

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reexamination : 8,078,436 to Pershing et al.
Title : AERIAL ROOF ESTIMATION SYSTEM AND METHODS
Control No. : 96/000,004
Filed : December 28, 2012

Examiner : Jason Scott Proctor
Art Unit : 3992
Docket No. : 290115.401C1RE
Date : October 25, 2013

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Commissioner for Patents
P.O. Box 1450
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Respectfully submitted,

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PATENT

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AMENDMENT

Commissioner for Patents:

In response to the Office Action dated July 25, 2013, please amend the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Amendments to the Abstract begin on page 8 of this paper.

Remarks begin on page 9 of this paper.

Amendments to the Claims:

1. (Amended) A computing system for generating a roof estimate report, the computing system comprising:

a memory;

a roof estimation module that is stored on the memory and that is configured, when executed, to:

receive a first and a second aerial image of a building having a roof, each of the aerial images providing a different view of the roof of the building, wherein the first aerial image provides a top plan view of the roof and the second aerial image provides an oblique perspective view of the roof, and are not a stereoscopic pair;

correlate the first aerial image with the second aerial image;

generate, based at least in part on the correlation between the first and second aerial images, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding slope, area, and edges; and

generate and transmit a roof estimate report that includes one or more top plan views of the three-dimensional model annotated with numerical values that indicate the corresponding slope, area, and length of edges of at least some of the plurality of planar roof sections using at least two different indicia for different types of roof properties.

18. (Amended) A computer-implemented method for generating a roof estimate, the method comprising:

receiving a first and a second aerial image of a building having a roof, each of the aerial images providing a different view of the roof of the building wherein the first aerial image provides a top plan view of the roof and the second aerial image provides a view of the roof that is other than a top plan view and neither of the two images are part of a stereoscopic pair;

correlating the first aerial image with the second aerial image;

generating, based at least in part on the correlation between the first and second aerial images, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding slope, area, and edges; and

transmitting a roof estimate report that includes one or more top plan views of the three-dimensional model annotated with numerical indications of at least one of the slope, area, and lengths of the edges of the plurality of planar roof sections, wherein the roof estimate report includes at least two different indicia for different types of roof properties.

36. (Amended) A non-transitory computer-readable storage medium whose contents, which are computer executable instructions stored on the non-transitory computer-readable storage medium, when executed by a computer processor of a computing system, enable [a] the computing system to generate a roof estimate report for a building having a roof, by [performing] causing, when executed by the computer processor of the computing system, the computing system to perform a method comprising:

receiving [one] two or more images of the building, wherein at least one of the two or more images provides an oblique perspective view of the roof and one of the images provides a top plan view of the roof;

receiving an indication of pairs of points on the two or more images, each pair of points corresponding to substantially the same point on the roof depicted in each of the two or more images;

generating, based on the [one] two or more images of the building, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding area and edges, wherein the generating, based on the two or more images of the building, the model of the roof includes generating the model of the roof based on the receiving the indication of the pairs of points on the two or more images of the building; and

transmitting a roof estimate report that includes one or more views of the model, the report being annotated with numerical indications of the area and lengths of the edges of at least some of the plurality of planar roof sections, wherein the roof estimate report includes at least two different indicia for different types of roof properties.

37. (Amended) The non-transitory computer-readable storage medium of claim 36 wherein generating the model of the roof based on the receiving the indication of the pairs of points on the two or more images includes:

correlating two of the two or more images by registering the pairs of points; and
generating [a] the three-dimensional model based on [a] the correlation between
the two of the [one] two or more images.

41. (Amended) The non-transitory computer-readable storage medium of claim 36 wherein the contents are instructions that when executed cause the computing system to perform the receiving two or more images step of the method by causing, when executed by the computer processor of the computing system, the computing system to provide access to a repository of aerial images of one or more buildings.

43-45. (Canceled)

57. (New) The method according to 18 wherein the second aerial image provides an oblique perspective view of the roof.

58. (New) A computer-implemented method for generating a roof estimate, the method comprising:

receiving a first aerial image of a building having a type of view of the roof that is a top plan view of the roof;

receiving a second aerial image of the building having a type of view of the roof that is a perspective oblique view of the roof;

receiving a third aerial image having a type of view of the roof that is an oblique perspective from a different direction than the second aerial image, each of the aerial images providing a different view of the roof of the building;

correlating the first aerial image with the second aerial image and third aerial images;

generating, based at least in part on the correlation between the first, second and third aerial images, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding slope, area, and edges; and

transmitting a roof estimate report that includes one or more top plan views of the three-dimensional model annotated with numerical indications of at least one of the slope, area, and lengths of the edges of the plurality of planar roof sections, wherein the roof estimate report includes at least two different indicia for different types of roof properties.

59. (New) The method of claim 58 wherein the different types of roof properties include a ridge line and a valley line and the at least two different indicia include one color of a line conveying the meaning of a roof ridge and a different color of a line conveying the meaning of roof valley.

60. (New) A computer-implemented method for generating a roof estimate, the method comprising:

receiving a first aerial image of a building;

receiving a second aerial image of the building having the roof;

receiving a third aerial image of the building, each of the aerial images providing a different view of the roof of the building;

correlating the first aerial image with the second aerial image and third aerial image;

generating, based at least in part on the correlation between the first, second and third aerial images, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding slope, area, and edges; and

generating and transmitting a roof estimate report that includes one or more top plan views of the three-dimensional model annotated with numerical indications of at least one of the slope, area, and lengths of the edges of the plurality of planar roof sections, wherein the roof estimate report includes at least two different indicia for different types of roof properties.

61. (New) The method of claim 60 wherein the correlating the first aerial image with the second and third aerial image includes receiving an indication of pairs of points on each of the images corresponding to substantially the same point on the roof depicted in each of the images.

62. (New) The method of claim 61 wherein the correlating the first aerial image with the second and third aerial image further includes registering the pairs of points and the generating the three-dimensional model includes generating the three-dimensional model based on the registering of the pairs of points.

63. (New) A computer-implemented method for generating a roof estimate, the method comprising:

receiving a request for a roof estimate report for the roof of the building;

receiving location information regarding the building;

receiving a first aerial image of the building having the roof;

receiving a second aerial image of the building having the roof, the first and second images of the roof being independent of each in the views provided of the roof, each of the aerial images providing a different view of the roof of the building;

correlating the first aerial image with the second aerial image;

generating, based at least in part on the correlation between the first and second aerial images, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding pitch, area, and edges;

determining a pitch of a plurality of sections of the roof;

determining a direction of the pitch for each of the plurality of sections of the roof for which a pitch was determined;

generating a roof estimate report that includes a top plan views of the three-dimensional model annotated with numerical indications of the determined pitch and the direction of the pitch;

displaying on at least one top plan view a graphical indication of the pitch value of the respective roof sections that conveys the pitch value;

determining a ridge line and a valley line of the roof;

displaying on at least one top plan view a ridge line in which the property of it being a ridge line is conveyed by it being displayed in a first color and a valley line in which the property of it being a valley line is conveyed by it being in a second color, different from the first color; and

transmitting the generated roof report.

64. (New) The method of claim 63 further comprising:

displaying on at least one top plan view of the roof a graphical indication of the pitch direction of the respective roof sections that conveys the direction of the pitch.

65. (New) The method of claim 63 wherein the top plan view showing the pitch value is a different top plan view than the one showing the ridge line and the valley line.

66. (New) The method of claim 65 wherein the correlating the first aerial image with the second aerial image further includes registering pairs of points and the generating the three-dimensional model includes generating the three-dimensional model based on the registering of the pairs of points.

Amendments to the Abstract:

Please replace the previous Abstract with the following redlined Abstract:

Methods and systems for roof estimation are described. Example embodiments include a roof estimation system, which generates and provides roof estimate reports annotated with indications of the size, geometry, pitch and/or orientation of the roof sections of a building. Generating a roof estimate report may be based on one or more aerial images of a building. The slope and orientation images are typically oblique perspective views and top plan views of the buildings in the area. In some embodiments, generating a roof estimate report of a specified building roof may include generating a three-dimensional model of the roof, and generating a report that includes one or more views of the three-dimensional model, the views annotated with indications of the dimensions, area, and/or slope of sections of the roof. This abstract is provided to comply with rules requiring an abstract, and it is submitted with the intention that it will not be used to interpret or limit the scope or meaning of the claims.

REMARKS

Claims 1-56 are subject to reexamination upon entry of the present amendment. Claims 1, 18, 36, 37, and 41 are amended herein. Claims 43, 44 and 45 are canceled herein. Claims 57-66 are new. The Abstract is also amended herein. No new matter is being presented by way of this Amendment.

The Examiner is thanked for the in-person interview conducted on October 17, 2013. This amendment and these remarks are based on that interview. The patent owner's summary of the interview is provided herein as part of these remarks.

No new matter is being presented by way of this amendment. All claim amendments find support in the Application of the '436 Patent as filed and do not broaden any claim. The patent owner, and two consultants Brian Curless and Kevin Jones, along with the undersigned law firm make no representation herein regarding whether any reference provided in any information disclosure statement, any reference referred to herein or any reference referred to in any Declaration or Exhibit filed herewith is or is not prior art with respect to the '436 Patent.

Interview Summary

During the interview, the Examiner indicated that any amendments to the claims should specifically use language from the specification to ensure that there was proper support in the Application as filed. As one example, the term "orthogonal view" was discussed as the term used in this industry for a downward looking aerial view of a home. It was discussed at the interview that Figure 5A is an actual photographic image that is such an orthogonal view and that Figure 3 shows image files having an orthogonal view. The term used in the Application as filed was "top plan view," which was discussed at the interview as having the same meaning as orthogonal view within the context of the '436 Patent. The Examiner requested that the claims use the term from the '436 Patent, "top plan view," to cover images of the type of views shown rather than the more widely used term, "orthogonal view," with the understanding that they mean the same thing in the context of the '436 Patent and in the industry.

Figure 5B shows two oblique image views of the same house shown in Figure 3 and Figure 5A. It was discussed at the interview that these views are, in fact called, oblique views in the industry today and that the Application as filed provided these as examples of oblique views used in creating the final report that was in various claims.

The '578 Patent, which is the parent case to the '436 Patent was incorporated by reference into the '436 Patent. In the Abstract of the '578 Patent, these views were called "oblique perspective views," see '578 Abstract, line 8, and perspective views in other places, see for example, Col. 4, lines 10-11 and Col. 5, lines 55-57 as examples. This issue was discussed during the interview and the Examiner stated that it was preferred to use the terms from the specification. One suggestion during the interview was to refer to them as a view that is "other than a top plan view" if they were being claimed in the independent claims and then in a dependent claim, and to be more specific in calling them oblique perspective views or perspective views. Thus, the term perspective view of the patent is used in some places and the term "oblique perspective view" is used in other places as having generally the same meaning as an oblique view as used in the industry.

In order to clarify the support of the language in the '436 Patent itself, the Abstract is being amended to include the reference to oblique perspective views that was found in the parent '578 Patent. This does not constitute new matter since it was part of the original '578 Patent that was incorporated by reference.

During the interview, a presentation was made during which Chris Pershing and Brian Curless, along with the two attorneys attending, David Carlson and Greg Gardella, who made comments. A copy of that presentation is included herewith as Attachment 1. During the presentation, a physical model of a home in the form of a bird house was demonstrated to the Examiner and an explanation made regarding how the problem was understood, addressed and solved with regard to this model.

Slides 4 and 5 of Attachment 1 as presented at the interview explain how stereoscopic pairs of images are created. During the interview the distinction between stereoscopic pairs of images was discussed with respect to these two slides. Slide 4 is a copy of Figure 3 of Exhibit C that was filed with the supplemental Reexam. This Exhibit C is an English

language version of the document referred to in paragraph 6 of the European Patent No. EP 1 010 966 B1 as describing how stereoscopic images are acquired. According, the text of Exhibit C is one teaching regarding how these images are obtained and how they are different from a standard orthographic view and an oblique perspective view.

As stated in Exhibit C and shown in its Figure 3, the stereoscopic images are acquired as orthophotos 5. They are not obtained from two oblique images nor from one orthophoto and one oblique. As both Mr. Pershing and Dr. Curless explained in the interview, and Dr. Curless sets forth in his declaration, a stereoscopic pair of images are obtained from two orthographic images.

Dr. Curless states:

“As explained during the interview, the ‘966 patent requires carefully acquired stereoscopic aerial pairs of images which need significantly more data to create than the simple image files of unrelated images. As explained in the interview, stereoscopic aerial pairs of images are obtained using two top-plan view images, not from a top plan view image and an oblique image. Concretely, the EP ‘966 patent states that to create stereoscopic aerial pairs “two aerial photographs are taken in stereoscopic coverage, to give sets of two-dimensional, geometric image data and parameter data that contain highly detailed information on the camera angle of the image pairs, absolute image coordinates and other image recording parameters” (column 1, paragraph 2 of the EP ‘966 patent). These images and associated data are completely different from a top plan view image and one or more oblique images (also called perspective views in ‘578) that are unrelated to each other. Reconstructing shape from calibrated stereo pairs (as in the ‘966 patent) is well-known in computer vision to be quite different from, and substantially easier than, reconstructing shape from photographs taken from unknown viewpoints with unknown camera parameters (as in the ‘578 and ‘436 Patents).”

Curless Declaration, pp. 14-15.

As will be explained later herein, the claims are amended to specific that one image is a top plan view and the other image is a view other than a top plan view as discussed during the interview. Some of the claims specify that this other view is an oblique perspective view. Accordingly, this will be shown to be patentably distinct from the EP ‘966 and the all other prior art.

A. Rejections of claims 36-40 and 42-56 under 35 U.S.C. § 101

Claims 36-40 and 42-56 of the Patent under reexamination (the “Patent”) are rejected under 35 U.S.C. § 101 because the claimed invention is allegedly drawn to non-statutory subject matter

Patent Owner respectfully traverses the rejections. However, the claims have been amended herein to advance prosecution of the reexamination of the Patent. In particular, claim 36 as amended recites in relevant part (emphasis added):

36. (Amended) A non-transitory computer-readable storage medium whose contents, which are computer executable instructions stored on the non-transitory computer-readable storage medium, when executed by a computer processor of a computing system, enable [a] the computing system to generate a roof estimate report for a building having a roof, by [performing] causing, when executed by the computer processor of the computing system, the computing system to perform a method comprising:

receiving [one] two or more images of the building, wherein at least one of the two or more images provides an oblique perspective view of the roof and one of the images provides a top plan view of the roof; . . .”

As shown above, claim 36 includes tangible limitations of “computer executable instructions stored on the non-transitory computer-readable storage medium,” at least by describing the “non-transitory computer-readable storage medium” and the instructions as “causing, when executed by the computer processor of the computing system, the computing system to perform” a method comprising.

Therefore, claim 36 is directed to statutory subject matter under for at least the foregoing reasons. Since dependent claims 37-56 inherit the limitations of the corresponding independent claim 36 from which they depend, claims 37-56 are also directed to statutory subject matter for at least the same reasons presented above regarding claim 36.

For at least the foregoing reasons, Patent owner respectfully requests the applicable rejections of claim 36-40 and 42-56 be withdrawn.

B. Rejections of claims 1-5, 7-42 and 46-56 under 35 U.S.C. § 103 as being unpatentable over EP 966

Claims 1-5, 7-42 and 46-56 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over European Patent No. EP 1 010 966 B1 published October 23, 2002 (EP 966). All citations to EP 966 herein are from the first English translation of EP 966 provided in Exhibit B of the Supplemental Examination Request except for one reference made herein to the second English translation of EP 966 provided in Exhibit B of the Supplemental Examination Request.

Patent Owner respectfully traverses the rejection of claims 1-5, 7-42 and 46-56 under 35 U.S.C. § 103(a). However, the independent claims have been amended for clarification to expedite prosecution of the reexamination. EP 966 does not teach or suggest all the features of any of claims 1-5, 7-42 and 46-56 as amended.

For example, claim 1 recites in relevant part (emphasis added):

1. A computing system for generating a roof estimate report, the computing system comprising:

a memory;

a roof estimation module that is stored on the memory and that is configured, when executed, to:

receive a first and a second aerial image of a building having a roof, each of the aerial images providing a different view of the roof of the building, *wherein the first aerial image provides a top plan view of the roof and the second aerial image provides an oblique perspective view of the roof, and are not a stereoscopic pair*;

correlate the first aerial image with the second aerial image;

generate, based at least in part on the correlation between the first and second aerial images, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding slope, area, and edges; and

generate and transmit a roof estimate report that includes one or more top plan views of the three-dimensional model *annotated with numerical values that indicate the corresponding slope*, area, and length of edges of at least some of the plurality of planar roof sections using at least two different indicia for different types of roof properties.

EP 966 does not teach or suggest a roof estimation system “*wherein the first aerial image provides a top plan view of the roof and the second aerial image provides an oblique perspective view of the roof, and are not a stereoscopic pair.*”

Instead, in the '966 Patent, the images are taken and received as a stereoscopic pair and the raw data comes already matched as a stereoscopic pair. The images in a stereoscopic pair are not taken independently of each other, as they include geometric image data and parameter data that contain highly detailed information on the camera angle of the image pairs with respect to each other (see paragraph 2 of EP 966). The claimed invention of the '436 Patent does not make use of this particular information. The fact that the '436 Patent does not make use of such stereoscopic pairs of images and associated stereoscopic parameter data is further supported by the attached Declaration of both Chris Pershing and Dr. Curless, both of which are incorporated herein by reference and not quoted in full here to save space. Chris Pershing explained this in the interview and states this in his Declaration, paragraphs 3 and 4. In contrast, the system of EP 966 requires such stereoscopic pairs of images and associated stereoscopic parameter data and other image recording parameters in order to form the three-dimensional (3D) object description in that system. This is shown in the excerpts below from EP 966 (emphasis added):

[0001] The present invention relates to a method for generating a three-dimensional object description of a localized spatial object - especially a building - from aerial stereoscopic pairs, whereby

- two-dimensional image data from the aerial pairs and *the stereoscopic parameter data* are digitized and stored in a data processing system as three dimensional raw data;
- two-dimensional orthophoto data and three dimensional object data are calculated from the raw data;
- the three-dimensional object data is coordinated with external object-specific factual data to form a three-dimensional object description.

...

[0002]...In this way, stereoscopic aerial pairs of the objects, i.e. two aerial photographs *are taken in stereoscopic coverage*, to give sets of two-dimensional, *geometric image data and parameter data that contain highly detailed information on the camera angle of the image pairs*, absolute *image coordinates*

and other *image recording parameters*. These data provide the raw data to calculate real oriented representations of the earth's surface. Scanning the individual aerial images into an electronic data processing system gives digital, two-dimensional image data. By considering *the stereoscopic parameter data, oriented aerial photographs* with height information are determined by aerotriangulation. In this way, three-dimensional object data is gathered from the original raw data *to form a three-dimensional object description*.

Furthermore, the use of such stereoscopic pairs of images and associated stereoscopic parameter data are explicitly recited in claim 1 of EP 966 as that from which the 3D object data are calculated. This is further evidence that use of such stereoscopic pairs of images and associated stereoscopic parameter data are necessary and required in the system of EP 966 in order to produce the 3D model description, thereby excluding and teaching away from the use of images that are not stereoscopic pairs. In particular claim 1 of EP 966 recites, in part (emphasis added):

1. A method of producing a three-dimensional object description of a located spatial object - in particular a building - *from stereoscopic pairs of aerial pictures*, in which
 - from the pairs of aerial pictures two-dimensional image data *and stereoscopic parameter data are stored digitized as three-dimensional raw data* in a data processing installation;
 - two-dimensional orthophoto-data and *three dimensional object data* are *calculated from the raw data...*

Thus, not only does EP 966 fail to teach or suggest the claimed roof estimation system, but EP 966 also teaches away from using such images that are not stereoscopic pairs by requiring use of such stereoscopic pairs of images and associated stereoscopic parameter data.

As Mr. Jones points out in his declaration:

“For example, stereoscopy as described in the 966 Patent requires two images taken at the same camera angle with respect to the image plane. Thus, they cannot be two images, one having a top plan view and one having another view, such as an oblique view. For example, when using aerial images of roofs, the stereoscopic pair of images of the roof may be two images both showing top plan views of the roof, each taken at a known distance between the respective camera positions. Also, the general 1/30th rule of thumb in stereoscopy requires the distance between the camera positions taking each stereoscopic image to be substantially 1/30th of the distance from the object being photographed.

Jones Declaration, ¶¶ 18 and 19.

Nothing in the EP '966 mentions that slope or pitch are provided on a top plan view of the roof. Instead, these are provided as tables in a separate document, as demonstrated by Exhibit F, the AeroDach web site that is the commercial implementation of the EP '966 patent. Thus, EP 966 describes outputting lengths of exterior edges of roof section on the “flat two-dimensional graphics” (see paragraph 33 and Fig. 3 of EP 966) and providing area generally (see paragraph 33 of EP 966), but does not teach or suggest providing any numerical values of slope or pitch on a top plan view of the roof, even if such measurements had been previously calculated or determined.

Furthermore, the Office points to paragraph 33 of EP 966 which states:

[0033] The resulting calculated three-dimensional object description may be output either as flat two-dimensional graphics as shown in Fig. 3, and/or as a perspective three-dimensional representation as shown in Fig. 4, and then transmitted to the client computer. At the same time, *the factual data* is processed and added alphanumerically to the transmitted image data. For example, the roof can be provided in m² to give a first impression of the scope of a necessary roof renovation.

A description and antecedent basis is explicitly provided in EP 966 for “the factual data” referred to in paragraph 33 of EP 966. This appears in various earlier sections of the specification of EP 966. In particular, paragraph 11 of EP 966 states, in part (emphasis added):

[0011]...*Factual data*, for example, could be *cadastral data, road and/or other building data*. In this way, for example, unique pairing of *address data containing a street name and house number* can be effected with a particular building. The two-dimensional orthophoto data is stored together with these *external factual data* in a respective orthophoto-hybrid data set referenced to the specific object.

Cadastral data is “1 : of or relating to a cadastre 2 : showing or recording property boundaries, subdivision lines, buildings, and related details” (Merriam-Webster.com). A “cadaster” is “an official register of the quantity, value, and ownership of real estate used in apportioning taxes” (Merriam-Webster.com). Thus, “the factual data” of EP 966 is building data such as building address, building number and property boundaries stored together with the two-

dimensional data, and is not roof slope or pitch and has nothing to do with roof slope or pitch.

This is shown further in paragraph 14 of EP 966, which states, in part (emphasis added):

A particular advantage of the inventive method is that no longer - as was the case before - does a building need to be identified clumsily in an aerial image, but only the object-specific *factual data* need to be entered for the selection, for example, *a street name and house number*. This is sufficient for the selection of an object-specific orthophoto-hybrid data set.

This is also shown further in paragraph 14 of EP 966 which states, in part, "By the unique combination with the object *factual data, such as street and house number*, a simple and unique access is guaranteed (emphasis added) and in paragraph 30 of EP 966, which states, in part "the orthophoto data is structured according to external *factual data, such as street addresses plus house numbers*" (emphasis added). Thus, "the factual data" that "is processed and added alphanumerically to the transmitted image data" as stated in paragraph 33 of EP 966 is not slope or pitch of a roof section, but is instead cadastral data such as building address or building number as shown above.

One significant indication that the EP '966 does not teach or even suggest that the pitch values and direction of pitch was what was intended by these statements is to look at what those practicing the EP '966 actually did. First, in the EP '966, no pitch values or directions are shown on the top plan view of the roof.

Exhibit F is one example of a commercial implementation of the EP '966 by the very company which invented it. In this Exhibit F, they did not put pitch values or direction on the top plan view of the roof itself. Instead, they labeled each roof facet or section with a letter and then placed a number on the edges that separate the facets, see pages 11-17, and in particular pages 13-15 of Exhibit F of the reexamination request. After this, a table was provided in which the data was shown for each facet and edge. This is a very cumbersome approach. It is exactly the opposite of the approach taken and claimed in the '436 Patent. Thus, the EP '966 teaches away from the claims of the '436 Patent.

The Office goes on to state:

However, in light of the teachings to determine "all relevant information, such as" "roof pitch," and the teaching that "the information necessary for renovation" [of a roof] includes "roof form, ridge lines, roof line" and "roof structures," it would

have been obvious to a person of ordinary skill in the art modify the teachings of EP 966 to arrive at a roof estimate report that includes “numerical values that indicate the corresponding slope of at least some of the plurality of planar roof sections”.

Office Action, p. 19, second full paragraph.

Determining or calculating information such as roof pitch does not teach or suggest generating “one or more top plan views of the three-dimensional model annotated with numerical values that indicate the corresponding slope.” Instead, as shown above, EP 966 specifically states in paragraph 33 that “the roof can provided in m²,” while not showing or making any mention of providing roof pitch on the “flat two-dimensional graphics” of Figure 3, or any other view of the roof for that matter. If annotating a top plan view of the roof with numerical values of roof pitch were necessary or particularly relevant for the EP 966 system, then why wouldn’t the “flat two-dimensional graphic” shown in Figure 3, or at least the specification of EP 966 mention including such numerical values of slope on the “flat two-dimensional graphic”? The answer is that for the purposes of the system described in EP 966, providing the roof section lengths on the “flat two-dimensional graphic” or providing roof area generally is sufficient for roof renovation and there was no suggestion or motivation of any additional benefit of including numerical values of slope on the “flat two-dimensional graphic” of EP 966.

Therefore, EP 966 does not teach or suggest “generate and transmit a roof estimate report that includes one or more top plan views of the three-dimensional model *annotated with numerical values that indicate the corresponding slope*” (emphasis added) as recited in claim 1. Since dependent claims 2-17 inherit the limitations of the corresponding independent claim 1 from which they depend, EP 966 also does not teach or suggest all the limitations of any of dependent claims 2-17 for at least the same reasons presented above regarding claim 1.

Therefore, claims 1-17 are not obvious in view of EP 966 for at least the reasons presented above.

Additionally, claim 2, which depends from claim 1, recites “...wherein the roof estimation module is further configured to correlate the first and second aerial images *by*

receiving an indication of one or more corresponding points on the building shown in each of the first and second aerial images” (emphasis added). EP 966 does not teach or suggest this feature.

The Office points to paragraphs 11 and 24 of EP 966 as disclosing this feature. Patent Owner respectfully disagrees. Paragraph 11 describes how the “building address data containing a street name and house number” (i.e., the “external factual data” of EP 966) is stored together with the “two-dimensional orthophoto data.” There is no mention of receiving any indication of particular corresponding points in the first and second aerial images, let alone “corresponding points *on the building* shown in each of the first and second aerial images” as recited in claim 2 (emphasis added).

Paragraph 24 of EP 966 discloses that “the desired roof surface can be marked by clicking” to request the description of the roof. There is no mention in EP 966 of indicating a particular point on the building, only the user marking the roof surface generally to identify which roof the request is for. Also, there is no mention in EP 966 of receiving any indication of particular corresponding points in any first and second aerial images. Even if the user did mark a particular a point on the building in an image in EP 966 to identify the roof for the request, there is no teaching or suggestion of receiving any indication of a point on another image specifically corresponding to that point marked by the user in EP 966.

Thus, EP 966 does not teach or suggest all the limitations of claim 2 and claim 2 is not obvious in view of EP 966 for at least these additional reasons.

Additionally, claim 3, which depends from claim 1, recites “...wherein the roof estimation module is further configured to generate the three-dimensional model *by receiving an indication of at least one of a ridgeline of the roof, a valley of the roof, an edge of the roof, a hip of the roof, and a gable of the roof*” (emphasis added). EP 966 does not teach or suggest this feature.

The Office points to paragraph 24 of EP 966 as disclosing this feature. Patent Owner respectfully disagrees. Paragraph 24 of EP 966 discloses that “the desired roof surface can be marked by clicking” to request the description of the roof. There is no mention in EP 966 of this user indicating specifically any of “a ridgeline of the roof, a valley of the roof, an edge of

the roof, a hip of the roof, and a gable of the roof” as recited in claim 3. EP 966 just describes the user marking the roof surface generally to identify which roof the request is for (see paragraph 24 of EP 966). Nowhere in EP 966 does it describe such a marking of the roof being an *indication* of any particular roof feature, let alone indicating specifically a roof ridgeline, edge, valley, hip or gable.

Thus, EP 966 does not teach or suggest all the limitations of claim 3 and claim 3 is not obvious in view of EP 966 for at least these additional reasons.

Additionally, claim 8, which depends from dependent claim 7, recites “...wherein the length is located adjacent to a line representing a segment, *the slope is located next to an arrow indicating direction of the slope* and the area is located within a section having the area” (emphasis added). EP 966 does not teach or suggest this feature.

On page 25 of the Office Action, the Office points to paragraph 33 of EP 966 regarding the “the factual data” of EP 966 being “added alphanumerically to the transmitted image data.” However, a description and antecedent basis is explicitly provided in EP 966 for “the factual data” referred to in paragraph 33 of EP 966 in various earlier sections of the specification and based on these descriptions, “the factual data” in EP 966, does not include or have anything to do with pitch or slope of the roof. In particular, paragraph 11 of EP 966 states, in part (emphasis added):

[0011]...*Factual data*, for example, could be *cadastral data, road and/or other building data*. In this way, for example, unique pairing of *address data containing a street name and house number* can be effected with a particular building. The two-dimensional orthophoto data is stored together with these *external factual data* in a respective orthophoto-hybrid data set referenced to the specific object.

Cadastral data is “1 : of or relating to a cadastre 2 : showing or recording property boundaries, subdivision lines, buildings, and related details” (Merriam-Webster.com). A “cadaster” is “an official register of the quantity, value, and ownership of real estate used in apportioning taxes” (Merriam-Webster.com). Thus, “the factual data” of EP 966 is building data such as building address and property boundaries and the like stored together with the two-dimensional data, and is not roof slope or pitch and has nothing to do with roof slope or pitch. This is shown further in paragraph 14 of EP 966, which states, in part (emphasis added):

A particular advantage of the inventive method is that no longer - as was the case before - does a building need to be identified clumsily in an aerial image, but only the object-specific *factual data* need to be entered for the selection, for example, *a street name and house number*. This is sufficient for the selection of an object-specific orthophoto-hybrid data set.

This is also shown further in paragraph 14 of EP 966 which states, in part, “By the unique combination with the object *factual data, such as street and house number*, a simple and unique access is guaranteed (emphasis added) and in paragraph 30 of EP 966, which states, in part, “the orthophoto data is structured according to external *factual data, such as street addresses plus house numbers*” (emphasis added). Thus, “the factual data” that “is processed and added alphanumerically to the transmitted image data” as stated in paragraph 33 of EP 966 is not slope or pitch of a roof section, but is instead cadastral data such as building address, building number, or building property boundaries, as shown above.

The Office goes on to state in the Office Action:

The claim language describes a conventional written notation to indicate slope. Accordingly, in view the express instruction in EP 966 to determine “all relevant information, such as roof shape, roof surface, roof pitch” (§ 0033) and that “factual data is processed and added alphanumerically to the transmitted image data” (§ 0033), it would have been obvious to add slope data to the image data using a conventional written notation to indicate slope.”

Office Action, p. 26, lines 1-6.

Patent Owner respectfully disagrees. As shown above, the “factual data” of EP 966 is building data such as building address and property boundaries that is stored together with the two-dimensional data, and is not roof slope or pitch and has nothing to do with roof slope or pitch. Adding building data such as building address, house number and/or property boundaries to the transmitted image data, would not suggest or motivate one to “add slope data to the image data” as the Office alleges, let alone wherein “the slope is located next to an arrow indicating direction of the slope” as recited in claim 8 of the '436 Patent.

Furthermore, determining or calculating information such as roof pitch would not suggest or motivate one to “add slope data to the image data” on the top plan view as the Office alleges, let alone wherein “the slope is located next to an arrow indicating direction of the slope” as recited in claim 8 of the '436 Patent. Instead, as shown above, EP 966 specifically states in

paragraph 33 that “the roof can provided in m²,” while not showing or making any mention of providing roof pitch or slope on the “flat two-dimensional graphics” of Figure 3, or any other view of the roof for that matter. In fact, for the purposes of the system described in EP 966, providing the roof section lengths or area on the “flat two-dimensional graphic” is sufficient to give an impression of the scope of roof renovation and there was no suggestion or motivation of any specific additional benefit of adding any indicia of slope, regardless of the particular type of slope notation that could be used to do so. Thus, even if the claim language of claim 8 did describe a “conventional written notation to indicate slope,” there would be no motivation or suggestion to modify the system of EP 966 to include such notation.

Also, the Office provides no support and points to no documentary evidence of what a “conventional written notation to indicate slope” is. In fact, Exhibit F teaches the very opposite. Thus, Patent Owner respectfully submits that such factual assertions are improperly officially noticed and hereby rebuts such purported Official Notice taken by the Office.

Withdrawal of this ground of rejection is requested.

The Office alleges on page 26 of the Office Action that:

...the differences between the claimed invention and the embodiment expressly disclosed by EP 966, Fig. 3, are merely differences in nonfunctional descriptive material. Accordingly, these differences do not patentably distinguish the claimed invention over the prior art. See MPEP § 2111.05.

Office Action, p. 26, last full paragraph.

Patent Owner respectfully disagrees. In particular, MPEP 2111.05 Section I paragraph A, states, in part (emphasis added):

To be given patentable weight, the printed matter and associated product must be in a functional relationship. A functional relationship can be found where the ***printed matter performs some function with respect to the product to which it is associated.*** See Lowry, 32 F.3d at 1584(citing Gulack, 703 F.2d at 1386). For instance, ***indicia on a measuring cup perform the function of indicating volume within that measuring cup.*** See In re Miller, 418 F.2d 1392, 1396, 164 USPQ 46, 49 (CCPA 1969).

Likewise, the indicia of slope on the roof estimate report referred to in claim 8 of the '436 Patent performs the function of indicating slope of the roof shown within that roof estimate report. Thus, this functional relationship is evidence that the roof estimate report does

not merely provide support for the indicia of slope on the roof estimate report, but the indicia of slope has a functional relationship with the roof shown within that report. The fact that the specific type of functional relationship may be different than that in *In re Miller* above is not relevant as a matter of law. See *In re Gulack*, which states (emphasis added):

A functional relationship of the precise type found by the CCPA in *Miller* -to size or to type of substrate, or conveying information about substrate-**is not required**. What **is** required is the existence of **differences between the appealed claims and the prior art** sufficient to establish patentability. The bare presence **or absence** of a specific functional relationship, without further analysis, is **not dispositive of obviousness**. Rather, the critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate.

In re Gulack, 703 F.2d 1381, 1386 (Fed. Cir. 1983)

Thus, the relevant question is whether the functional relationship of the indicia of slope with the roof shown within the roof estimate report is new and nonobvious.¹ The language of claim 8, “wherein...***the slope is located next to an arrow indicating direction of the slope***” defines this functional relationship of the indicia of slope with the roof shown within the roof estimate report. As shown above, the Office has failed to present a *prima facie* case of obviousness of this feature of claim 8 and EP 966 does not teach or suggest this element.

Furthermore, MPEP 2111.05 states:

USPTO personnel **must** consider **all** claim limitations when determining patentability of an invention over the prior art. *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ, 401, 403-04 (Fed. Cir. 1983). Since a claim must be read as a whole, USPTO personnel **may not disregard claim limitations comprised of printed matter**. See *Gulack*, 703 F.2d at 1384, 217 USPQ at 403; see also *Diamond v. Diehr*, 450 U.S. 175, 191, 209 USPQ 1, 10 (1981).

Additionally, *In re Gulack* states:

Differences between an invention and the prior art cited against it **cannot be ignored merely because those differences reside in the content of the printed**

¹ *In re Gulack*, 703 F.2d 1381, 1386 (Fed. Cir. 1983), states (emphasis added): A functional relationship of the precise type found by the CCPA in *Miller* -to size or to type of substrate, or conveying information about substrate- is not required. What is required is the existence of differences between the appealed claims and the prior art sufficient to establish patentability. The bare presence or absence of a specific functional relationship, without further analysis, is not dispositive of obviousness. Rather, the **critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate**.

matter. Under section 103, the board cannot dissect a claim, excise the printed matter from it, and declare the remaining portion of the mutilated claim to be unpatentable. The claim *must be read as a whole*.

In re Gulack, 703 F.2d 1381, 1385 (Fed. Cir. 1983)

Therefore, since the language of claim 8 “wherein...*the slope is located next to an arrow indicating direction of the slope*” defines a functional relationship of the indicia of slope with the roof shown within the roof estimate report and EP 966 does not teach or suggest this element, it must be given patentable weight.

Therefore claim 8 is not obvious in view of EP 966 for at least the additional reasons above.

Additionally, dependent claim 10, which depends from claim 1, recites “...wherein the different types of roof properties include a ridge line and a valley line and *the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley*” (emphasis added). EP 966 does not teach or suggest this feature.

The Office agrees on page 28 of the Office Action that EP 966 does not explicitly disclose “the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley” as recited in claim 10, but alleges it would be obvious to one of ordinary skill in the art at the time the invention was made in view of EP 966 to use “at least two different indicia” that “include one color of a line associated with a ridge and a different color of a line associated with a valley” as recited in claim 10. Patent owner respectfully disagrees.

The Office points to paragraph 23 of EP 966, which states, in part (emphasis added) “In the previously proposed application, it is conceivable, for example, to mark graphically in color the outline of roof surfaces that form the object in order to highlight it. This display is extremely user friendly.” However, highlighting the outline of the roof surface to be “user friendly” is not a reason for using one color for a ridge line and another color for a valley. Using one color for a ridge line and another color for a valley is not done for highlighting or for mere ornamental purposes; it is done to distinguish ridges from valleys. In the EP ‘966 this was

done on the computer screen and all outlines were likely same color. It was not done to provide the function of showing which lines were ridges and which were valleys.

Having colored lines perform the function of showing ridges and valleys serves an important specific function to indicate to the builder, roof renovator or other user of the report which line is a valley and which line is a ridge such that the direction of slope can be easily determined when looking at the flat top plan view of the roof in the roof estimate report. Thus, it is not merely an ornamental feature. EP 966 does not teach or suggest such a reason, or any reason at all, to specifically distinguish ridges from valleys, let alone using two different colors to do so.

Furthermore, the Office alleges on page 29 of the Office Action, that:

...the differences between the claimed invention and the prior art are merely differences in nonfunctional descriptive material. Accordingly, these differences do not patentably distinguish the claimed invention over the prior art. See MPEP 2111.05.

Office Action, p. 29, first full paragraph

Patent Owner respectfully disagrees for the reasons previously explained and will not repeat them here to save space.

The indicia of one color of a line associated with a ridge and a different color of a line associated with a valley on the roof estimate report referred to in claim 10 performs the function of distinguishing ridges from valleys of the roof shown within that roof estimate report for the reasons stated above. Thus, this functional relationship is evidence that the roof estimate report does not merely provide support for the indicia of different colors, but the indicia of different colors has a functional relationship with the roof shown within that report. The fact that the specific type of functional relationship may be different than that in *In re Miller* above is not relevant as a matter of law. See *In re Gulack*, which states (emphasis added):

A functional relationship of the precise type found by the CCPA in *Miller* -to size or to type of substrate, or conveying information about substrate-***is not required***. What ***is*** required is the existence of ***differences between*** the appealed ***claims and the prior art*** sufficient to establish patentability. The bare presence ***or absence*** of a specific functional relationship, without further analysis, is ***not dispositive of obviousness***. Rather, the critical question is whether there exists any

new and unobvious functional relationship between the printed matter and the substrate.

In re Gulack, 703 F.2d 1381, 1386 (Fed. Cir. 1983)

Therefore, the relevant question is whether the functional relationship of the indicia of different colors with the roof shown within the roof estimate report is new and nonobvious.² The language of claim 8, "...wherein the different types of roof properties include a ridge line and a valley line and ***the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley***" defines this functional relationship of the indicia of different colors with the roof shown within the roof estimate report. As shown above, the Office has failed to present a *prima facie* case of obviousness of this feature of claim 10 and EP 966 does not teach or suggest this element.

Furthermore, MPEP 2111.05 states:

USPTO personnel ***must*** consider ***all*** claim limitations when determining patentability of an invention over the prior art. *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 403-04 (Fed. Cir. 1983). Since a claim must be read as a whole, USPTO personnel ***may not disregard claim limitations comprised of printed matter***. See *Gulack*, 703 F.2d at 1384, 217 USPQ at 403; see also *Diamond v. Diehr*, 450 U.S. 175, 191, 209 USPQ 1, 10 (1981).

Additionally, *In re Gulack* states:

Differences between an invention and the prior art cited against it ***cannot be ignored merely because those differences reside in the content of the printed matter***. Under section 103, the board cannot dissect a claim, excise the printed matter from it, and declare the remaining portion of the mutilated claim to be unpatentable. The claim ***must be read as a whole***.

In re Gulack, 703 F.2d 1381, 1385 (Fed. Cir. 1983)

Therefore, since the language of claim 10 "...wherein the different types of roof properties include a ridge line and a valley line and ***the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley***"

² *In re Gulack*, 703 F.2d 1381, 1386 (Fed. Cir. 1983), states (emphasis added): A functional relationship of the precise type found by the CCPA in *Miller* -to size or to type of substrate, or conveying information about substrate- is not required. What is required is the existence of differences between the appealed claims and the prior art sufficient to establish patentability. The bare presence or absence of a specific functional relationship, without further analysis, is not dispositive of obviousness. Rather, the ***critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate***.

defines a functional relationship of the indicia of different colors with the roof shown within the roof estimate report and EP 966 does not teach or suggest this element, it must be given patentable weight.

Thus, EP 966 does not teach or suggest all the limitations of claim 10 and claim 10 is not obvious in view of EP 966 for at least these additional reasons.

Additionally, dependent claim 13, which depends from claim 1, recites “...wherein the different types of roof properties include a ridge length and a valley length and ***the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley***” (emphasis added). Although the language of dependent claim 13 is not identical to that of dependent claim 10, the nonobviousness of claim 13 for reasons additional to those with respect to claim 1 will be apparent in view of the above discussion regarding dependent claim 10.

Additionally, dependent claim 17, which depends from claim 1, recites “...wherein the different types of roof properties include a slope and the at least two different ***indicia include a slope indicia, wherein the slope indicia is an arrow in a direction of the slope with a numerical value adjacent thereto***” (emphasis added). Although the language of dependent claim 17 is not identical to that of dependent claim 8, the nonobviousness of dependent claim 17 for reasons additional to those with respect to claim 1 will be apparent in view of the above discussion regarding dependent claim 8.

Therefore, the Office has failed provide a *prima facie* case of obviousness for claims 1-17 and claims 1-17 are not obvious in view of EP 966 for at least the reasons presented above.

Independent method claim 18 as amended recites (emphasis added):

18. A computer-implemented method for generating a roof estimate, the method comprising:

receiving a first and a second aerial image of a building having a roof, each of the aerial images providing a different view of the roof of the building *wherein the first aerial image provides a top plan view of the roof and the second aerial image provides a view of the roof that is other than a top plan view and neither of the two images are part of a stereoscopic pair;*

correlating the first aerial image with the second aerial image;

generating, based at least in part on the correlation between the first and second aerial images, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding slope, area, and edges; and

transmitting a roof estimate report that includes one or more top plan views of the three-dimensional model annotated with numerical indications of at least one of the slope, area, and lengths of the edges of the plurality of planar roof sections, wherein the roof estimate report includes at least two different indicia for different types of roof properties.

EP 966 does not teach or suggest the feature of “each of the aerial images providing a different view of the roof of the building **wherein the first aerial image provides a top plan view of the roof and the second aerial image provides a view of the roof that is other than a top plan view and neither of the two images are part of a stereoscopic pair;**” as recited in claim 18 as amended (emphasis added). Instead, in the system described in EP 966, the images are taken and received as a stereoscopic pair and the raw data comes already matched as a stereoscopic pair. The images in a stereoscopic pair are not taken independent of each other, let alone at different times and on different dates as recited in claim 18, as they include geometric image data and parameter data that contain highly detailed information on the camera angle of the image pairs with respect to each other (see paragraph 2 of EP 966), the benefit of which the claimed invention of the '436 Patent does not make use.

The fact that the '436 Patent does not make use of the benefit of use of such stereoscopic pairs of images and associated stereoscopic parameter data is further supported by the attached Declarations of Jones and Curless which are incorporated herein by reference, the details of which are not repeated here to save space. In contrast, the system of EP 966 requires such stereoscopic pairs of images and associated stereoscopic parameter data and other image recording parameters in order to form the three-dimensional object description in that system. This is shown in the excerpts below from paragraphs 1 and 2 in EP 966 previously quoted and not repeated here.

Furthermore, the use of such stereoscopic pairs of images and associated stereoscopic parameter data are explicitly recited in claim 1 of EP 966 as that from which the 3D object data are calculated. This is further evidence that use of such stereoscopic pairs of images and associated stereoscopic parameter data are necessary and required in the system of EP 966 in

order to produce the 3D model description of that system, thereby excluding and teaching away from the use of images taken independent of each other. In particular claim 1 of EP 966 recites, in part (emphasis added):

1. A method of producing a three-dimensional object description of a located spatial object - in particular a building - *from stereoscopic pairs of aerial pictures*, in which
 - from the pairs of aerial pictures two-dimensional image data *and stereoscopic parameter data are stored digitized as three-dimensional raw data* in a data processing installation;
 - two-dimensional orthophoto-data and three dimensional object data are *calculated from the raw data...*

Thus, EP 966 fails to teach or suggest the amended claim feature of “receiving a first and a second aerial image of a building having a roof, each of the aerial images providing a different view of the roof of the building **“wherein the first aerial image provides a top plan view of the roof and the second aerial image provides a view of the roof that is other than a top plan view and neither of the two images are part of a stereoscopic pair.”**

Since dependent claims 19-35 inherit the limitations of the corresponding independent claim 18 from which they depend, EP 966 also does not teach or suggest all the limitations of any of dependent claims 19-35 for at least the same reasons presented above regarding claim 18.

Therefore, claims 18-35 are not obvious in view of EP 966 for at least the reasons presented above.

Additionally, dependent method claim 20, which depends from claim 18, recites “...wherein correlating the first and second aerial images *includes receiving an indication of one or more corresponding points shown in each of the first and second aerial images*” (emphasis added). Although the language of dependent method claim 20 is not identical to that of dependent system claim 2, the nonobviousness of claim 20 for reasons additional to those with respect to independent claim 18 will be apparent in view of the above discussion regarding dependent claim 2.

Additionally, dependent method claim 22, which depends from claim 18, recites “...wherein ***generating the three-dimensional model includes receiving an indication of at least one of a ridgeline of the roof, a valley of the roof, an edge of the roof, a hip of the roof, and a gable of the roof***” (emphasis added). Although the language of dependent method claim 22 is not identical to that of dependent system claim 3, the nonobviousness of claim 22 for reasons additional to those with respect to independent claim 18 depends will be apparent in view of the above discussion regarding dependent claim 3.

Additionally, dependent method claim 26, which depends from claim 18, recites “...wherein ***the length is located adjacent to a line representing a segment, the slope is located next to an arrow indicating direction of the slope and the area is located within a section having the area***” (emphasis added). Although the language of dependent method claim 26 is not identical to that of dependent system claim 8, the nonobviousness of claim 26 for reasons additional to those with respect to independent claim 18 will be apparent in view of the above discussion regarding dependent claim 8.

Additionally, dependent method claim 28, which depends from claim 18, recites “...wherein ***the different types of roof properties include a ridge line and a valley line and the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley***” (emphasis added). Although the language of dependent method claim 28 is not identical to that of dependent system claim 10, the nonobviousness of claim 28 for reasons additional to those with respect to independent claim 18 will be apparent in view of the above discussion regarding dependent claim 10.

Additionally, dependent method claim 31, which depends from claim 18, recites “...wherein ***the different types of roof properties include a ridge length and a valley length and the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley***” (emphasis added). Although the language of dependent method claim 31 is not identical to that of dependent system claim 10, the nonobviousness of claim 31 for reasons additional to those with respect to independent claim 18 will be apparent in view of the above discussion regarding dependent claim 10.

Additionally, dependent method claim 35, which depends from claim 18, recites “...wherein the different types of roof properties include a slope and the at least two different indicia include a slope indicia, wherein the slope indicia is an arrow in a direction of the slope with a numerical value adjacent thereto” (emphasis added). Although the language of dependent method claim 35 is not identical to that of dependent system claim 8, the nonobviousness of claim 35 for reasons additional to those with respect to independent claim 18 will be apparent in view of the above discussion regarding dependent claim 8.

Therefore, allowance of amended claims 18-35 is respectfully requested.

Independent computer-readable storage medium claim 36 as amended recites (emphasis added):

36. (Amended) A non-transitory computer-readable storage medium whose contents, *which are computer executable instructions stored on the non-transitory computer-readable storage medium, when executed by a computer processor of a computing system*, enable the computing system to generate a roof estimate report for a building having a roof, by causing, when executed by the computer processor of the computing system, the computing system to perform a method comprising:

receiving two or more images of the building, wherein at least one of the two or more images provides an oblique perspective view of the roof and one of the images provides a top plan view of the roof;

receiving an indication of pairs of points on the two or more images, each pair of points corresponding to substantially the same point on the roof depicted in each of the two or more images;

generating, based on the two or more images of the building, a three-dimensional model of the roof that includes a plurality of planar roof sections that each have a corresponding area and edges, wherein the generating, based on the two or more images of the building, the model of the roof includes generating the model of the roof based on the receiving the indication of the pairs of points on the two or more images of the building; and ...”

EP 966 does not teach or suggest the claimed features of:

“two or more images of the building, wherein at least one of the two or more images provides an oblique perspective view of the roof and one of the images provides a top plan view of the roof;

receiving an indication of pairs of points on the two or more images, each pair of points corresponding to substantially the same point on the roof depicted in each of the two or more images;

generating, based on the two or more images of the building. . .”

as recited in amended claim 36. In contrast, EP 966 discloses using stereoscopic *pairs* of images to perform a “three-dimensional model calculation” (paragraph 16 of EP 966), not “generating a *two-dimensional model* of the roof based on a *single* aerial image of the roof” as recited in amended claim 36.

Novak fails to cure the deficiencies of EP 966 described above with respect to this feature that EP 966 lacks. The Office alleges Novak teaches “generating a *two-dimensional model* of the object based on a single image” (page 48, lines 15-16 of the Office Action, emphasis added). Patent Owner respectfully submits this is incorrect. What Novak teaches is merely calculating measurements of objects and distances between objects in the image (see paragraph 65 of Novak). This is not the same as actually generating a two-dimensional *model* of the object. In particular, paragraph 65 of Novak shows how measurement values are merely calculated without actually building any model (emphasis added):

In the fourth step 440 the user selects a point at the right edge of the pole and a point at the left edge of the pole at the location that the pole diameter is desired. The image processor 190 automatically *determines the distance* in pixel units of measure between the selected points. The *diameter* of the pole at reference point “A” is then *calculated* 450 by multiplying the image scale at point “A” With the pixel separation distance. Lastly, once the diameter is known the *circumference* of the pole at point “A” is *calculated* 460 using principles of geometry. With the diameter known and the image processor’s 190 ability to *determine the distance* between any two substantially coplanar points on the pole, a myriad of other *calculations* may be performed including, for instance, the surface area *calculation* and the volume *calculation*. Further, one with skill in the art can appreciate that in addition to cylindrical objects, the area and perimeter of all planar geometric shapes may be easily *calculated* by simply identifying the critical distances on the shape.

Thus, despite the conclusion of the Office, nowhere does Novak teach generating a *two-dimensional model* of the object based on a single image. The fact that Novak does not teach generating a two-dimensional model of the object based on a single image and merely

calculates measurements of objects and distances between objects in the image is further supported by the attached Declaration of Jones, he states:

22. The Novak reference describes calculating distances between points in a single image that are identified as being coplanar on a plane parallel to the image plane. However, points on a planar surface of the roof in an aerial image of the roof are rarely coplanar on a plane parallel to the image plane unless the planar surface of the roof is flat (i.e., has no pitch).

Jones Declaration, ¶ 22.

In addition, the Declaration of Curless states:

I have also read the Novak patent, US 2003/0103651 A1. This patent concerns an invention for measuring the distance between points in a single, predominantly vertical plane based on a single image. It requires a substantial amount of extra equipment beyond a camera for the task, including a rangefinder to measure the distance to a point on a plane and devices to measure the orientation (at least, bearing/yaw and azimuth/pitch, perhaps assuming no roll) of the camera. Further, the camera must be calibrated with the aid of a large, planar calibration pattern roughly the size of the target plane to be measured; such a pattern can then be used to estimate camera focal length and lens distortion. This invention is substantially different from the one described in the '578 and '436 Patents. First and foremost, roofs are generally not comprised of a single, predominantly vertical plane; rather, they consist of a set of pitched facets that are not generally coplanar with each other. The Novak patent is intended for capturing vertical structures with a camera mounted on a tripod or equivalent to photograph a predominantly vertical planar structure, as opposed to the aerial imagery used to recover multi-faceted, upward-facing roofs in '578 and '436. In addition, the Novak patent requires substantial equipment and large, custom calibration patterns to estimate camera parameters before measuring distances between coplanar scene points from a single image. By contrast, the '578 and '436 Patents start just from two or more images (one of them a top-down view) without camera additional information, other than an image scale marker in one of the images.

Curless Declaration, pp. 15 and 16.

Therefore, the assertion as to what Novak teaches is incorrect.

In support of an argument that a person would have been motivated to combine the teachings of EP 966 and Novak, the Office states "In forming the combination, it would have been obvious that the 'planar geometric shapes' (Novak, ¶ 0065) of interest would be planar sections of a building roof (e.g., EP 966, ¶ 0003)." Patent Owner respectfully disagrees.

Novak states in paragraph 65 that “all planar geometric shapes may be easily calculated by simply *identifying the critical distances on the shape*” (emphasis added). In Novak, these critical distances are determined between two substantially “*coplanar*” points in the image. This is reiterated throughout the specification of Novak. For example, the Abstract of Novak states “A photogrammetric apparatus for capturing a single image of an object, capturing a plurality of data about the image, analyzing the data, and computing relationships between substantially *coplanar points in the image*... The image processor includes routines for calibrating the apparatus, measuring distances between substantially coplanar points in the image, and calculating a plurality of relationships among various *coplanar points in the image*” (emphasis added). This is also shown in the calculation of measurements in paragraph 65 of Novak, which states, in part “determine the distance between any two substantially *coplanar* points on the pole” (emphasis added). Paragraph 17 describes the process in which the user provides input indicating “at least *two coplanar points in the image* that are substantially *coplanar on the real world target of interest*... For example, the distance between various points on a substantially *coplanar utility* pole may be calculated. More specifically, the point can correspond to *cables or equipment on the pole*” (emphasis added).

The use of the term “coplanar” in Novak is “the conventional use in the context of geometric applications” (paragraph 10 of Novak), which means that “coplanar” refers to “lying in the same plane” (Collins English Dictionary – Complete and Unabridged, HarperCollins Publishers 1991, 1994, 1998, 2000, 2003). Since the “at least two coplanar points” described in Novak can be on objects with rounded surfaces such as cylindrical utility poles and cables on the pole as shown above, which do not have flat physical planar surfaces, the plane referred to in Novak on which the “at least two coplanar points” lie must be some imaginary plane in 3D space. However, any two points in 3D space are lying on some same imaginary “plane” in 3D space. Thus, for “at least two coplanar points in the image” being “coplanar” in Novak to have any significance or meaning in Novak, the imaginary plane in 3D space on which the two coplanar points lie must be with respect to some reference plane. That reference plane is the “image plane IP” of Novak (see at least paragraph 58 and Fig. 3 of Novak). This is because in Novak, the calculated real world distance between the “at least two coplanar points in the image”

is according to the distance in pixels between the points on the single image itself adjusted for scale. Thus, if the selected points in the image were *not* coplanar on a plane in 3D space that is substantially parallel to the reference “image plane IP” of Novak (e.g., if one point was on a utility pole in the foreground of the image and the other point was on a distant mountain in the background), the distance in pixels between the points on the image would be of no use in calculating the real world distance between the points in the image. This is evidenced in paragraph 65 of Novak, which states, “The image processor 190 automatically determines the distance *in pixel units of measure between the selected points*. The diameter of the pole at reference point ‘A’ is then calculated 450 by *multiplying the image scale* at point ‘A’ with the *pixel separation distance*” (emphasis added).

For at least the foregoing reasons, Patent owner respectfully requests the applicable rejection of claim 36 be withdrawn.

Since dependent claims from 36 inherit the limitations of the corresponding independent claim 36 from which they depend, EP 966 also does not teach or suggest all the limitations of any of dependent claims for at least the same reasons presented above regarding claim 36.

Additionally, dependent method computer-readable storage medium claim 37, which depends from claim 36, recites as amended (emphasis added):

37. The non-transitory computer-readable storage medium of claim 36 wherein generating the model further includes:

correlating two of the one or more images by receiving an indication of one or more corresponding points on the building shown in each of the two images;
and

generating a three-dimensional model *based on the correlation between two of the one or more images*.

EP 966 does not teach or suggest all the limitations of claim 37 as amended. For example, EP 966 does not teach or suggest “correlating two of the one or more images by receiving an indication of one or more corresponding points on the building shown in each of the two images” as recited in claim 37 as amended. Paragraph 11 of EP 966 describes how the “building address data containing a street name and house number” (i.e., the “factual data” of EP

966) is stored together with the “two-dimensional orthophoto data” of EP 966. There is no mention of correlating any particular corresponding points in the first and second aerial images, let alone “corresponding points *on the building* shown in each of the first and second aerial images” as recited in claim 37 as amended (emphasis added).

Paragraph 24 of EP 966 discloses that “the desired roof surface can be marked by clicking” to request the description of the roof. There is no mention in EP 966 of indicating a particular point on the building, only the user marking the roof surface generally to identify which roof the request is for. Also, there is no mention in EP 966 of correlating any particular corresponding points in any first and second aerial images. Even if the user did mark a particular a point on the building in an image in EP 966 to identify the roof for the request, there is no teaching or suggestion of receiving any indication of a point on another image specifically corresponding to that point marked by the user in EP 966.

Therefore, EP 966 does not teach or suggest all the limitations of claim 37 as amended and claim 37 is not obvious in view of EP 966 for at least these additional reasons.

Additionally, dependent method computer-readable storage medium claim 47, which depends from claim 36, recites “...wherein *the length is located adjacent to a line representing a segment, the slope is located next to an arrow indicating direction of the slope and the area is located within a section having the area*” (emphasis added). Although the language of dependent computer-readable storage medium claim 47 is not identical to that of dependent system claim 8, the nonobviousness of claim 47 for reasons additional to those with respect to independent claim 36 will be apparent in view of the above discussion regarding dependent claim 8.

Additionally, dependent computer-readable storage medium claim 49, which depends from claim 36, recites “...wherein *the different types of roof properties include a ridge line and a valley line and the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley*” (emphasis added). Although the language of dependent computer-readable storage medium claim 49 is not identical to that of dependent system claim 10, the nonobviousness of claim 49 for reasons

additional to those with respect to independent claim 36 will be apparent in view of the above discussion regarding dependent claim 10.

Additionally, dependent computer-readable storage medium claim 52, which depends from claim 36, recites "...wherein *the different types of roof properties include a ridge length and a valley length and the at least two different indicia include one color of a line associated with a ridge and a different color of a line associated with a valley*" (emphasis added). Although the language of dependent computer-readable storage medium claim 52 is not identical to that of dependent system claim 10, the nonobviousness of claim 52 for reasons additional to those with respect to independent claim 36 will be apparent in view of the above discussion regarding dependent claim 10.

Additionally, dependent computer-readable storage medium claim 56, which depends from claim 36, recites "...wherein *the different types of roof properties include a slope and the at least two different indicia include a slope indicia, wherein the slope indicia is an arrow in a direction of the slope with a numerical value adjacent thereto*" (emphasis added). Although the language of dependent computer-readable storage medium claim 56 is not identical to that of dependent system claim 8, the nonobviousness of claim 56 for reasons additional to those with respect to independent claim 36 will be apparent in view of the above discussion regarding dependent claim 8.

For at least the foregoing reasons, claims 1-5, 7-42 and 46-56 are not obvious in view of EP 966 and Patent owner respectfully requests the applicable rejections of claims 1-5, 7-42 and 46-56 be withdrawn.

C. Rejection of dependent claim 6 under 35 U.S.C. § 103 as being unpatentable over EP 966 in view of Aerodach Website

Claim 6 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over EP 966 in view of Aerodach Website. Patent owner respectfully traverses the rejection.

The Aerodach Website fails to cure the deficiencies of EP 966 described above with respect to claim 1 as amended and the Office does not allege the Aerodach Website teaches or suggests the features described above of claim 1 that EP 966 lacks. Since dependent claim 6

inherits all the limitations of independent claim 1 from which it depends, the combination of EP 966 and the Aerodach Website also does not teach or suggest all the limitations of dependent claim 6 for at least the same reasons presented above regarding claim 1.

Therefore, the Office has failed provide a *prima facie* case of obviousness of claim 6 over EP 966 in view of Aerodach Website and claim 6 is also not obvious over EP 966 in view of Aerodach Website for at least the reasons presented above.

For at least the foregoing reasons, Patent owner respectfully requests the applicable rejection of claim 6 be withdrawn.

D. Rejections of claims 1-5, 7-42 and 46-56 under 35 U.S.C. § 103 as being unpatentable over EP 966 in view of alleged Applicant's Admitted Prior Art

Claims 1-5, 7-42 and 46-56 are rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over EP 966 in view of alleged Applicant's Admitted Prior Art ("AAPA").

Patent owner respectfully traverses the rejections and the allegations of admitted prior art.

It appears the Office is alleging that several claim elements of claims 1-5, 7-42 and 46-56 are Applicant's Admitted Prior Art and also that several portions of the Detailed Description section of the specification of the Patent are Applicant's Admitted Prior Art.

MPEP 2129 Section I states (emphasis added):

A statement by an applicant > in the specification or made < during prosecution **identifying** the work **of another** as "**prior art**" is an admission ** > which can be relied upon for both anticipation and obviousness determinations, regardless of whether the admitted prior art would otherwise qualify as prior art under the statutory categories of 35 U.S.C. 102. *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354, 66 USPQ2d 1331, 1337 (Fed. Cir. 2003); *Constant v. Advanced Micro-Devices Inc.*, 848 F.2d 1560, 1570, 7 USPQ2d 1057, 1063 (Fed. Cir. 1988). < However, even if labeled as "prior art," **the work of the same inventive entity may not be considered prior art** against the claims **unless** it falls under one of the statutory categories. *Id.*; see also *Reading & Bates Construction Co. v. Baker Energy Resources Corp.*, 748 F.2d 645, 650, 223 USPQ 1168, 1172 (Fed. Cir. 1984) ("[W]here the inventor continues **to improve upon his own work** product, his foundational work product should **not**, without a statutory basis, **be treated as prior art** solely because he admits knowledge of his own work. It is

common sense that an inventor, regardless of an admission, has knowledge of his own work.”).

Consequently, the examiner **must** determine whether the subject matter identified as “prior art” is applicant’s **own work, or the work of another**. In the absence of another credible explanation, examiners should treat such subject matter as the work of another.

MPEP 2129 Section II states (emphasis added):

Where the specification identifies work done **by another** as “prior art,” the subject matter so identified is treated as admitted prior art. In re Nomiya, 509 F.2d 566, 571, 184 USPQ 607, 611 (CCPA 1975) (holding applicant’s labeling of two figures in the application drawings as “prior art” to be an admission that what was pictured was prior art relative to applicant’s improvement).

Additionally:

A finding of obviousness should **not** be based on an **implied admission** erroneously creating imaginary prior art. That is **not** the intent of s 103.

Application of Ehrreich, 590 F.2d 902, 910 (C.C.P.A. 1979).

The Office has failed to present even a *prima facie* case that the several claim elements and the quoted portions of the Detailed Description of the Patent are admitted prior art.

First, there is no label of anything in the Patent as “prior art.”

As a showing to rebut the allegation that this material is admitted prior art, the Declaration of an inventor, Chris Pershing, is attached and incorporated herein by reference. In this declaration, paragraphs 20 and 21, the inventor sets forth his statement the text asserted by the Examiner to be prior art are not, in fact prior art. Many times, the recognition of a problem is part of the inventive solution and once the problem is properly framed, again often an inventive step, the solution can be approached in a more straight forward fashion. In addition, the application of previously known math is solve a new problem and arrive at new solution is considered inventive. Mr. Pershing admits that he did not invent new math. What Mr. Pershing did was recognize a problem and then work out a solution to that problem. As he worked out a solution to that problem, he was able to use math that had been applied to different problems to reach a new solution in the creation of roof reports. As he points out in his declaration, he realizes that others might use different systems, software code and math from what he used to

achieve his claimed invention of the '436 Patent. This recognition does not render the statements in the '436 Patent as prior art.

Mr. Pershing states in his declaration as follows:

In fact, I am an inventor of the subject matter of Column 6, lines 50-67 and Column 7, lines 1-7. I do not admit that any of this description is prior art since it is not. I defined a problem that others had not recognized and then created a solution to that problem, which I explained in the '436 patent, including in Columns 6 and 7. Of course, I did not invent the math for performing the image analysis solely from the image data files, (it is rare that someone invents math) but what I did was identify a significant problem in the roofing industry, and I also determined which math should be applied to solve that particular problem. This required a significant creative process. I did invent, create and teach in the '578 and '436 patents the steps and mechanisms by which known math could be used to solve a new problem that no one had been able to solve previously.

Pershing Declaration, ¶ 20.

Mr. Pershing explains in paragraphs 20 and 21 that these portions of the '436 Patent are not prior art and the Examiner is invited to read these two paragraphs from his Declaration in detail.

Further, the Office does not provide any reason, rationale or support for various conclusions that quoted sections of the Detailed Description of the Patent are admitted prior art. The Office merely quotes sections of the MPEP and quotes sections of the Detailed Description concluding they are admitted prior art.

While the Office has stated that the language from the claims and Detailed Description of the Patent quoted on pages 53-63 of the Office Action is specifically *Applicant's* Admitted Prior Art and not the work of another (although the required reasoning or rationale is not provided by the Office for this conclusion), as shown above, MPEP § 2129 Section I states "*the work of the same inventive entity may not be considered prior art* against the claims *unless* it falls under one of the statutory categories" (emphasis added). However, there is no indication by the Office that the work purported by the Office to be Applicant's Admitted Prior Art falls under one of the statutory categories. Therefore, the work purported by the Office to be Applicant's Admitted Prior Art "*may not be considered prior art* against the claims" (see MPEP

2129 Section I, *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346 (Fed. Cir. 2003) and *Constant v. Advanced Micro-Devices Inc.*, 848 F.2d 1560 (Fed. Cir. 1988)).

Fifth, since there is no label of anything in the Patent as “prior art” and the Office does not provide any reason, rationale or support for the conclusion that various quoted sections of the Detailed Description are Admitted Prior Art, it appears the Office may somehow be interpreting the particular quoted language from the claims and Detailed Description of the Patent to be *implied* admissions of prior art. However, “a finding of obviousness should *not* be based on an *implied* admission erroneously creating imaginary prior art. That is *not* the intent of s 103.” *Application of Ehrreich*, 590 F.2d 902, 910 (C.C.P.A. 1979).

Thus, for at least the foregoing reasons, The Office has failed to present even a *prima facie* case that the that the language from the claims and Detailed Description of the Patent quoted on pages 53-63 of the Office Action are Applicant’s Admitted Prior Art. Even if such a case has been shown, this response, together with the declaration by Mr. Pershing overcomes this showing the assertion that the material is AAPA should be withdrawn.

For at least the foregoing reasons, Patent owner respectfully requests this rejection of claims 1-5, 7-42 and 46-56 be withdrawn.

E. Rejection of claim 6 under 35 U.S.C. § 103(a) as being unpatentable over EP 966 in view of alleged Applicant’s Admitted Prior Art, further in view of Aerodach Website

Claim 6 is rejected under pre-AIA 35 U.S.C. § 103(a) as being unpatentable over EP 966 in view of alleged Applicant’s Admitted Prior Art, further in view of Aerodach Website.

Patent owner respectfully traverses the rejections and the allegations of admitted prior art for the reasons previously stated and does not repeat them here to save space.

For at least the foregoing reasons, Patent owner respectfully requests the applicable rejection of claim 6 be withdrawn.

F. New Claims 57-66

Patent owner had added 10 new claims, 57-66. The general content of some of these claims was in broad terms during the interview, notably, claims 63-66, as explained below.

New claims 58 and 60 specify the use of three different views, something which is clearly beyond what is taught in the EP '966 or any other combination of prior art. Claims 58 and 60 cover the correlation of three images, something which is not possible with stereo pairs of images, but which is clearly taught in the '436 Patent, Figures 5A and 5B. Claims 58, 60 and claims dependent thereon are believed allowable and allowance is respectfully requested.

In addition, claim 63 specifies in more clear terms that the markings of pitch values and direction, line colors and meaning are first determined and then displayed to convey certain meanings. This is believed to clearly define these markings in a manner discussed during the interview and suggested by the Examiner. The new claim 63 is therefor along the very lines of the text and language of the interview and should be allowed as discussed.

G. Secondary Considerations of Nonobviousness

The Eagle View story and its nexus with the claimed invention of the '436 and '578 Patents is best told in the Declaration of co-inventor, Chris Pershing, who is the Chief Technical Officer of Eagle View Technologies, Inc., the Patent Owner. The Pershing Declaration should be read at one time as a whole from beginning to end to appreciate the magnitude of his invention's impact on the roof estimation industry. It paints the picture and is evidence of how this foundational and groundbreaking invention revolutionized the way roof measurements were done, and in a matter of just a few years, quickly made the Patent Owner a huge success in the industry directly due to the ingenuity of and great need in the market for the claimed invention. If there is any quintessential example of Patents for which objective indicia of nonobviousness should be considered and given substantial weight, it is the '436 and '578 Patents.

1. Law of Secondary Considerations of Nonobviousness

The legal requirement of giving substantial weight to secondary considerations of nonobviousness is clear as shown below. As shown below, secondary considerations of nonobviousness must be considered and are to be considered highly probative regarding nonobviousness. Although each case below was a panel decision, Judges Rader, Moore, Linn,

Reyna, and O'Malley all agree on the elevation of secondary considerations of nonobviousness. Emphasis below was added.

- a. *Apple Inc. v. International Trade Com'n*, 725 F.3d 1356 (Fed Cir 2013).
August 7, 2013

This case was held before Moore, Linn, and Reyna. Apple sued Motorola in the ITC alleging that Motorola smartphones and tablets infringe the '607 patent which discloses a multitouch panel with transparent capacitive sensing medium. The ITC found for Motorola, determining that an article describing SmartSkin rendered the claims obvious, and that the Perski '455 patent anticipated the '607 claims. Apple appealed to the Federal Circuit, which reversed the ITC, finding the ITC erred when it did not consider secondary considerations, which were significant. Moore and Linn remanded to ITC for further findings. Reyna dissented and wanted to reverse the ITC, emphasizing the importance of secondary considerations.

- “[I]t is axiomatic that “[t]he establishment of a prima facie case ... is not a conclusion on the ultimate issue of obviousness.” *Apple Inc. v. Int'l Trade Comm'n*, 725 F.3d 1356, 1365 (Fed. Cir. 2013) citing *Transocean*, 699 F.3d at 1348.
- The ultimate conclusion of obviousness is a legal conclusion to be reached after weighing all the evidence on both sides. *Id* at 1365.
- “The ITC analyzed only the disclosure of the prior art references and based solely on that evidence determined the claims would have been obvious. We conclude that the ITC's fact findings regarding what the references disclose are supported by substantial evidence. And as the ALJ and the ITC found, the Smartskin reference is very close and expressly recommends as “Conclusions and Directions for Future Work” using transparent ITO electrodes to build a “transparent SmartSkin sensor.” J.A. 13603. Indeed, the reference teaches that this transparent sensor could be integrated with “most of today's flat panel displays” because those systems rely on an “active matrix and transparent electrodes.” *Id*. The ITC erred, however, to the extent that it did not analyze the secondary consideration evidence...This error was not harmless. *Id* at 1365-66.
- ***Secondary considerations*** evidence can ***establish*** that “an ***invention appearing to have been obvious*** in light of the prior art ***was not***” and may be “***the most probative and cogent evidence in the record.***” *Transocean*, 699 F.3d at 1349 (quoting *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d

1530, 1538 (Fed.Cir.1983)). This evidence guards against the use of hindsight because it helps “turn back the clock and place the claims in the context that led to their invention.” Mintz, 679 F.3d at 1378. Id at 1366.

- “Apple presented compelling *secondary considerations evidence* that may have *rebutted* even a *strong* showing under the first three Graham factors, and the ITC failed to grapple with it.” Id. at 1366
- Apple showed secondary considerations through: (Id. at 1366)

Evidence of industry praise by business publications

Evidence of copying.

A high degree of commercial success

- Apple showed a “nexus between the undisputed commercial success of the iPhone and the patented multitouch functionality, namely evidence that Apple’s competitors copied its touchscreen and those in the industry praised the iPhone’s multitouch functionality. Id. at 1366.

b. *Leo Pharmaceutical Products, Ltd. v. REA* 726 F.3d 1346 (Fed Cir 2013).
August 12, 2013

This case was held before Rader, O’Malley, and Reyna. Plaintiff appealed from an inter partes re-examination of the ‘013 patent, where the Board incorrectly found the claimed invention would have been obvious in view of the prior art and incorrectly weighed the objective indicia of nonobviousness. The ‘013 patent teaches simultaneous treatment with vitamin D and corticosteroids to heal psoriasis faster, however combining these two elements does not result in a storage stable combination. The Board made an obviousness rejection based on three references involving a steroid compensation within a solvent, a vitamin D analog and a corticosteroid, and a composition of the vitamin D analog and a steroid. Furthermore, Board found that objective indicia of nonobviousness did not overcome the prima facie case of obviousness. The Fed Circuit reversed.

- Obviousness is a question of law based on underlying findings of fact. An analysis of obviousness must be based on several factual inquiries: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art at the time the invention was made; and (4) objective evidence of nonobviousness, if any.” Citing In re Kubin, 561 F.3d 1351, 1355 (Fed.Cir.2009); see also

Graham v. John Deere Co., 383 U.S. 1, 17–18, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). Leo Pharm. Products, Ltd. v. Rea, 726 F.3d 1346, 1353 (Fed. Cir. 2013)

- The '013 patent, however, is not simply a combination of elements found in the prior art. The inventors of the '013 patent recognized and solved a problem with the storage stability of certain formulations—a problem that the prior art did not recognize and a problem that was not solved for over a decade. *Id.* at 1353
- As an initial matter, an invention can often be the recognition of a problem itself. See *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 381 F.3d 1371, 1377 (Fed.Cir.2004) (“There can of course arise situations wherein identification of the problem is itself the invention.”). *Id.* at 1353.
- The '013 patent's claimed combination would not have been obvious to try. “[W]here the *prior art*, at best *gives only general guidance* as to the *particular form* of the claimed invention or *how to achieve* it, relying on *an obvious-to-try theory* to support an obviousness finding is *impermissible*.” *In re Cyclobenzaprine Hydrochloride Extended–Release Capsule Patent Litigation*, 676 F.3d 1063, 1073 (Fed.Cir.2012) (internal citations and quotation marks omitted). Further, “KSR did not create a presumption that all experimentation in fields where there is already a background of useful knowledge is ‘obvious to try,’ without considering the nature of the science or technology.” *Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341, 1352 (Fed.Cir.2008). *Id.* at 1356
- Objective *indicia of nonobviousness* play a *critical role* in the obviousness analysis. They are “*not just a cumulative or confirmatory* part of the obviousness calculus but *constitute[] independent evidence of nonobviousness*.” *Ortho–McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed.Cir.2008). *id.* at 1358.
- Objective indicia “can be the most probative evidence of nonobviousness in the record, and enables the court to avert the trap of hindsight.” *Crocs, Inc. v. Int'l Trade Comm'n*, 598 F.3d 1294, 1310 (Fed.Cir.2010) (internal quotation marks omitted). Here, the objective indicia of nonobviousness are crucial in avoiding the trap of hindsight when reviewing, what otherwise seems like, a combination of known elements. *Id.* at 1358.
- Leo Pharmaceuticals provided other objective indicia of non-obviousness. For example, the commercial success of Leo Pharmaceutical's Taclonex® ointment is a testament to the improved properties of the '013 patent's claimed invention. Taclonex® is the first FDA-approved drug to combine vitamin D and corticosteroids into a single formulation for topical application. While FDA approval is not determinative of nonobviousness, it can be relevant in evaluating the objective indicia of nonobviousness.

See Knoll Pharm. Co., Inc. v. Teva. Pharm. USA, Inc., 367 F.3d 1381, 1385 (Fed.Cir.2004). Id. at 1358.

- The *record also shows evidence of long felt but unsolved need*, i.e., the need for a single formulation to treat psoriasis. The length of the intervening time between the publication dates of the prior art and the claimed invention can also qualify as an objective indicator of nonobviousness. See Ecolochem, Inc. v. S. Cal. Edison Co., 227 F.3d 1361, 1376–77 (Fed.Cir.2000). Id. at 1359.
- Here, the *objective indicia*—taken in sum—are the *most “probative evidence of nonobviousness”* ... enabl[ing] the court to avert the trap of hindsight.” Crocs, Inc., 598 F.3d at 1310. Viewed through the lens of the objective indicia, as opposed to the hindsight lens used by the Board, the '013 patent would not have been not obvious over Turi in combination with Dikstein or Serup. Therefore, this court reverses the Board's obviousness determination. Id. at 1359.

c. Rambus Inc. v. REA 2013 WL 5312505 (Fed Cir. 2013) September 24, 2013; A Case About “Nexus”

This case was held before Moore, Linn, and O’Malley. Plaintiff applicant appealed the decision of the Be PAI which sustained PTO examiners rejection of claims on re-examination of the patent for a method of controlling a synchronous memory device. The Board found that 2 references, an Intel iAPX manual and an unexamined Japanese patent “Inagaki.” The references and patent in question deal with clocking schemes to transfer bits. The Fed Circuit reversed the rejection and remanded.

- *[O]bjective evidence can establish that “an invention appearing to have been obvious in light of the prior art was not.”* Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538 (Fed.Cir.1983). In some cases, that evidence is “*the most probative and cogent evidence* in the record.” Id. It helps “*turn back the clock and place the claims in the context that led to their invention.*” Mintz v. Dietz & Watson, Inc., 679 F.3d 1372, 1378 (Fed.Cir.2012). “For objective evidence ... to be accorded *substantial weight*, its proponent must establish a *nexus between the evidence and the merits of the claimed invention.*” In re Kao, 639 F.3d 1057, 1068 (Fed.Cir.2011) (quoting Wyers v. Master Lock Co., 616 F.3d 1231, 1246 (Fed.Cir.2010)) (emphasis omitted) (internal quotation marks omitted). Rambus Inc. v. Rea, 2012-1634, 2013 WL 5312505 (Fed. Cir. Sept. 24, 2013)

- Objective evidence of nonobviousness *need only be “reasonably commensurate with the scope of the claims,”* and we *do not require* a patentee to produce objective evidence of nonobviousness *for every potential embodiment* of the claim. Kao, 639 F.3d at 1068; In re Glatt Air Techniques, Inc., 630 F.3d 1026, 1030 (Fed.Cir.2011) (“[W]e have consistently held that a patent applicant ‘need not sell every conceivable embodiment of the claims in order to rely upon evidence of commercial success.’”) (quoting In re DBC, 545 F.3d 1373, 1384 (Fed.Cir.2008)). Id. at 8.
- Board found reasons that the Nexus for Objective considerations were met: Publication said that Fujitsu, NEC and Toshiba paid “substantial license fees to participate”

Furthermore, the MPEP states:

Objective evidence relevant to the issue of obviousness *must* be evaluated by Office personnel. Id. at 17-18, 148 USPQ at 467. Such evidence, sometimes referred to as “secondary considerations,” may include *evidence of commercial success, long-felt but unsolved needs, failure of others, and unexpected results.*

MPEP 2141 Section II (emphasis added); Graham v. John Deere Co., 383 U.S. 1 at 17-18 (1966)

Nexus between the Claimed invention on the Secondary considerations.

The Pershing Declaration provides evidence that the invention of the '436 Patent has a nexus with several secondary considerations that weight strongly in favor of the patentability. The Examiner is requested to review the Pershing Declaration in detail for these facts.

The Pershing declaration shows a nexus between the invention claimed herein and the secondary considerations. It was the inventive feature of being able to produce accurate roof reports based solely on the image files that resulted in the so many of the secondary considerations being strongly in favor of patentability. One of the inventive features is the ability to use existing top plan images of locations and oblique perspective view together to create a roof report. It was this feature that others had not been able to do until Pershing showed them how, see paragraphs 8 and 9. It was this feature that opened up an existing library of images that were ready for use by the invention of the '436 Patent but had found only limited use prior to this date. This solved a long felt need in the art of roof repair estimates, a costly and dangerous problem for many years. It was this feature that others who had had full access to

these images for many years, for example Pictometry, did not know how to solve until Pershing showed them the way with his invention disclosed in the '436 Patent Application. People in the insurance claims business, for example Xactware, had tried and failed to achieve this result and did not know how until Mr. Pershing solved the problem. This shows failure by others, despite having both the motivation and the resources. In addition to the above, the invention created by the '578 Patent resulted in the foundation of an entirely new company, started in Mr. Pershing's basement, from scratch. It went from having a few employees and low sales to having about \$50 million in sales in just 5 years.

The strong nexus between the invention and the sales increase is shown by a number of factors. First, the product covered by the '436 Patent was 100% of all their sales for the first several months and then became and remains about 95% of all revenue. Rarely does a company have the evidence to show that one product covered by its patent has this specific increase in sales over many years, see paragraph 13 of the Pershing declaration. Besides the fact that the product sold is made using the claimed features, a second way the nexus is shown is that it is the features of the claim, namely the ability to produce a roof report using only image files, that makes this product even possible and also available at such a low, reasonable price.

Establishing a nexus between the secondary considerations and the claimed features is made easier in this situation because it is the claimed features that make this product possible to produce and that opens up an existing library of images that could not be used unless the roof reports could be made using only the image files themselves.

There has been significant industry praise for the product produced by this claimed invention as shown by Mr. Pershing in his declaration, paragraph 14, 15 and 16 of his declaration. It is noted that same product practices both the '436 and the '578 patents, accordingly the nexus would be common for both patents on the secondary considerations.

2. Evidence of Long-felt But Unsolved Needs

The Pershing Declaration attached hereto is evidence that shows a long-felt, but unsolved need in the construction and insurance industries for a solution to cut down on costs and increase efficiency and safety of roof estimating. Aerial images of roofs had been just sitting

available in existing commonplace imagery databases for many years, but nobody had thought to, or could figure out how to, practically utilize these available images to solve this problem of the high cost and inefficiency of climbing on roofs to do roof estimations until Chris Pershing and his co-inventor came along:

2. ...Sometime in the second half of 2006, I had a conversation with David P. Carlson, the other listed inventor, regarding whether it would be possible to obtain specific measurements of a roof without having to climb on the roof. I speculated that a *solution* to that problem might be found by *utilizing aerial and satellite imagery that had become widely available through Google, Microsoft Live (now Bing Maps), USGS, and like services*. The overhead views, also called the top plan view or orthogonal view in the image files I could obtain had a scale reference that provided a mechanism to convert a pixel distance in the image to a physical distance in feet or meters. With that scale reference, one could calculate the length of a line near-to and parallel-to the ground as well as an area of a polygon in the plane of the ground for the overhead image. However, the image files *did not provide information to allow someone to determine the depth (e.g., distances perpendicular to the image viewpoint)*. Further the oblique images, sometimes call oblique perspective images or perspective images did not usually have scale information at all, or if they had it, it was of limited use. I wondered whether, *without being given specific information about how the image was acquired and details about the camera position when the image was taken* it would be possible to determine the pitch of sloped roof sections. I concluded that without a determination of the pitch of the roof sections, an accurate assessment of the surface area and the length of sloped edges and seams on the roof could not be achieved.

Pershing Declaration, ¶ 2 (emphasis added).

Note the *nexus existing between the evidence above and the merits of the claimed inventions* of the '578 Patents and the '436 Patent. The claimed invention of the '578 Patent is directed to determining roof measurements "based solely on the image files" and the long felt need presented was exactly for that. In other words, one long felt, but unsolved need was for a solution of how to determine roof measurements based solely on the image files of these existing imagery databases *without having the specific information about how the image was acquired and details about the camera position when the image was taken*. Similarly, the claimed invention of the '436 Patent is directed to determining roof measurements of roofs in images that have disparate types of views of the roof such as those available at the time to the general public in the existing aerial imagery databases that, unlike stereoscopic pairs of images,

do *not* have the *specific information about how the image was acquired and details about the camera position when the image was taken*. The claimed invention fulfilled this long felt need by providing a solution to remotely determine roof measurements based on image files available from image libraries that had been accumulating by these multiple image providers over many years. In particular the Pershing Declaration states in paragraph 3 (emphasis added):

3. *As I studied the problem* I also realized that if the pitch of the various roof sections could be reliably and accurately determined from an analysis of two more unrelated images, a vast and readily available library of imagery covering the United States could be successfully leveraged to provide a viable remote roof measurement solution. The ability to successfully leverage available image libraries that had been *accumulated* by multiple image providers *over many years* would be a *significant achievement and a great advance* in the field of roof measurements, if I were able to figure out how to do this.

As evidenced by Eagle View's aggressive growth in business volume and reaction in the marketplace once the product encompassed by the claims of the '578 and '436 Patents was released, the method solved an important and valuable overall problem in the roofing and insurance industries of the high cost and inefficiency of climbing on roofs to do roof estimations that had been present basically since roof repair had existed. This, of course, is a very long time. This aggressive growth in business volume and reaction in the marketplace is evidenced by the entire Pershing Declaration and attached Pershing Exhibits, and is shown in more detail below with respect to the discussion of the commercial success indicia, a relevant portion of which states:

5. The method that resulted from this prototyping and an example of the end-product is taught in the body and figures of the '578 Patent. This method was inventive. As *evidenced by our aggressive growth in business volume*, the method *solved an important and valuable problem in the roofing and insurance industries*. As evidenced by the *reaction in the marketplace*, the method was unexpected and unanticipated to the industries we serve as well as providers of software packages and aerial imagery that service those same industries. As *evidenced by our humble beginnings* from starting a *brand new company* from scratch for which *this was the only product* and the growing business success of EagleView, the economic benefits of leveraging *commonplace imagery* provided a working solution to an otherwise unworkably expensive problem.

Pershing Declaration, ¶ 5 (emphasis added).

As further evidence of the *nexus* here between the evidence above and the merits of the claimed inventions of the '578 Patents and the '436 Patent, the product that was encompassed by the claims of the '578 Patents and the '436 Patents, was Eagle View's *only product*, as shown above, and Eagle View was a small startup, even invoking the help of family members, obviously without a sizable marketing budget. Thus, there is no other apparent reason or excuse for the reaction in the marketplace toward Eagle View's aggressive growth in business volume and overall large commercial success, other than that the solution was fulfilling a significant long felt but unsolved need in the market for such a solution. This same nexus reasoning also applies to the other related objective indicia of non-obviousness below, especially with respect to commercial success. This is because commercial success is a likely indication or result of a long-felt need in the market being fulfilled (e.g., an untapped demand being met). Thus, if no other reason for the commercial success is apparent, commercial success may contribute as evidence of a long felt but unsolved need being fulfilled by the product encompassed by the claims.

The market reaction and aggressive growth is further evidenced in the excerpt from the Pershing Declaration below:

6. We officially launched the product in the last week of January 2008 with an email blast to many in the roofing business and asking them to try our service to provide them detailed roof reports of any address they provided to us in the United States. *Within the first hour on the first day we announced our service*, our phone began to ring, with people asking to buy the roof reports that were the product of the invention described in what became the '578 and '436 Patents. The reception in the industry was *nothing short of amazing*. Over the weeks that followed, our wives volunteered their time answering phones, assembling more desks, and helping to find and interview the staff we needed to meet the rising tide of interest. *Four months later, we had outgrown the size and infrastructure of our temporary office space*, and found something bigger to accommodate our growth.

Pershing Declaration, ¶ 6 (emphasis added).

3. Evidence of Failure of Others

The Pershing Declaration evidences the failure of others to independently invent the claimed inventions of the '578 and '436 Patents without having the benefit of having read the patent application or patent:

8. The buzz we created within the roofing contractor community soon caught the attention of insurance companies and software companies that service the insurance industry. Once such software company, Xactware, is a dominant provider of claims routing and adjusting software that services many of the nation's top insurance companies. We were invited to their headquarters just a couple of months after opening our doors. They were impressed with our product and *stated they had previously failed at an internal effort to figure out how to use such imagery to remotely measure features in pitched roofs*. They subsequently entered into a contract with us to use roof reports we produced in large quantities. At the time of the first meeting in early 2008 I had not shown them the patent application that resulted in the '578 patent which we had previously filed but which had not yet published, so they *were not able to read the Application that became the '578 Patent to see how we achieved this*.

9. Another company, Pictometry International, invited us out to their headquarters in the fall of 2008. We were customers in buying their oblique imagery product and they noticed we were buying more and more images from them. They saw that our product was rapidly making progress penetrating into use by the insurance industry – an industry that *Pictometry had been struggling with finding success with over a period of years*. Even though Pictometry was the supplier of our oblique imagery, they too *were wondering with the 'how did you do that?' question* with regard to our ability to *accurately determine pitch and 3D roof models using the photos they were selling to us*. When they sold their images, they intentionally removed from them nearly all the metadata collected at the time the image was taken, including all camera data and image acquisition data...

Pershing Declaration, ¶¶ 8 and 9 (emphasis added).

As shown above, Pershing was able to ingeniously overcome the problem of how to determine pitch based solely on the image files, or based on non-stereoscopic pairs of images, which have two different types of views and thus no associated camera position data. Try as they might, others could not do so without the benefit of having read the '578 or '436 Patent, or their respective patent applications. It just so happens that a main feature or merit of the claimed invention of the '578 and '436 Patents is that it determines estimated roof pitch from such images and thus the roof report with needed measurements can be provided. This shows a nexus

between the merits of the claimed invention and the evidence provided above of the failure of others.

4. Skepticism of others

The Pershing Declaration evidences the skepticism of others regarding whether the claimed inventions of the '578 and '436 Patents was even possible.

7. Our first and largest initial challenge in the marketplace was to prove that we were 'real'. Many of the initial contacts with contractors and companies were met with *deep skepticism* about our claim to be able to remotely and accurately measure the correct pitch and area of roofs from photographs obtained from commercially available image databases, such as Bing and Pictometry. In *an attempt to debunk our claims*, many early customers followed our first conversation by sending in an address of a particularly difficult roof that they had recently measured by hand. Upon receiving and validating the reports against their own measurements and finding that our reports were accurate, the conversation changed to something to the effect of: *"that was amazing, we are surprised you were able to do this."*

...

...The remaining metadata included only geolocation and image scale data in the orthographic images and only geolocation and approximate compass orientation of the oblique images that differentiated the East, West, North, and South looking viewpoints. This is equivalent in substance to the minimal metadata they allowed Microsoft to present to end users of the "Bird's eye" imagery in the form of visual scale markers and an indication of East, West, North, South viewpoint directions. *Pictometry had believed that by removing nearly all metadata from the image files, a person would not be able to make use of unrelated images to recreate a 3D model of the roof.* To paraphrase, the comment from one of their executives was that we *'shouldn't have the ability to do that' with what they knew they were providing to us in the image files.* To my knowledge, they had not, at that time, seen the '578 Patent application which was not published until October 2008 and I did not show it to them at that time.

Pershing Declaration, ¶¶ 7 and 9 (emphasis added).

As shown above, others in the industry were highly skeptical, or didn't think roof measurements from raw or disparate aerial imagery such as encompassed by the claims of the patent could even be achieved. Eagle View had to prove themselves from the very start because the industry felt Eagle View's product needed to be "debunked."

5. Unexpected results

The skepticism was eventually replaced by amazement in the industry with the success and accuracy of the process and resulting roof estimate reports encompassed by the claims of the '436 and '578 Patents. As shown in the emphasized text in the excerpts above and below from the Pershing Declaration, Eagle View's customers and the industry as a whole and even Eagle View were taken by surprise by the accuracy and reliability of the process, systems and resulting reports encompassed by the claims of the '436 and '578 Patents.

7. Our first and largest initial challenge in the marketplace was to prove that we were 'real'. Many of the initial contacts with contractors and companies were met with *deep skepticism* about our claim to be able to remotely and accurately measure the correct pitch and area of roofs from photographs obtained from commercially available image databases, such as Bing and Pictometry. In *an attempt to debunk our claims*, many early customers followed our first conversation by sending in an address of a particularly difficult roof that they had recently measured by hand. Upon receiving and validating the reports against their own measurements and finding that our reports were accurate, the conversation changed to something to the effect of: "*that was amazing, we are surprised* you were able to do this."

...

10. One reason they were *very surprised* is because we were able to achieve these *unexpected results* and produce the final reports *based solely on using the image data files*. We obtained no other information other than what we got from the *unrelated, independently taken images* and without an on-site visit to measure any actual roof properties.

11. Another unproven goal of the invention at the time of launch was to produce remote measurement results that were comparably accurate compared to the accepted manual roof measurement practices. To our surprise, we would soon learn that, on average, we were not only competitive with the existing manual measurement accuracy; our results were far more accurate and repeatable. In contrast to the smaller roofing contractors who were testing our product, insurance companies approached their testing with much more statistical rigor and with much larger test samples. It was not uncommon for an insurance company to conduct a test involving many hundreds of roofs across the country – sometime by ordering those roof reports anonymously under a false company name to shield us from knowing the scope or recipient of the testing. The results from several such tests from different insurance companies were consistently similar: The area reported on EagleView's measurement reports typically fell within 1% to 2% of what they determined to be the actual value obtained by a through their own on-site verification at each of the targeted buildings. In contrast, previous similar

studies of crews performing manual roof measurements found that the manual methods resulted in an average difference of 6%– 10%. Thus, in addition to streamlining business practices, having a professional looking product, and reducing time and injury risk spent on a roof, the EagleView reports produced by this invention replaced manual roof area estimates with a significantly more accurate result.

Pershing Declaration, ¶¶ 7, 10 and 11 (emphasis added).

Note above the features of producing the final reports based solely on using the image data files and determining accurate measurements having obtained no other information other than what Eagle View got from the unrelated, independently taken images. This is without an on-site visit to measure any actual roof properties. These abilities or features are what caused the surprise and are also particular merits of the product encompassed by the claimed inventions of the 436 and '578 Patents. This provides a strong nexus between the evidence above and the merits of the claimed inventions.

6. Evidence of A High Degree of Commercial Success

As shown above, the product provided by Eagle View was fulfilling a long felt, but unsolved, need in the market as soon as it was released. This caused a great, almost immediate, commercial success for Eagle View due to the merits of the product that are particularly encompassed by the claimed inventions of the '436 and '578 Patents. Namely, such merits are, with respect to the '578 Patent, being able to determine roof measurements based solely on the image files of these existing imagery databases without having the specific information about how the image was acquired and details about the camera position when the image was taken. With respect to the '436 Patent, the merits are being able to determine roof measurements of roofs in images that have disparate types of views of the roof such as those available at the time in the commonplace aerial imagery databases that, unlike stereoscopic pairs of images, do not have the specific information about how the image was acquired and details about the camera position when the image was taken. This caused the Eagle View product to quickly become an industry standard and resulted in the aggressive growth of Eagle View, skyrocketing Eagle View to the top of the roof measurement industry as shown in the

Declaration of Chris Pershing and associated publications, testimonials and case studies which are attached as Exhibits to, and form part of, the Pershing Declaration:

12. As evidenced by the recognized *growth of the volume of our business*, the *growth of our employee head count*, and the numerous *testimonials* and *articles* attesting to the impact we have made within the industries we service, this invention has proven its uniqueness and value to the world. I will summarize these in the following paragraphs.

13. Just a few days before our January 2008 launch, the other co-inventor, David P. Carlson and myself hired and began training our first few employees. - At the time of we launched our service, the only product we sold was the product described and claimed in the '578 and '436 Patents, namely, a report that had included on it the values we have determined for the roof area, the pitch and the length of various roof edges, valleys and ridges. Thus, *100% of the initial sales were directly for the product that is claimed in many of the claims of these two patents*. In Fiscal Year 2008, our revenue for this product was about \$1.4 million. As of December 31, 2008, our employee head count was 56. *We thus grew from the first few employees hired in January 2008 to 56 employees at year's end. In the FY 2009, our revenue was over \$5.3 million* for this product, close to quadrupling for the prior year and our employee count at the end of the year was 69. *In FY 2010, our revenue exceeded \$12 million for this product*, a doubling from the prior year and our employee count had grown to 105. By the end of FY 2010, many large insurance companies became convinced that our reports had data and measurements that were superior in many ways to measurements they could obtain other places and began to purchase more roof reports from us. As a result, in *FY 2011 we had revenue of greater than \$33 million from this product, almost triple from the prior year and in FY 2012 our revenue was more than \$45 million* from this product, another year of significant growth. In 2011 we ended with 161 employees and this stayed about the same through 2012. In reporting the above numbers the stated revenue resulted from the sale of the claimed inventions, namely, a roof report having the determined measurements on it as specified in the '578 and '436 Patents. *With respect to the '436 Patent, these reports were made from images that included a top plan view and an oblique perspective view and also included different colors of lines for different roof properties, such as red for ridge lines and light blue for valley lines. The edges were also a different color, for example green or dark blue. The pitch was indicated on the roof reports as well with an arrow showing the direction of the pitch. The orientation of the pitch arrow is relative to the compass rose indicated on the page which may or may not have the North direction aligned with orientation of the page.*

Pershing Declaration, ¶¶ 12 and 13 (emphasis added).

As further evidence of the *nexus* here between the evidence above and the merits of the claimed inventions of the '578 Patents and the '436 Patent, the product that was encompassed by the claims of the '578 Patents and the '436 Patents, was Eagle View's *only product*, as shown above, and Eagle View started as a small startup with just a few employees, obviously without a huge marketing budget. Thus, there is no other apparent reason or excuse for the reaction in the marketplace, Eagle View's aggressive growth in business volume, and overall large commercial success than "from the sale of the claimed inventions, namely, a roof report having the determined measurements on it as specified in the '578 and '436 Patents"

7. Evidence of Industry Praise

As a result of not only the commercial success, but also the merits of the product embodying the claimed inventions of the 578 and '436 Patents, there has been much industry praise for Eagle View and its product. The excerpts below evidence this, but the Examiner is invited to look at the Pershing Exhibits provided as part of the Pershing Declaration which are publications, articles and testimonials including praise for the product of Eagle View embodying the claimed inventions of the 578 and '436 Patents and its benefits:

14. There have been significant publications in various press sources that have touted our success. I attach hereto as *Pershing Exhibits A and B* some of those articles. During the Examiner's interview held on Oct. 17, 2013, we discussed the article in CNNMoney by Jennifer Alsever and a full copy is enclosed as Pershing Exhibit A for the Examiner's detailed review. We also discussed the article in Bloomberg by John Tozzi and a full copy is enclosed as Pershing Exhibit B. The Examiner can review these two articles in detail and I will quote only a few sections from each of them. In the CNNMoney publication, Kirk Belz is cited for the statements of: "***Having an Eagle View report has become an accepted industry standard.***" He also states that ***he can process 25% more claims each day using these reports, all without sending an adjustor onto the roof***, which saves the adjustor 45 min per roof and avoids the dangerous job of climbing on the roof. In the Bloomberg article, Joe Graham is cited for stating that with respect to Eagle View roof reports, "***most insurance carriers at this point treat it as gospel.***"

15. An articles authored by Chris King, titled "Bird's-Eye View illustrates the response in the industry from the early launch, having been published in August 2009, attached as *Pershing Exhibits C*. This article is also by an author independent from EagleView and shows recognition in the industry of the

benefits that were obtained by the claimed invention of the '578 and '436 Patents. The Examiner is inv[i]ted to review the entire article and I will only quote herein from one location near the end. Troy Mock, President of BRM roofing states: "I've been with them since the beginning, and thing really picked up since February of last year." He states that he had them shoot 100 roofs due to a recent hail storm in Houston. The article states, " ***'The bottom line is that this would help every roofing contractor,'*** said Mock. 'The number one reason is liability-you don't ***have to have salesmen climbing on the roof, hurting themselves or damaging the roof.***' " Another briefer article is also attached by Jeff Bond, Pershing Exhibit D that explains the benefits of the inventive reports.

16. There are a number of other articles attached as ***Pershing Exhibits E-H*** which have were authored by Eagle View employees and printed in various magazines. For example, two of the authors list are Karen Edwards and Heidi Ellsworth, both of whom were employees of Eagle View at the time they wrote the articles and thus the authors were not independent from the patent owner and company selling the inventive reports. The ***articles do contain information about the industry acceptance of the EagleView roof reports as well as comments by many in the Roofing Industry regarding their views on these reports*** and therefore have value in showing both the tremendous benefits of the invention and the acceptance in the industry. Also attached are case studies as Pershing Exhibits I-N that were prepared by Eagle View employees that were specific case studies on the benefits of using Eagle View reports that were produced by the process and system covered in the '578 and '436 Patents.

Pershing Declaration, ¶¶ 14-16 (emphasis added).

8. Evidence of Copying

The product embodying the claimed inventions of the 578 and '436 Patents was so commercially successful and had so much merit that others almost immediately began copying the invention, apparently as soon as they were able to get their hands on the published patent applications for the '578 and '436 Patents:

19. In fact, the industry showed that some months ***after our applications were published***, a number of ***copy-cat companies started-up*** and created ***nearly identical reports and began selling them in competition with us***. I had not given them my source code and yet by having access to our end reports, a real example of which I provided in the patent and what other information they were able to glean from the press and the '578 published patent application, they were able to imitate my results. Of course, I don't know the things the competitors studied to copy our product since they didn't contact me when they did so, but what I do know is that they ***made look-a like reports sometime after the '578 application was published***, so I believe that there was sufficient information included that

would permit another person to make and use the invention as claimed. The companies who imitated our products, many of whom to which we have sent notice letters include **RoofWalk**, **GeoEstimator**, **Skytek Imaging**, **Aerialogics**, **Roofs411** and **ConnectPoint**. This is evidence not only that they could create such reports, but also evidence that sometime after we started this business with an entire new product, others decided to imitate our product.

Thus, not only are the claims of the '436 and '578 Patents nonobvious because the Items of Information, alone or in combination, do not teach or suggest all the claimed elements, but, just as importantly, because of the secondary considerations of nonobviousness provided above as evidenced by the Pershing Declaration and attached Pershing Exhibits. Therefore, even if the one or more of the claims of the '436 and '578 Patents appear to the Office to be obvious in light of the Items of Information, they are in fact not obvious due to the substantial secondary considerations of nonobviousness noted above and the nexus shown above between the merits of the claimed inventions of the '436 and '578 Patents and the evidence providing the secondary considerations of nonobviousness herein.

Conclusion

Patent Owner respectfully submits that the claims of the Patent are in condition for allowance. Any remarks in support of patentability of one claim should not be imputed to any other claim, even if similar terminology is used. Any remarks referring to only a portion of a claim should not be understood to base patentability on that portion; rather, patentability must rest on each claim taken as a whole. A number of clarifying amendments have also been made to the above claim set. Patent Owner does not acquiesce to each of the Examiner's rejections and to each of the Examiner's assertions regarding what the cited references show or teach, even if not expressly discussed herein. Although changes to the claims have been made, no acquiescence or estoppel is or should be implied thereby; such amendments are made only to expedite prosecution of the present reexamination and are without prejudice to the presentation or assertion, in the future, of claims relating to the same or similar subject matter.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19 1090.

All of the claims remaining in the Patent under reexamination are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

STATEMENT per 37 C.F.R. § 1.530(e)

Claim	Status (Pending or Canceled)	Support in Disclosure
1 (Amended)	Pending	Col 4, lines 9-11 and Col. 5, lines 52-57;
2	Pending	
3	Pending	
4	Pending	
5	Pending	
6	Pending	
7	Pending	
8	Pending	
9	Pending	
10	Pending	
11	Pending	
12	Pending	
13	Pending	
14	Pending	
15	Pending	
16	Pending	
17	Pending	
18 (Amended)	Pending	Col 4, lines 9-11 and Col. 5, lines 52-57;
19	Pending	
20	Pending	
21	Pending	
22	Pending	
23	Pending	
24	Pending	
25	Pending	
26	Pending	
27	Pending	
28	Pending	
29	Pending	
30	Pending	
31	Pending	
32	Pending	
33	Pending	
34	Pending	

35	Pending	
36 (Amended)	Pending	Col 3, lines 65-67; Col 4, lines 1-2; lines 9-11 and Col. 5, lines 52-57; Abstract, as amended; Col 6, lines 50-54; lines 63-67; Col 7, lines 1-11;
37 (Amended)	Pending	Col 6, lines 50-54
38	Pending	
39	Pending	
39	Pending	
40	Pending	
41 (Amended)	Pending	Col 3, line 67; Col 4, lines 1-2; lines 21-23; lines 48-52; Col 5, lines 9-12.
42	Pending	
43	Canceled	
44	Canceled	
45	Canceled	
46	Pending	
47	Pending	
48	Pending	
49	Pending	
50	Pending	
51	Pending	
52	Pending	
53	Pending	
54	Pending	
55	Pending	
56	Pending	
57 (New)	Pending	Abstract, as amended
58 (New)	Pending	Abstract, as amended; Col. 4, lines 8-11; Col. 5, lines 52-56; Col. 6, lines 12-67; Col 7, lines 12-18
59 (New)	Pending	Figure 5C; Col. 5, lines 57-61
60 (New)	Pending	Col 3, lines 65-67; Col 4, lines 1-2; lines 9-11 and Col. 5, lines 52-67; Abstract, as amended; Col 6, lines 50-54; lines 63-67; Col 7, lines 1-9
61 (New)	Pending	Col 6, lines 50-67
62 (New)	Pending	Col 6, lines 50-67; Col 7, lines 1-9
63 (New)	Pending	Col 3, lines 65-67; Col 4, lines 1-2; lines 9-11 and Col. 5, lines 52-67; Abstract, as amended; Col 6, lines 1-16; lines 50-67; lines 63-67; Col 7, lines 1-9
64 (New)	Pending	Figure 5D; Col 5, lines 61-67 and Col. 6, lines 1-6
65 (New)	Pending	Figure 5C; Figure 5D; Col 5, lines 52-67 and Col. 6, lines 1-6
66 (New)	Pending	Col. 6; lines 50-67; Col. 7, lines 1-9

Respectfully submitted,
SEED Intellectual Property Law Group PLLC

/David V. Carlson/
David V. Carlson
Registration No. 31,153

DVC:jks

Attachments:

- Attachment 1: Eagle View Presentation provided at Examiner Interview held on 10/17/13
- Attachment 2: Pershing Declaration including Pershing Exhibits A-O
- Attachment 3: Curless Declaration including Curless Exhibit A
- Attachment 4: Jones Declaration including Jones Exhibit A
- Attachment 5: Consent Decree and Dismissal – Eagle View v. Roofwalk

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