 5). The recited changing of the second line drawing based on changes in the first line drawing is argued to have been taught by Avrahami's iterative process of matching seed points from the left to the right images. We note, that the iterative process discussed in the reference is described as a series of steps in which points are inputted manually and then detected by the system for use in the opposing image. *See* Ex. 1004, Fig. 2. This back and forth of point input and point detection serves as input for “[b]uilding the topology between the roof planes, intersecting them and reconstructing the 3D roof.” *Id.*; *see* Pet. 32–34 (citing Ex. 1004, 45, Fig. 1). Petitioner relies on *Applicad* to teach the recited generation of a roof estimate report. *Id.* at 34–36 (citing Ex. 1005, 2, 4, 10, 13, 25, 28, 35, 40). *Applicad* discusses the generation of detailed quotations for roofing work and provides example reports. Ex. 1005, 40–41.

Patent Owner argues that the disclosures of Avrahami and *Applicad* fail to teach the following limitations of claim 26: (1) “displaying, by the

computer system of the roof estimate report system,” the four recited images (first aerial image, second aerial image, first line drawing, and second line drawing) (PO Resp. 7–10); (2) “in response to user input, changing, a line in the first line drawing” (*id.* at 10–17); (3) “changing, by the computer system . . . a line in the second line drawing. . . in response to the change that was made by the user in the first line drawing” (*id.* at 17–25); and (4) the recited roof estimate report (*id.* at 25–36). Patent Owner also asserts that Petitioner failed to meet its burden to demonstrate that one of ordinary skill in the art would have combined the teachings of Avrahami and Applicad. *Id.* at 36–41. Finally, Patent Owner asserts that it has provided objective evidence of non-obviousness that outweighs any evidence presented in Petitioner’s affirmative case. *Id.* at 44–45, 61.

*1. Whether the Cited Art Teaches Displaying Images*

Independent claim 26 recites “displaying, by the computer system of the roof estimate report system” four recited images (first aerial image, second aerial image, first line drawing, and second line drawing). Ex. 1001, 27:9–26. The first and second aerial images are displayed “on a single display.” *Id.* The first line drawing is “overlaid on the first aerial image of the roof” and the second line drawing is “overlaid on the second aerial image of the roof.” *Id.*

Patent Owner contends that Petitioner has not shown that these limitations are disclosed by the asserted art. PO Resp. 7–10. The crux of Patent Owner’s argument is that while

Avrahami includes illustrative Figures 1, 3, and 5 that show side-by-side images of a roof, those are included in the paper to graphically illustrate the internal operation of the Avrahami algorithm. The mere presence of those figures does not teach or

disclose that the images in the figures should be displayed during performance of the algorithm.

*Id.* at 8. Further, Patent Owner asserts that the algorithm performed in Avrahami does not require the use of a second image because it provides a first image in which the user selects seed points and then the remainder of the algorithm occurs automatically. *Id.* at 9. According to Patent Owner, “[a]t bottom, there is no specific disclosure showing that the images are displayed.” *Id.* at 10.

Petitioner disputes this reading of Avrahami and posits that the images shown in Avrahami are not renderings of internal operations, but rather images from the MATLAB implementation of Avrahami’s system. Reply 1; *see also* Ex. 1004, 48 (“In the course of research, a semi-automatic system for performing extraction from aerial images was developed using the MATLAB® environment, in order to examine the algorithm efficiency.”). As part of its discussion of testing performed in MATLAB®, Avrahami notes that “Figures 3 and 5 show the extraction of polygons in the image space in test areas 1 and 2, accordingly.” Ex. 1004, 47. Based on these disclosures, Petitioner argues that “Avrahami explicitly discloses implementation on a computer system, and that implementation is shown in Figures 3 and 5.” Reply 1–2; *see also* Ex. 2017, 69:14-21 (testimony of Dr. Harold Schuch that the figures shown in Avrahami are images that were shown on a computer screen).

Avrahami’s algorithm is described as providing “for semi-automatic 3D spatial *polygon extraction from a pair of colored aerial images* with a known external model solution.” Ex. 1004, 43 (emphasis added). Avrahami touts that one of the advantages of its system is that “the operator can

identify *at a glance* which buildings can be mapped by this method so as to combine it with traditional manual extraction or other semi-automatic method.” *Id.* at 48 (emphasis added). In light of these passages, we are persuaded that the reference teaches or at least suggests that a pair of images should be viewable in a manner that would allow an operator visually examine the buildings found in the images. Further to this point, Figure 1 shows a side-by-side comparison of the images in the pair. *See* Ex. 1004, Fig. 1 (displaying left and right polygons going through Avrahami’s iterative matching process). We also credit Mr. Schuch’s testimony that one of ordinary skill in the art would have understood the reference to disclose images displayed on a computer screen. Ex. 2017, 69:14–73:16. Therefore, we find that Petitioner has proffered sufficient evidence to show that one of ordinary skill in the art would have learned the disputed limitation from the cited disclosures in Avrahami.

2. *Whether the Cited Art Teaches a Change to the First Line Drawing in Response to User Input*

Claim 26 recites, in relevant part, “in response to user input, changing, a line in the first line drawing.” Patent Owner asserts that Avrahami does not teach this limitation because “[t]he only user interaction disclosed in Avrahami is the manual placement of a seed point on an aerial image at the outset of the algorithm, which occurs before any line drawings even exist, and thus cannot constitute a ‘change’ to a line in the first line drawing.” PO Resp. 11. Patent Owner contends that once the seed point is placed there are no further user interactions during the process and thus, there is no point in time in which the line drawing is modified in response to a user input. *Id.* at 12. Patent Owner further contends that “the selection by the user of an initial ‘seed point’ in Avrahami is not a change to a line. Rather than

indicating a change in a line, the initial ‘seed point’ merely reflects ‘manual pointing to the center’ of an area on the left image.” *Id.* at 15 (citing Ex. 1004, 43).

Petitioner responds by arguing that Avrahami’s seed points are processed one at a time and the resulting “spatial polygons” (line drawings) are modified as the seed points are processed. Reply 5. Avrahami states that “[p]rior to the final stage we must ensure that each polygon in both images includes one seed point. If there are two or more pointers for a single polygon, then these pointers must be merged and consequently the areas which are represented by the pointers are also merged.” Ex. 1004, 46. In other words, a polygon is generated based on a single seed point and then modified to account for the existence of an additional seed point. We find that these disclosures would teach or at least suggest to one of ordinary skill in the art that the first line drawing is changed in response to user input. Therefore, we find that Petitioner has proffered sufficient evidence to show that one of ordinary skill in the art would have learned the disputed limitation from the cited disclosures in Avrahami.

*3. Whether the Cited Art Teaches a Change to the Second Line Drawing in Response to a Change in the First Drawing*

Claim 26 recites “changing, by the computer system . . . a line in the second line drawing . . . in response to the change that was made by the user in the first line drawing.” We interpret this language to mean that there are two line drawings that share common elements and that a user-driven change to one line drawing will cause a commensurate computer-driven change to the second line drawing.

Patent Owner here again argues that Avrahami does not teach or suggest allowing the user to change any line drawing. PO Resp. 17. This

argument is a restatement of the argument addressed above and we do not find it persuasive for reasons previously discussed. *See* § II.B.2. Patent Owner also argues that the sliding process described in Avrahami does not teach the recited change to a second line drawing. *Id.* at 19.

Petitioner argues that Avrahami teaches this limitation because claim 26 “merely requires a user input and that such input causes changes to the line drawings in response.” Reply 7. Thus, Petitioner argues that “the identification of seed points causing the changes to the first and second line drawings satisfies Claim 26.” *Id.* at 8. In addition, Petitioner asserts that “the flood fill operation in the right image is *based on* the operations in the left image.” *Id.* Thus, according to Petitioner, the placement of the seed point is the user input that propagates changes to both the left and right polygons. *See id.*

Avrahami’s method uses at least two aerial images and these images have corresponding features, but may have differences attributable to things such as images taken from different camera angles. Ex. 1004, 46. The polygon overlaying the left image is created with user input (“seed points”) via a flood fill operation. *Id.* at 43. The polygon overlaying the right image is created, in part, based on calculations made regarding the height of the polygon overlaid on the left image. *Id.* at 45. The seed point from the left image is transferred to the right image and the right image’s polygon is calculated using the same flood fill technique that created the left image’s polygon. *Id.* The homologous points between the two polygons are found by “matching” points via a process that iteratively “slides” the left polygon over to the right image. *Id.*

First, the points in the left polygon are assigned the estimated average height, which was calculated previously. With each iteration these heights of points in the left polygon are updated until the conditional equation is optimized. During the iterations the left polygon “slides” in the direction of the epipolar line in the right image space.

*Id.*

As discussed above, we agree with the Petitioner’s argument that the changes to the first line drawing are responsive to the placement of the seed point. As to the second line drawing, we find that this is a much closer call because while the operator’s input (“seed point”) is used to generate the first line drawing (“left spatial polygon”) the generation of the second line drawing is performed by transferring the first seed point to the right image and then “the segmentation process around this point can be applied in the same way as in the left image. At the end of this process we obtain two polygons – one in the left image and one in the right image.” Ex. 1004, 45. Petitioner argues that this is sufficient to teach the disputed limitation because the user input causes changes to the first line drawing and those same changes are propagated to the second line drawing.

The placement of the seed points in the left image therefore:  
(i) causes a change in the first image by generating a polygon in the left image; (ii) causes a corresponding change in the second image by transferring a homologous point to the right image and generating a polygon on the right image. Thus, by ensuring that the seed points are placed in corresponding locations, the change in the right image is based on the change in the left image.

Reply 8. At best, the record before us indicates a close call, but certainly not a strong case, regarding whether the cited art teaches this limitation. Claim 26 recites, in relevant part, “in response to user input, changing a line in the

first line drawing” and changing “a line in the second line drawing that corresponds to the same feature in the first line drawing that was changed by the user, the change in the second line drawing being made by the computer system in response to the change that was made by the user in the first line drawing.” As discussed above, we are persuaded that the placement of seed points modifies the first line drawing.

The question here, however, is whether there is a change in the second line drawing that is responsive to that change in the first line drawing. This is a close call because the second line drawing is made using the same flood fill technique that created the left image’s polygon. Ex. 1004, 45. Thus, in our view, it is a close call as to whether the change occurs in the second line drawing in response to a “change made by the user in the first line drawing” or whether it is a change made in response to user input without regard to the first line drawing. To the extent that it is a close call, it is noteworthy that the burden of persuasion is on Petitioner. *In re Magnum Oil Tools Int’l, Ltd*, 829 F.3d 1364, 1375 (Fed. Cir. 2016) (quoting *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015)) (“In an *inter partes* review, the burden of persuasion is on the petitioner to prove ‘unpatentability by a preponderance of the evidence,’ 35 U.S.C. § 316(e), and that burden never shifts to the patentee.”). Based on the evidence presented in this case, we are persuaded that one of ordinary skill in the art probably would have learned this limitation from Avrahami, but we find that Petitioner has not made a strong showing as to this element of claim 26.

#### 4. *Whether the Cited Art Teaches a Roof Estimate Report*

Claim 26 recites, in relevant part, “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 the edges of at least some of the plurality of planar roof sections of the model of the roof.” Patent Owner argues that the specific limitations detailing the content of the roof estimate report are entitled to patentable weight. PO Resp. 26–30. Patent Owner also argues that Applicant’s disclosures do not include all of the elements of the roof estimate report stated in the claims. PO. Resp. 30–36.

Patent Owner asserts that the detailed and specific requirements of the roof estimate report have a functional and structural relationship to the substrate. *Id.* at 27. According to Patent Owner, the benefits of the claimed method would not be fully obtained without a roof report that provides the specific values set forth in the claim. *Id.* Further, “[t]he informational content of the report and types of annotations contained in the report are inexorably linked to the method, as the method allows for those values to be accurately derived from aerial images.” *Id.* at 28.

We do not agree. The ’454 patent claims the content of information that may be provided on a piece of paper. *See, e.g.*, Ex. 1001, 8:22–24 (“FIGS. 3A-3F illustrate individual pages of an example roof estimate report generated by an example embodiment of a roof estimation system”). First, we must ascertain whether the “matter [is] claimed for what it communicates.” *In re DiStefano*, 808 F.3d 845, 850 (Fed. Cir. 2015). Here, the claim recites plan views (one or more drawings) annotated with numerical values to communicate quantities such as slope, area, or lengths of edges to a human viewer. Next, we must determine “if the claimed informational content has a functional or structural relation to the substrate.”

*Id.* “Only if the limitation in question is determined to be printed matter does one turn to the question of whether the printed matter nevertheless should be given patentable weight. Printed matter is given such weight if the claimed informational content has a functional or structural relation to the substrate.” *Id.*

We are persuaded that the drawings and numerical values are not functionally or structurally related to the substrate, whether the substrate might be computer memory, a computer display, an electronic file, or a piece of paper. *See generally* Manual of Patent Examining Procedure (MPEP) § 2111.05 (9th ed., Rev. 07.2015, Nov. 2015) (“[W]here the claim as a whole is directed [to] conveying a message or meaning to a human reader independent of the intended computer system, and/or the computer-readable medium merely serves as a support for information or data, no functional relationship exists.”). Patent Owner asserts that “[t]here is a strong functional relationship between that method and the contents of the roof report because those contents—i.e., slope, area, and lengths of edges of the roof—are the product of the method, thus improving it by allowing it to be useful for purposes of roof estimation.” PO Resp. 30.

We do not find this to be sufficient because the numbers on the page are not themselves used as part of the method. This stands in stark contrast to *In re Miller*, 418 F.2d 1392 (CCPA 1969), where the numbers printed on the measuring cup were used to carry out the intent of the claimed invention and not just to document the outcome. In *Miller*, there was “a new and unobvious functional relationship between a measuring receptacle, volumetric indicia thereon indicating volume in a certain ratio to actual volume, and a legend indicating the ratio, and in our judgment the appealed

claims properly define this relationship.” *Id.* at 1396. Here, we are presented with no such relationship. 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. We are persuaded that the content of the information does not modify or otherwise affect the underlying computer or paper, nor does it represent a new and non-obvious relationship with the substrate. Thus, the claimed content of the information is not entitled to weight in the patentability analysis. *See 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). In other words, what the content of the information, graphical or textual, 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.

We are cognizant that claim 26 is drawn to a method rather than an apparatus or a manufacture. The printed matter analysis, however, applies equally to process claims. The step of generating and outputting a roof estimate report “wherein the roof estimate report includes” particular information is similar to the “informing” step in *King Pharmaceuticals, Inc. v. Eon Labs, Inc.*, 616 F.3d 1267, 1274–79 (Fed. Cir. 2010). In *King Pharmaceuticals*, the subject matter of dependent claim 21, which recited “informing” the patient that the drug administered in accordance with base claim 1 had certain therapeutic effects, was subject to the rationale of “printed matter” cases even though the claims were cast as a method. The content of the “informing” was thus not given patentable weight. *See id.*

Thus, we are persuaded that the detailed requirements as to the contents of the roof estimate report are not entitled to patentable weight.

*5. Whether Petitioner Demonstrates a Motivation to Combine Avrahami and Applicad*

Patent Owner asserts that Petitioner has not provided sufficient rationale for combining the teachings of Avrahami and Applicad. PO. Resp. 36–41. Petitioner argues that “[i]t would have been obvious to a person of ordinary skill in the art to include an annotated roof report, as taught by Applicad, with the system of Avrahami for easy and effective communication of roof measurement results to a user.” Pet. 39. Petitioner asserts that Applicad discloses importing a drawing from another system and then creating a report based on that input. *Id.* at 40 (citing Ex. 1005, 4). According to Petitioner, Avrahami’s line drawing system could be used as input for Applicad’s reporting system. *Id.* Petitioner asserts that this combination would be within the skills of one of ordinary skill in the art. *Id.* at 41.

Patent Owner argues that “Avrahami and Applicad are fundamentally incompatible because Applicad cannot import three-dimensional models from other programs.” PO. Resp. 37. Petitioner asserts that this mischaracterizes its argument because its challenge is not predicated on a physical combination of Avrahami and Applicad, but rather the predictable results that would have been achieved by using the teachings of Applicad in conjunction with a 3D CAD system. Reply 16. Further, Petitioner directs us to Applicad’s discussion of importing drawings in a “.dxf format” and Applicad’s reference to its software “sit[ting] on top of a very powerful 3 dimensional CAD package.” *Id.* at 18 (quoting Ex. 1005, 3); *see* Ex. 1006 ¶ 57 (“Further, the Applicad system can also import a model generated in

another computer program, in the form of a roof or wall outline in three dimensions. *See, e.g.,* Applicad, pp. 2, 4.”).

We find Patent Owner’s assertions that Applicad cannot be incorporated in Avrahami to be unpersuasive because the obviousness analysis is not predicated on the physical combinability of the references, but whether the claimed invention is rendered obvious by the teachings of the prior art as a whole. *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc). This is true because “[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference . . . but rather whether ‘a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention.’” *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) (internal citations omitted). We are persuaded by Petitioner’s argument that one of ordinary skill in the art would have combined the teachings of the references in order to achieve the “easy and effective communication of roof measurement results to a user.” Pet. 39. Thus, the combination of the teachings of Applicad and Avrahami would have allowed one of ordinary skill in the art to achieve a predictable result. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007). Therefore, we are persuaded that Petitioner has put forth sufficient rationale to support the combination of the teachings of Applicad and Avrahami.

#### 6. *Analysis of Secondary Considerations*

Patent Owner contends that objective factors including commercial success and praise of Patent Owner’s Twister and Render House products confirm the non-obviousness of all challenged claims of the ’454 patent.

Paper 31 (“Sealed PO Resp.”), 43–63. Objective evidence of nonobviousness “may often be the most probative and cogent evidence in the record” and “may often establish that an invention appearing to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012). Such evidence must be analyzed as part of the determination as to whether any claim has been rendered obvious. *In re Cyclobenzaprine Hydrochloride Extended- Release Capsule Patent Litig.*, 676 F.3d 1063, 1075–76 (Fed. Cir. 2012).

*a. Nexus*

Factual inquiries for an obviousness determination include secondary considerations based on evaluation and crediting of objective evidence of nonobviousness. *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17–18 (1966). To be relevant, evidence of nonobviousness must be commensurate in scope with the claimed invention. *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). Thus, to be accorded substantial weight, there must be a nexus between the merits of the claimed invention and the evidence of secondary considerations. *In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). “Nexus” is a legally and factually sufficient connection between the objective evidence and the claimed invention, such that the objective evidence should be considered in determining nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 (Fed. Cir. 1988). “There is a ‘presumption of a nexus’ when a product is ‘coextensive’ with a patent claim.” *Teva Pharm., Inc. v. Sandoz, Inc.*, 723 F.3d 1363, 1372 (Fed. Cir. 2013)

We are persuaded by Patent Owner’s extensive evidence of nexus between its Render House and Twister products and claim 26. Patent Owner steps through claim 26 on an element by element basis and directs us to images and specific passages from its user guides for its Twister and Render House products, which it argues embodies the limitations of claim 26. Sealed PO. Resp. 46–52. Patent Owner also supports its assertion of nexus with testimony from Dr. Chandrajit L. Bajaj, which includes a claim chart detailing where each and every limitation of the challenged claim is found in its Twister and Render House products. Ex. 2032<sup>4</sup>, 36–53.

The Federal Circuit has held that “if the marketed product embodies the claimed features, and is coextensive with them, then a nexus is presumed and the burden shifts to the party asserting obviousness to present evidence to rebut the presumed nexus.” *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1130 (Fed. Cir. 2000). Patent Owner has put forth sufficient evidence to show that its Twister and Render House products embody the elements of claim 26 and thus, we look to Petitioner to rebut this presumed nexus and acknowledge that the presumption “cannot be rebutted with mere argument; evidence must be put forth.” *Id.* Petitioner argues that we should discount Patent Owner’s evidence of nexus because “Dr. Bajaj formed his opinion on Twister and Render House in a WebEx presentation with Patent Owner’s engineers,” but did not actually use the Twister or Render House products himself. Reply 22.

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<sup>4</sup> Here, we cited to page number and not paragraphs of Dr. Bajaj’s report because the paragraph containing the claim charts stretches over many pages.

Under Federal Rule of Evidence 702, an expert witness may offer opinion testimony if (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case. Petitioner has not moved to exclude Dr. Bajaj’s testimony as impermissible under Rule 702, but instead has argued to us that we should not rely upon Dr. Bajaj’s testimony because it is not evidence that that we can use to explain whether the sequence of screenshots provided by Patent Owner’s counsel embodies the elements of claim 26. Reply 20–21. We do not agree with Petitioner.

Dr. Bajaj testified that he “discussed these products with engineers at Patent Owner who use the Twister and Render House products on a regular basis” and that during those discussions, he “personally directed Patent Owner’s engineers to operate the Twister and Render House software to confirm [his] understanding of the products’ operation.” Ex. 2008 ¶ 69. He further testified that “[m]y understanding of the features of the Twister and Render House products are further confirmed based on my review of user manuals for these two products.” *Id.* We find this explanation to be credible. Petitioner objects to the screenshots in Dr. Bajaj’s declaration because they were not prepared by Dr. Bajaj and certain screenshots appear to have predated Dr. Bajaj’s report. Reply 21. Dr. Bajaj, however, is testifying as to his opinion of the capabilities and features of the Twister and Render House products and these screenshots are merely visual aids to assist the Panel in understanding how Dr. Bajaj reached his conclusion. We see no

impropriety in his use of images collected from other sources to document his opinions as to the operation of the products at issue. Thus, we are not persuaded by Petitioner's arguments and we find that Patent Owner has provided sufficient evidence to establish a nexus between claim 26 and the Twister and Render House products.

*b. Commercial Success*

Patent Owner contends that its Twister and Render House products “used the patented invention to achieve tremendous commercial success by creating accurate roof estimate reports faster and at less expense than previous solutions.” PO Resp. 58. Patent Owner asserts that Petitioner recognized the benefits of these products and “entered a contract with Patent Owner for its roof reports soon after the release of Patent Owner's first product.” *Id.* at 59 (citing Ex. 2021 (“EagleView and Xactware announced a new technology integration that will allow Xactware customers to access EagleView's breakthrough roof measurement capabilities.”)). Patent Owner also provides evidence of rapid growth of its business after the introduction of these products. *Id.* (citing Ex. 2022 (noting “three-year revenue growth of 2,406 percent”)). Patent Owner directs us to statements from Scott Stephenson, President and CEO of Verisk Analytics, which is Petitioner's parent company. Ex. 2023. In a call with investors, Mr. Stephenson “announced the acquisition of EagleView Technologies Corporation, or EVT, for a purchase price of \$650 million. EVT [“Patent Owner”] is the parent company of both Pictometry International, a recognized leader in imagery, and EagleView, which is well known in the insurance industry.” *Id.* at 3. He also touted Patent Owner's “significant intellectual property,

including over 20 issued patents” and its position as a market leader, noting that:

Eagle View division is a leading provider of reports on structures used in claims processes in the property and casualty insurance and the contractor markets. The Eagle View division does at least some business with 24 of the top 25 insurance companies, as well as with over 30,000 building contractors.

*Id.* Finally Patent Owner offers the testimony of Chris Johnson, Vice President of Eagle View Technologies, to discuss financial reports for the years 2009–2012. Ex. 2011. In his declaration, Mr. Johnson testifies that the reports submitted into evidence “reflect sales of reports created using the Twister and Render House products.” *Id.* ¶¶ 3–6.

Petitioner asserts that “Patent Owner has failed to demonstrate a nexus with the purportedly unique characteristics of the claimed invention and that for which there is alleged commercial success.” Reply 22. Our reviewing court has held that for evidence of commercial success to be relevant, “the patentee must establish a nexus between the evidence of commercial success and the patented invention.” *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010). As noted above, however, Patent Owner has provided extensive evidence that the Twister and Render House products are coextensive with claim 26 and thus, we are persuaded that nexus exists between claim 26 and the products at issue.

Petitioner also asserts that we should discount Patent Owner’s evidence of commercial success because “[a]ll the evidence relates to the sale and praise of roof reports, not the license or sale of the Twister and Render House products themselves.” Reply 22. We do not find this argument persuasive.

A patent challenger may respond to an allegation of presumed nexus by presenting evidence that shows the proffered objective evidence was “due to extraneous factors other than the patented invention.” *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1393 (Fed. Cir. 1988). Such extraneous factors include additional unclaimed features or arguably, as is the case here, features to which little or no patentable weight has been ascribed. *See, e.g., Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1378 (Fed. Cir. 2000) (applying presumption even though commercial embodiment had unclaimed mobility feature). As noted above, however, a patent challenger cannot successfully rebut the presumption with argument alone—it must present evidence. *Brown & Williamson*, 229 F.3d at 1130 (citing *Demaco*, 851 F.2d at 1393).

Patent Owner may commercialize its technology in many different ways. The choice to sell the output of the method as opposed to selling or licensing software that practices the method does not deprive Patent Owner of the ability to show that it has experienced commercial success in the marketplace that is attributable to its claims. Patent Owner is tasked with providing evidence tying the commercial success and the claims. That commercial success may take many forms and be the result of many different business strategies, but in the end for our purposes the question is whether Patent Owner has shown a sufficient nexus between the commercial success and the claims. We are persuaded that Patent Owner has provided such evidence here. As noted above, Patent Owner and its declarant has extensively analyzed the Twister and Render House products and shown that these products exercise the method of claim 26 in order to generate the roofing reports sold by Patent Owner. Petitioner has not shown sufficiently

that the alleged commercial success is based only on the roofing reports and not the contributions of the claimed invention to the generation of roofing reports.

Thus, in light of the extensive evidence of nexus, we are persuaded that it is proper for Patent Owner to rely upon financial information relating to the sale of reports generated by the Twister and Render House products.

Finally, Petitioner also asserts that “Patent Owner has failed to make any showing as to market share, thus rendering their sales figures irrelevant and not adequately defined.” Reply 22. Patent Owner provided unrebutted evidence that “approximately 96 percent of the top 25 insurance carriers rely on [Eagle View Technologies 3D aerial roof measurement reports] in their claims departments.” Ex. 2020, 1; *see also* Ex. 2029, 8 (Verisk Analytics presentation noting that 24 of top 25 insurance companies and 30,000 contractors are Eagle View customers). In addition, Patent Owner’s evidence also shows that its products are used by “about one-fifth of the roofing contractor market, according to an estimate by market researcher IbisWorld.” Ex. 2024. Patent Owner’s financial reports show both that it sold a significant number of roofing reports and that its sales grew significantly between 2009 and 2015. Sealed PO Resp. 60 We find that this information, taken together with statement from others in the industry (*see* Ex. 2029) gives us a view of Patent Owner’s place in the relevant market and persuades us that Patent Owner’s Twister and Render House products experienced significant commercial success and wide-spread use in the industry.

*c. Industry Praise*

Praise from industry participants, especially competitors is probative as to obviousness because such participants “are not likely to praise an obvious advance over the known art. Thus, if there is evidence of industry praise of the claimed invention in the record, it weighs in favor of the non-obviousness of the claimed invention.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1053 (Fed. Cir. 2016). Petitioner described Patent Owner’s products as “[u]sing aerial photography and patent-pending software [to] accurately calculate[] measurements for the roof’s ridges, rafters, valleys, slopes and more.” Ex. 2021, 1. Petitioner further noted that the “process saves contractors and roofers hours of time spent measuring and scoping a roof.” *Id.*

Verisk Analytics described Patent Owner as “a leader in sophisticated imagery for uses in the property and casualty, contractor, government, and commercial spaces.” Ex. 2023, 3. Verisk’s CEO stated that Patent Owner is “a leading provider of reports on structures used in claims processes in the property and casualty insurance and the contractor markets.” *Id.* He also noted that “[Patent Owner’s] solutions provide detailed, accurate measurements without the danger and added time of an adjustor climbing onto a roof.” *Id.* at 4.

Patent Owner directs us to an article from Bloomberg in which a roofer touts the accuracy of Patent Owner’s products, stating that “most insurance carriers at this point treat [Patent Owner’s roofing reports] as gospel.” Ex. 2024, 2. Patent Owner also directs us to an article from CNN Money in which a partner at a claim investigation company stated that “Having an Eagle View report has become an industry accepted standard.”

Ex. 2025, 1. An article from the California Business Journal states that “Eagle View made one of the biggest breakthroughs in the history of the industry by creating a state-of-the-art software program that remotely snaps sophisticated aerial pictures of roofs and accurately measures lengths, pitches, valleys and other hard-to-see areas on roofs.” Ex. 2026, 1. In that article, a roofer is quoted as saying that “Eagle View changed the industry forever with this technology.” *Id.* at 2.

We find these unrebutted statements to be persuasive evidence of praise in the industry for Patent Owner’s roofing reports, which were generated by the Twister and Render House products. This praise is strong evidence that participants in the industry believed that Patent Owner’s roofing reports demonstrated a non-obvious advance in the art.

*d. Conclusions Regarding Alleged Obviousness of Claim 26*

We have considered Petitioner’s arguments about the teachings of Avrahami and Applicad. We also have considered the objective indicia of non-obviousness presented by Patent Owner. As noted above (*see supra* § II.B.c), we find certain aspects of Petitioner’s obviousness allegations to be at best a close call. We find that Patent Owner has shown strong evidence of nexus between its Twister and Render House products and claim 26. We are persuaded that Patent Owner has shown strong evidence of commercial success and industry praise. “These real world indicators of whether the combination would have been obvious to the skilled artisan in this case ‘tip the scales of patentability,’ *Graham*, 383 U.S. at 36, or ‘dislodge the determination that claim [26 would have been] obvious,’ *KSR*, 550 U.S. at 426.” *Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1058 (Fed. Cir. 2016). Thus, upon consideration of the strength of Petitioner’s

obviousness allegations and the strength of Patent Owner's contentions as to secondary considerations of non-obviousness, we are persuaded that Petitioner has not met its burden to show that claim 26 would have been obvious over the teachings of Avrahami and Applicad. *See Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1361 (Fed. Cir. 1999) (holding that "even assuming that [the accused infringer] established a prima facie case of obviousness, [the patentee] presented sufficient objective evidence of nonobviousness to rebut it").

*C. Dependent Claims 27, 28 and 34–36*

Petitioner asserts that claims 27, 28 and 34–36 are unpatentable as obvious over Avrahami and Applicad, relying on the references' disclosures and the Declaration of Mr. Harold Schuch (Ex. 1006). Petitioner provides detailed claim charts and points out where each claim limitation is considered to be taught by the references. Pet. 26–42. These claims all depend from claim 26 and Petitioner puts forth no argument in regards to these dependent claims to cure the deficiencies noted as to claim 26. Thus, we are persuaded that Petitioner has not met its burden to show that claims 27, 28, and 34–36 would have been obvious over Avrahami and Applicad.

#### IV. CONCLUSION

Based on the arguments in the Petition, as well as the evidence of record, we determine that Petitioner has not demonstrated by a preponderance of the evidence that claims 26–28 and 34–36 of the '454 patent would have been obvious.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Petitioner has failed to prove by a preponderance of the evidence that claims 26–28 and 34–36 of the '454 patent are unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

PETITIONER:

Mark Nikolsky  
mnikolsky@mccarter.com

Amit Parikh  
aparikh@mccarter.com

PATENT OWNER:

Gianni Cutri  
gianni.cutri@kirkland.com

Jared Barcnas  
jared.barcenas@kirkland.com