

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ROOFR INC.,
Petitioner

v.

PICTOMETRY INTERNATIONAL CORP.,
Patent Owner

Case IPR2023-00435
U.S. Patent No. 10,648,800

**DECLARATION OF CHANDRAJIT BAJAJ, PH.D.
IN SUPPORT OF PATENT OWNER'S RESPONSE**

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Pictometry EX2031
Roofr v. Pictometry
IPR2023-00435

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I, Chandrajit Bajaj, Ph.D., hereby declare as follows.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of Pictometry International Corp. for the above-captioned *inter partes* review (IPR).

2. I am being compensated for my work in this matter at my standard hourly rate. I am also being reimbursed for reasonable and customary expenses associated with my work and testimony in this investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony.

3. I understand that this Declaration accompanies Patent Owner's Response filed in this IPR involving U.S. Patent No. 10,648,800 ("the '800 patent") (EX1001). I have been asked to provide my opinions regarding whether claims 1-17 ("the Challenged Claims") of the '800 patent would have been obvious to a person having ordinary skill in the art ("POSITA") at the time of the invention based on the Grounds of Unpatentability presented in the Corrected Petition (Paper 5). It is my opinion that the challenged claims would not have been obvious to a POSITA.

4. In preparing this Declaration, I have reviewed the '800 patent and each of the documents cited herein, in light of general knowledge in the art at the time of the invention. In formulating my opinions, I have relied upon my experience, education, and knowledge in the relevant art. In formulating my

opinions, I have also considered the viewpoint of a person of ordinary skill in the art (“POSITA”) (as discussed further below in Section V.B) at the time of the invention.

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

5. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Exhibit 2036. The following is a brief summary of my relevant qualifications and professional experience.

6. I am currently employed as a Professor of Computer Science at the University of Texas at Austin (“UT Austin”). I currently hold the Computational Applied Mathematics endowed Chair in Visualization. I am also the Director of the Computational Visualization Center at UT Austin, which has been funded by the National Institutes of Health, the National Science Foundation, the Department of Energy, and the Department of Defense. The center personnel include fifteen researchers, scientists, post-graduate students, and staff.

7. I have a Bachelor of Technology degree in Electrical Engineering, which I obtained from the Indian Institute of Technology in Delhi (IITD) in 1980. I also obtained a Master of Science degree and a Doctorate in Computer Science from Cornell University in 1983 and 1984 respectively.

8. Prior to my employment at the University of Texas, I was an assistant

professor, then associate professor, and finally professor of Computer Sciences at Purdue University (Purdue) from 1984 until I resigned in 1997 and transferred to UT Austin. During this time, I was also the Director of Image Analysis and Visualization Center at Purdue University. I was a visiting associate professor of Computer Science at Cornell University from 1990–1991. I have also been invited for collaborative visits by several academic institutions, and have presented numerous keynote presentations worldwide. I have been an editorial member of the SIAM Journal on Imaging Sciences, and the ACM Transactions on Graphics, and continue my editorial role for ACM Computing Surveys and the International Journal of Computational Geometry and Applications.

9. I have spent the better part of my career, both at Purdue and UT Austin, researching, designing, teaching and using computer systems to model, simulate, and visualize natural and synthetic objects combining computational image and geometric processing. I am knowledgeable about and have much experience in both hardware and software, including algorithms, used for capturing, analyzing and displaying interactive imagery.

10. In the 1970s, while majoring in Electrical Engineering at the Indian Institute of Technology with a minor in Computer Sciences, I was intimately involved in the design and fabrication of microprocessor-controlled circuits as well as the development of microprocessor controller software. In the 1980s, while at

Cornell University, my past experiences led to research in computational geometry, image processing, and optimization. In the early 1990s, I created 3D interactive and collaborative multimedia software environments which were fully navigable for multi-person computer gaming and simulation (e.g. “The GATI Client-Server Animation Toolkit” and “The VAIDAK Medical Image Model Reconstruction Toolkit”). In 1994, I co-authored a technical paper entitled “Shastra: Multimedia Collaborative Design Environment.” The need for increasing computer graphics display realism without sacrificing interactivity led me also to explore image processing and geometric modeling techniques such as segmentation and surface reconstruction from imaging scans, point clouds, and texture mapping with data compression, such as described in some exemplary publications “Arbitrary Topology Shape Reconstruction from Planar Cross Sections,” *Graphical Models and Image Processing*, 58(6):524-543 (1996); “Making 3D Textures Practical,” *Proceedings of Pacific Graphics*, 259-268 (1999); “3D RGB Image Compression for Interactive Applications,” *ACM Transactions on Graphics*, 20,1, 10-38 (2001); “Anisotropic Vector Diffusion in Image Smoothing,” *Proceeding of the 9th IEEE International Conference on Image Processing*, 828-831 (2002); “Image Segmentation Using Gradient Vector Diffusion and Region Merging.” *Proceedings of the 16th International Conference on Pattern Recognition*, 941-944 (2002); “A Fast and Adaptive Algorithm for

Image Contrast Enhancement,” *Proceedings of IEEE International Conference on Image Processing*, 1001-1004 (2004).

11. In the mid-2000s, I began to create spatially-realistic 3D graphical environments with a combination of different types of acquired and reconstructed imagery within which a user may explore, query, and learn. My publication titled “From Voxel Maps to Models” that appeared in an Oxford University Press book called “Imaging Life: Biological Systems from Atoms to Tissues”, is an example of my research in computational imaging. Over the course of my career, I have participated in the design and use of several computer systems including handhelds, laptops, graphics workstations to PC/Linux clusters, as well as very large memory supercomputers for capturing, modeling and displaying virtual and scientific phenomena. My experience with computer modeling and displaying computer graphics imagery encompasses many fields, such as interactive games, molecular, biomedical and industrial diagnostics, oil and gas exploration, geology, cosmology, and military industries.

12. During my time at UT Austin, I also designed and implemented scalable solutions for inverse problems in microscopy, spectroscopy, biomedical imaging; constructing spatially realistic and hierarchical 3D models; development of search/scoring engines for predicting energetically favorable multi-molecular and cellular complexes; and statistical analysis and interrogative visualization of

neuronal form-function. Additionally, I have courtesy appointments with, and supervise M.S. and Ph.D. students from, several UT departments, including biomedical and electrical engineering, neurobiology, and mathematics. I currently serve on the editorial boards for the International Journal of Computational Geometry and Applications, and the ACM Computing Surveys. Much of my work involves issues relating to interactive image processing, 3D modeling, bio-informatics, computer graphics, and computational visualization. Examples of my publications, including peer-reviewed publications, are listed in my CV.

13. As set forth in my CV, I have authored approximately 170 peer-reviewed journal articles, 34 book chapters (which were also peer reviewed), and 157 peer-reviewed conference publications.

14. I have written and edited four books, on topics ranging from image processing, geometric modeling and visualization techniques, to algebraic geometry and its applications. I have given 215 invited speaker keynote presentations. I am a Fellow of the American Association for the Advancement of Science (AAAS), a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of the Society of Industrial and Applied Mathematics (SIAM), and also a Fellow of the Association of Computing Machinery (also known as ACM), which is the world's largest education and scientific computing society. The ACM Fellow is ACM's most prestigious member grade and recognizes the top

1% of ACM members for their outstanding accomplishments in computing and information technology and/or outstanding service to ACM and the larger computing community.

III. MATERIALS CONSIDERED

15. In formulating my opinions, I have relied upon my training, knowledge, and experience relevant to the '800 patent. Furthermore, I have considered the following documents listed below in addition to any other documents cited in this Declaration.

Paper/Exhibit No.	Description
EX1001	U.S. Patent No. 10,648,800 B2 (“the ’800 patent”)
EX1002	Excerpts of the prosecution history of U.S. Patent No. 10,648,800 B2
EX1003	Declaration of Tony Cummings In Support of Petition for <i>Inter Partes</i> Review [Corrected]
EX1004	U.S. Pub. No. 2008/0262789 A1 to Pershing et al. (“Pershing ’789”)
EX1005	U.S. Pub. No. 2007/0220174 A1 to Abhyanker
EX1006	U.S. Pub. No. 2008/0231700 A1 to Schultz et al. (“Schultz”)
EX1007	<i>Airborne Digital Imaging Technology: A New Overview</i> , Petrie et al., The Photogrammetric Record 11(119): 203-225 (September 2007) (“Petrie”)
EX1008	<i>Pictometry: aerial photography on steroids</i> , LET Staff, Law, Enforcement Technology (July 2002) (“Pictometry”)

Paper/Exhibit No.	Description
EX1009	U.S. Pub. No. 2009/0304227 A1 to Kennedy et al. (“Kennedy”)
EX1010	<i>Roofer: Steep Roofing Inventory Procedures And Inspection And Distress Manual For Asphalt Shingle Roofs</i> , David M. Bailey, U.S. Army Corps of Engineers, CERL Tech. Rept. (December 1999) (“Bailey”)
EX1011	April 17, 2008 Drawings From File History of Pershing ’789
EX2032	Deposition Transcript of Tony L. Cummings (November 17, 2023)
EX2033	RSMeans Illustrated Construction Dictionary, Fourth Edition, Unabridged, 2010.
EX2036	<i>Curriculum Vitae</i> of Chandrajit Bajaj, Ph.D.
Paper 5	Petitioner for <i>Inter Partes</i> Review [Corrected]
Paper 11	Patent Owner’s Preliminary Response
Paper 16	Decision Granting Institution of <i>Inter Partes</i> Review

IV. LEGAL UNDERSTANDING

A. My Understanding of Claim Construction

16. I understand that during an *inter partes* review proceeding, claims are to be construed in light of the specification as would be read by a person of ordinary skill in the relevant art at the time the application was filed. I understand that claim terms are given their ordinary and customary meaning as would be understood by a person of ordinary skill in the relevant art in the context of the

entire disclosure. A claim term, however, will not receive its ordinary meaning if the patentee acted as his or her own lexicographer and clearly set forth a definition of the claim term in the specification. In this case, the claim term will receive the definition set forth in the patent.

B. My Understanding of Obviousness

17. I understand that a patent claim is invalid if the claimed invention would have been obvious to a person of ordinary skill in the art at the time the application was filed. I understand that this means that even if all of the requirements of the claim cannot be found in a single prior-art reference that would anticipate the claim, the claim can still be invalid.

18. To obtain a patent, a claimed invention must have been, as of its priority date, nonobvious in view of the prior art in the field. I understand that a patent claim is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

19. I understand that to prove that prior art or a combination of prior art renders a patent obvious, it is necessary to: (1) identify the particular references that, singly or in combination, render the patent obvious; (2) specifically identify which elements of the patent claim appear in each of the asserted references; and

(3) explain how the prior-art references would have been combined in order to create the inventions claimed in the asserted claim.

20. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to combine the references exists so as to avoid impermissibly applying hindsight when considering the prior art. I understand this test should not be rigidly applied, but that the test can be important to avoiding such hindsight.

21. I understand that certain objective indicia can be important evidence as to whether a patent is obvious or nonobvious. Such indicia include:

(1) commercial success of products covered by the patent claims; (2) a long-felt need for the invention; (3) failed attempts by others to make the invention; (4) copying of the invention by others in the field; (5) unexpected results achieved by the invention as compared to the closest prior art; (6) praise of the invention by the infringer or others in the field; (7) the taking of licenses under the patent by others; (8) expressions of surprise by experts and those skilled in the art at the making of the invention; and (9) the patentee proceeded contrary to the accepted wisdom of the prior art.

22. I also understand that “obviousness” is a legal conclusion based on the underlying factual issues of the scope and content of the prior art, the differences between the claimed invention and the prior art, the level of ordinary skill in the

pertinent art, and any objective indicia of non-obviousness. For that reason, I am not rendering a legal opinion on the ultimate legal question of obviousness. Rather, my testimony addresses the underlying facts and factual analysis that would support a legal conclusion of obviousness or non-obviousness, and when I use the term obvious, I am referring to the perspective of one of ordinary skill at the time of invention.

C. My Understanding of a Person of Ordinary Skill in the Art

23. I understand that a person of ordinary skill in the relevant art (herein “POSITA”) is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity.

24. I have been asked to consider the level of ordinary skill in the field that someone would have had at the time the claimed invention was made. In deciding the level of ordinary skill, I considered the following:

- the levels of education and experience of persons working in the field;
- the types of problems encountered in the field; and
- the sophistication of the technology.

25. My opinion below explains how a POSITA would have understood the technology described in the references I have identified herein around the timeframe of May 22, 2009, which I understand is the earliest priority date claimed

by the '800 patent.

26. Regardless if I use “I” or a “POSITA” during my technical analysis below, all of my statements and opinions are always to be understood to be based on how a POSITA would have understood or read a document at the time of the invention.

V. THE '800 PATENT

A. Overview

27. The '800 patent is titled “System and Process for Roof Measurement Using Imagery.” EX1001, '800 patent, Title. The application that issued as the '800 patent was filed on February 1, 2019. EX1001, '800 patent, (22). In the “Related U.S. Application Data” section of the '800 patent, the patent claims priority through a series of continuation applications to May 22, 2009. EX1001, '800 patent, (63). For the purposes of my analysis and opinions in this Declaration, I assumed that the '800 patent is entitled to priority to the May 22, 2009 priority date, but I have not performed any analysis to confirm this assumption. Although I applied the May 22, 2009 timeframe in my analysis, my opinions herein that the claims of the '800 patent would not have been obvious based on the Grounds of Unpatentability in the Petition would not change if the '800 patent was entitled to a later priority date.

28. The '800 patent states that it “is in the field of measuring roofing

dimensions and other attributes, and more particularly pertains to the use of aerial imagery in that field.” EX1001, ’800 patent, 1:19-21. More specifically, the ’800 patent describes a computer-implemented system and process for roof measurement using aerial imagery that displays aerial imagery on a computer screen and that includes an graphical user interface that enables a user to interact with the imagery, designate the location of a roof structure, and confirm the user’s designation such that measurements can be conducted on the proper roof structure. EX1001, ’800 patent, 9:62-10:67; FIGS. 4A-4D. Allowing the user to confirm her prior designation increases accuracy and provides assurance that the measurements are conducted on the intended roof structure.

29. The ’800 patent describes and illustrates the system and process with respect to the non-limiting examples shown in Figures 4A-4D. EX1001, ’800 patent, 9:62-66. The ’800 patent explains that, “in FIG. 4A, computer screen 100 provides a place to enter an address, such as field 102 for address entry (denoted by label 101). ... The user may enter by clicking or otherwise button 103 to find that address.” EX1001, ’800 patent, 9:66-10:5, FIG. 4A (reproduced below).

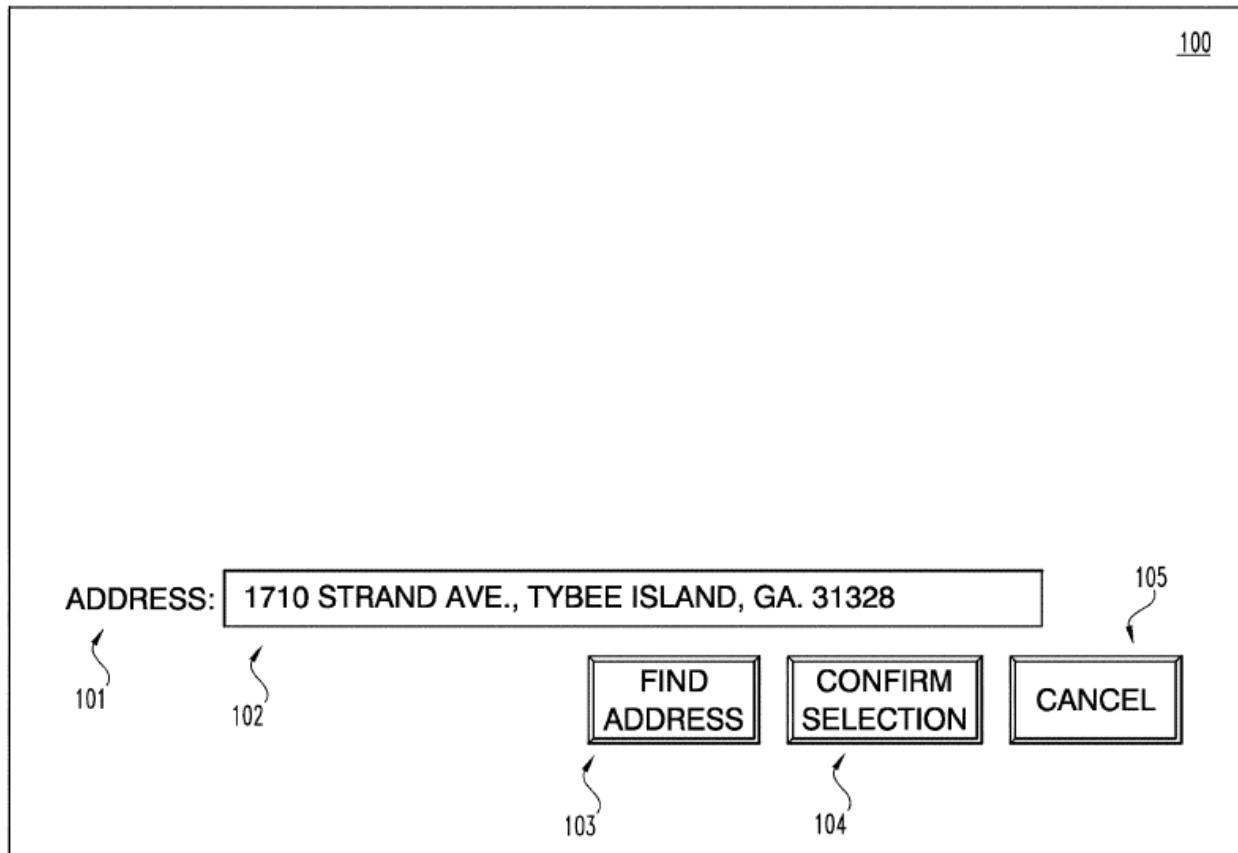


Fig. 4A

EX1001, '800 patent, FIG. 4E.

30. The '800 patent further explains that, “[i]n response, computer screen 100 may appear like FIG. 4B. As such, it may depict imagery 502 of a region, the region including building 500 with its roof structure 501. ... In FIG. 4B, marker 106a is shown in the region 502, corresponding to the street address in field 102. Note further that while marker 106a is close to roof structure 501, it does not directly or perfectly correspond to roof structure 501.” EX1001, '800 patent, 10:5-19, FIG. 4B (reproduced below).

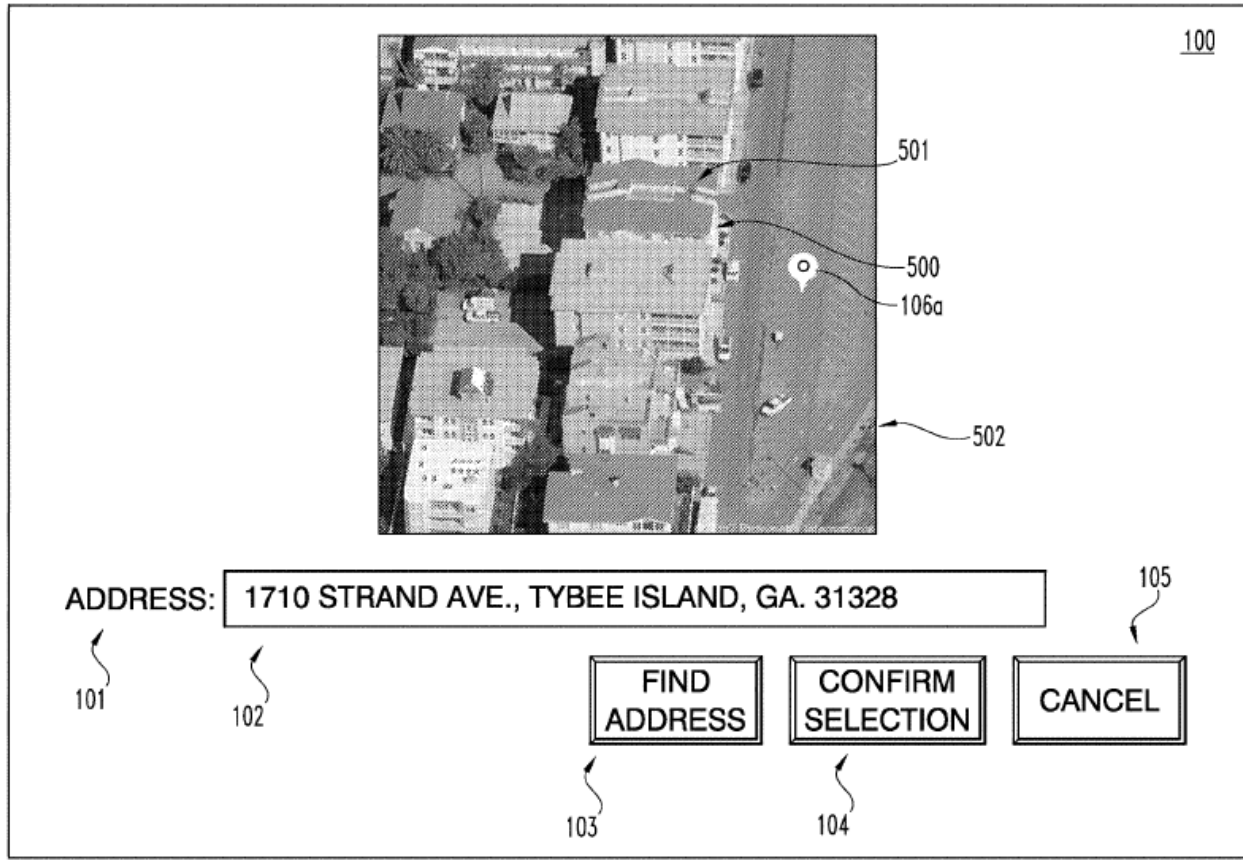


Fig. 4B

EX1001, '800 patent, FIG. 4B.

31. The '800 patent explains that, “[a]s such, the customer or other user may be allowed to move the marker (by click and dragging via computer mouse, arrows, or otherwise) to a final location 106b as depicted in FIG. 4C. Such final location is on top of the building 500 and such movement more precisely identifies the location of the building roof structure 501 to be measured.” EX1001, '800 patent, 10:19-25, FIG. 4C (reproduced below).

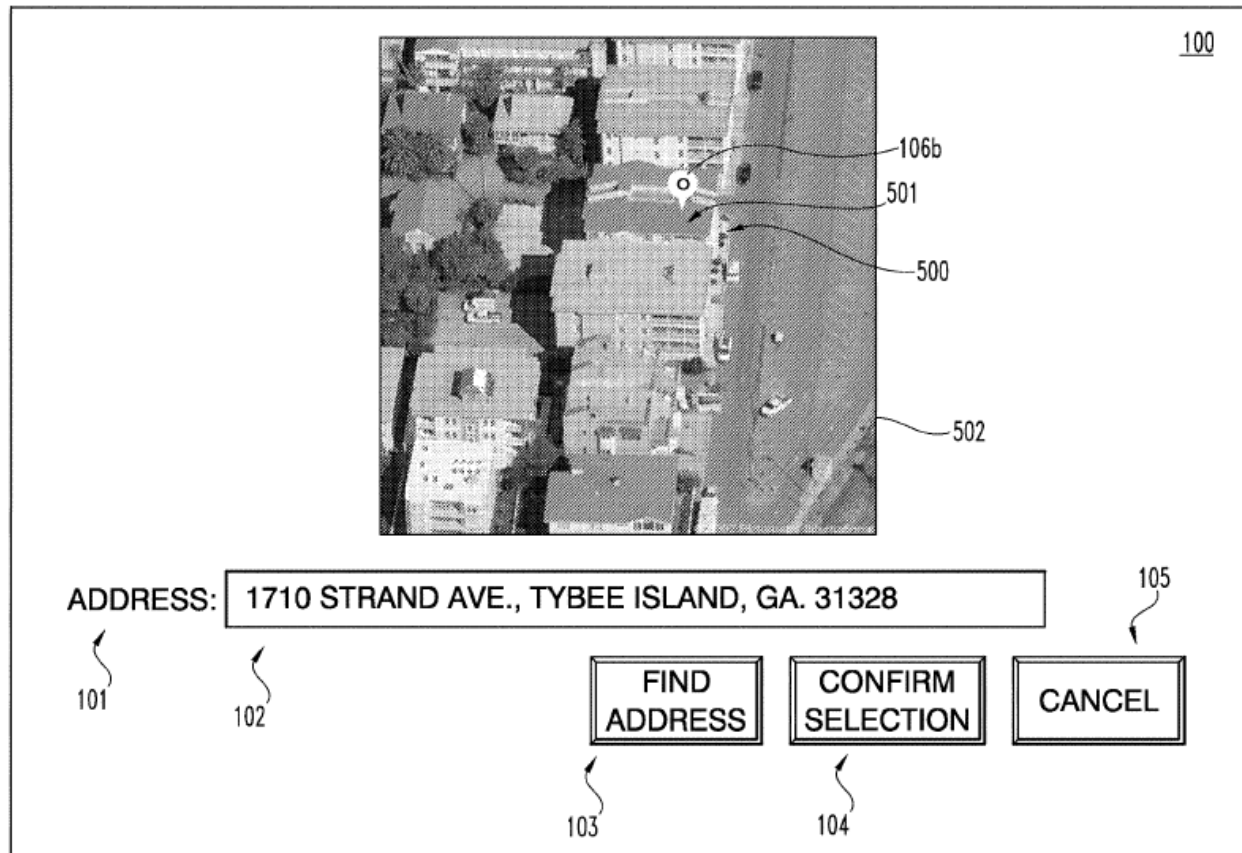


Fig. 4C

EX1001, '800 patent, FIG. 4C.

32. Next, “if confirmed selection button 104 or other such user acceptance is activated, another screen (and/or report) optionally may be provided, such as screen 100 as depicted in FIG. 4D.” EX1001, '800 patent, 10:30-33, FIG. 4D (reproduced below). In the user interface show in Figure 4D, “a checkbox may be providing a further reconfirmation that the users reviewed the image is correct.” EX1001, '800 patent, 10:36-38. The '800 patent explains that, “[i]n this way, the end user/customer will be sure that when placing an order, the vendor is measuring the correct roof structure as opposed to, for example, measuring the nearby roof

structure due to mistake/miscommunication.” EX1001, ’800 patent, 10:38-42.

ADDRESS TO BE MEASURED:
1710 STRAND AVE.
CITY: 108
TYBEE ISLAND
STATE: 109
GA.
ZIP CODE 110
31328
NUMBER OF PLANES 111
RUSH PROCESSING 112
OPTIONAL: 113
REFERENCE NUMBER: 114
CLAIM NUMBER: 115
ADD TO CART 116

100
106b
502a

☒ I have reviewed the image and confirm my selection is correct.

LATITUDE REFERENCE:
38.7492
LONGITUDE REFERENCE:
-85.2748

Fig. 4D

EX1001, ’800 patent, FIG. 4D.

33. The ’800 patent has 17 claims. Claims 1, 11, and 17 are independent claims. Claims 2-10 and 12-16 are dependent claims. Below, I reproduced claim 1 of the ’800 patent, including the claim element labels that the Petitioner used.

[1a] A process, comprising:

[1b] receiving first location data;

[1c] providing visual access to a first image corresponding to the first location data, the first image including a roof structure of a building;

[1d] providing a first computer input capable of signaling a designation from a user of a building roof structure location within the first image, wherein the building roof structure location is a geographic position of the building roof structure and is different than the first location data;

[1e] receive a designation of the building roof structure within the first image;

[1f] responsive to receiving the designation of the building roof structure location, providing a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location; and

[1g] subsequent to receiving the user-acceptance confirming the designation of the building roof structure location, providing a report for the building roof structure.

34. Claim element 1f recites “a second computer input” that is provided “responsive to receiving the designation of the building roof structure location” and that is “capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.” The checkbox shown in Figure 4D of the ’800 patent is a non-limiting example of the “second computer input” – it is a graphical user interface

element that is provided by the computer to the user in response to the user designating the location of a building roof structure and its enables the user to take an affirmative step to confirm the user's prior designation of the location of the building roof structure. As I discuss in more detail below, Abhyanker, the reference that the Petitioner relies on in all Grounds of Unpatentability to address claim element 1f, does not teach or suggest the claimed "second computer input." This also applies to independent claims 11 and 17, which recite the same or similar features, as I also discuss in more detail below.

B. Person of Ordinary Skill in the Art of the '800 patent

35. A person of ordinary skill in the art ("POSITA") of the '800 patent would have had a bachelor's degree in an academic area emphasizing the design of electrical, computer, or software technologies, or a similar discipline, and at least two years of experience related to computerized image analysis and three-dimensional modeling.

36. I determined the level of ordinary skill in the art by reviewing the '800 patent and considering the types of problems encountered in the art, such as image and geometry processing. Solutions to these problems involve algorithm design and software development. These topics are routinely covered in multiple undergraduate curriculum courses in computer science, computer vision, visualization, and computer engineering. Problem solving application expertise is

gained through projects, courses, and work experience in real-time computer vision, visualization, interactive computer graphics, image processing and pattern recognition, and data analysis. In the particular case of the '800 patent, the problem of accurately identifying a building roof structure for searching and retrieval of images from a database for the purposes of determining attributes of a building roof structure and enabling the creation of highly detailed roof estimate reports involves algorithm design and software development. *See, e.g.*, EX1001, '800 patent, 9:62-10:44, 11:1-29, FIGS. 4A-4D, 5A-5I, 7A-7B.

37. I have also been advised and understand that the body of prior art in a given field may reflect the level of ordinary skill in the art. Here, Petitioner challenged the claims based on combinations that include Pershing '789, Kennedy, Abhyanker, and Bailey. These references describe computer-implemented systems, computer algorithms, interactive computer graphics, image processing and visualization, data analysis, etc., and thus confirm my opinion that a POSITA of the '800 patent would need a strong foundation or education in the computing disciplines that I identified above. *See, e.g.*, EX1004, Pershing '789, ¶¶11-16, FIGS. 1-4; EX1009, Kennedy, FIGS. 1, 20-22; EX1005, Abhyanker, FIGS. 10, 11A-11D, 12.

38. I understand that in the Decision Granting Institution of *Inter Partes* Review, the Board preliminary found “that one skilled in the art would have

computer-related experience” because that is “consistent with the prior art and patent specification.” Decision Granting Institution of *Inter Partes* Review, Paper 16, pp. 7-8. I understand that the Board also preliminary found that “experience may compensate for formal education, and vice versa.” Decision Granting Institution of *Inter Partes* Review, Paper 16, p. 8.

39. While I agree that some experience may take the place of formal education, I would not agree that mere experience using computer software, even computer software that can perform some of the functions I described above, can be a wholesale replacement for formal education. For example, computer-aided design (CAD) programs based on 3D modeling and interactive computer graphics are commonly used in the architecture and construction industries. But a person who merely had experience using CAD programs or similar software in the May 2009 timeframe would not have been POSITA of the '800 patent because a mere user of such programs would not have had the skills to understand and implement in software the features of the claimed invention of the '800 patent or to fully understand and interpret the technologies described in the body of prior art. Formal education and/or hands-on experience developing such computer-implemented technologies are a necessary qualification of a POSITA of the '800 patent.

40. For example, to implement systems and processes like those claimed in the '800 patent, a software developer in the May 2009 timeframe would have

used prevalent image processing and computer graphics software libraries that supported interactive graphical user interfaces, capturing and responding to user commands from a direct graphical screen interface, while displaying computer generated and acquired image data effectively and meaningfully. Such interactive computer software and libraries that were available at the time of the '800 patent and that were used to build interactive graphical user interfaces would have been known to and used by a POSITA. A POSITA would have the skills to develop user event driven systems and processes (such as those claimed in the '800 patent) that would allow users to interact with the graphical information presented on the display using one or more of a number of input devices, some of which are aimed at delivering positions relevant to the information being displayed.

C. Claim Construction

41. I gave the claim terms their ordinary and customary meaning in the context of the '800 patent unless the term was defined in the specification. The '800 patent defines certain terms. EX1001, '800 patent, 2:55-5:33. For the purposes of the opinions I render in this Declaration, I note that the '800 patent defines the terms (1) "computer input": "The term 'computer input' means data, information and/or signals provided by a computer user. This may include numbers, words, mouse clicks, 'enter', check boxes, dialog boxes, and otherwise." EX1001, '800 patent, 3:11-15; and (2) "outline drawing": "The term 'outline

drawing’ means drawing of lines around an outline.” EX1001, ’800 patent, 4:15-

16. I applied these definitions in my analysis below.

VI. OVERVIEW OF GROUNDS OF UNPATENTABILITY

42. The Petition alleges three Grounds of Unpatentability on page “vii”:

GROUND OF CHALLENGE (37 C.F.R. § 42.204(b)(2))

No.	Ground for Challenge
1	Pershing-789 And Abhyanker Render Obvious Claims 1-17 Of The ’800 Patent
2	Pershing-789, Abhyanker And Pictometry Render Obvious Claims 9 And 14 Of The ’800 Patent
3	Kennedy And Abhyanker Render Obvious Claims 1-17 Of The ’800 Patent

43. While the Petition initially lists Ground 3 as being based on Kennedy and Abhyanker, in the body of the Petition Ground 3 relies on Kennedy, Abhyanker, and Bailey. Paper 5, Petition, p. 66.

44. Regarding independent claims 1, 11, and 17, my analysis below focuses on claim elements 1f, 11f, and 17d. In the Petition, the Petitioner relies on Abhyanker (and only Abhyanker) in all three Grounds to address claim elements 1f, 11f, and 17d, and thus I provide below a brief overview of the Abhyanker reference. Paper 5, Petition, pp. 33-35 (addressing 1f in Ground 1), 60 (addressing 11f in Ground 1), 62 (addressing 17d in Ground 1), 74 (addressing 1f in Ground 3), 86 (addressing 11f in Ground 3), 88 (addressing 17d in Ground 3).

45. My analysis below also addresses dependent claims 2, 9, and 14.

VII. GROUNDS 1-3: INDEPENDENT CLAIMS 1, 11, AND 17 ARE NON-OBVIOUS.

46. In my opinion, the Grounds of Unpatentability presented in the Petition do not show that independent claims 1, 11, and 17 (and therefore all of the claims of the '800 patent) would have been obvious. Abhyanker fails to teach claim elements 1f, 11f, and 17d. The Petitioner also failed to properly resolve the level of ordinary skill in the art, which undermines the Grounds of Unpatentability and further demonstrates that the claims would not have been obvious. These flaws apply to all three Grounds of Unpatentability.

A. Overview of Abhyanker

47. Abhyanker is directed to a shared mapping environment in which multiple users can interact with markers on a map, including moving and claiming markers. EX1005, Abhyanker, ¶¶3, 41, 48, 78 (describing registered and unregistered users), FIGS. 1, 4A. Abhyanker illustrates placement and movement of a marker in Figure 4A, reproduced below. Abhyanker explains:

FIG. 4A is a map view showing the placement of a marker in the mapping environment, according to one embodiment. Particularly, FIG. 4A illustrates an initial location 402A and a new location 404A, according to one embodiment. The initial location 402A may be the location of the marker in the mapping environment provided by the user. The new location 404A may be the location of the marker

accurately relocated at the physical location associated with the address data in the mapping environment. In the example embodiment illustrated in FIG. 4A, the map view may enable the user to locate a marker in the mapping environment adjacent to the physical location identified through the address data. The marker may be automatically relocated to the physical location based on the initial location 402A.

EX1005, Abhyanker, ¶78.

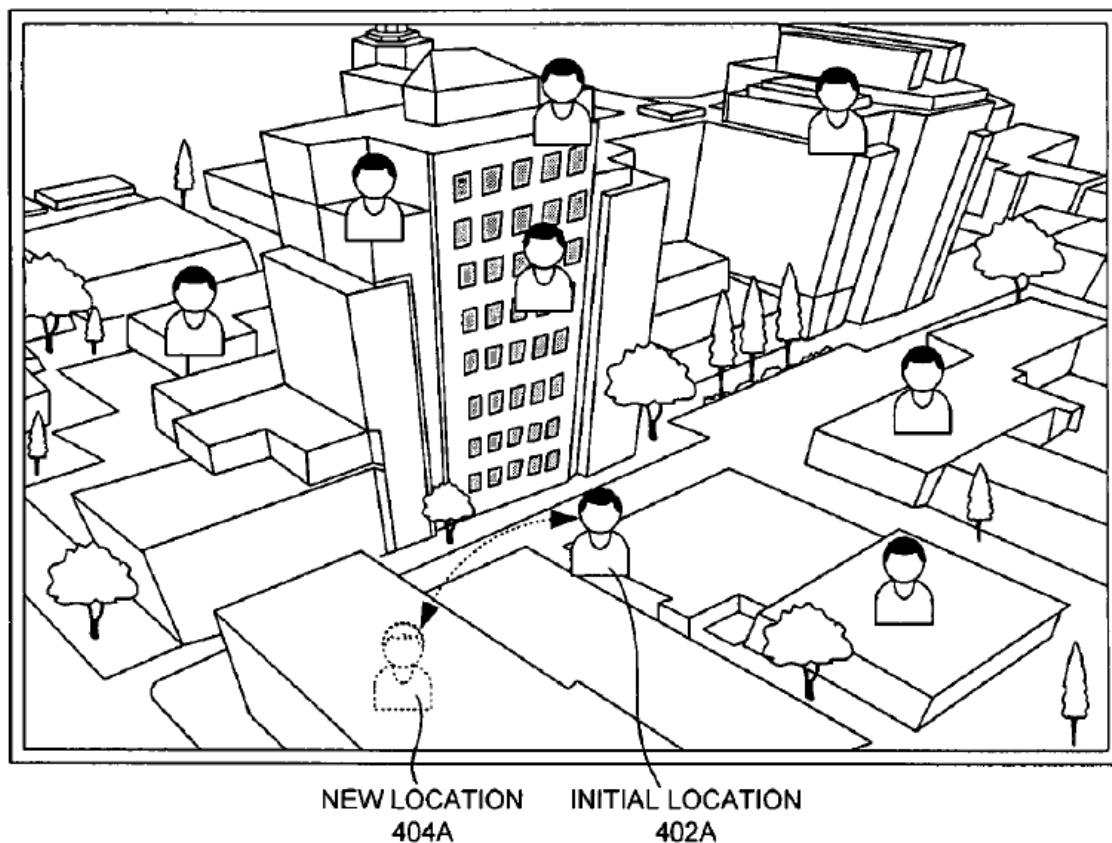


FIGURE 4A

EX1005, Abhyanker, FIG. 4A.

48. In addition to moving a marker, users can claim the wiki profile associated with a marker using a marker-locking feature, which is shown (for

example) as lock pushpin 908 in Figure 9, reproduced below. EX1005, Abhyanker, ¶¶64, 99, FIG. 9.

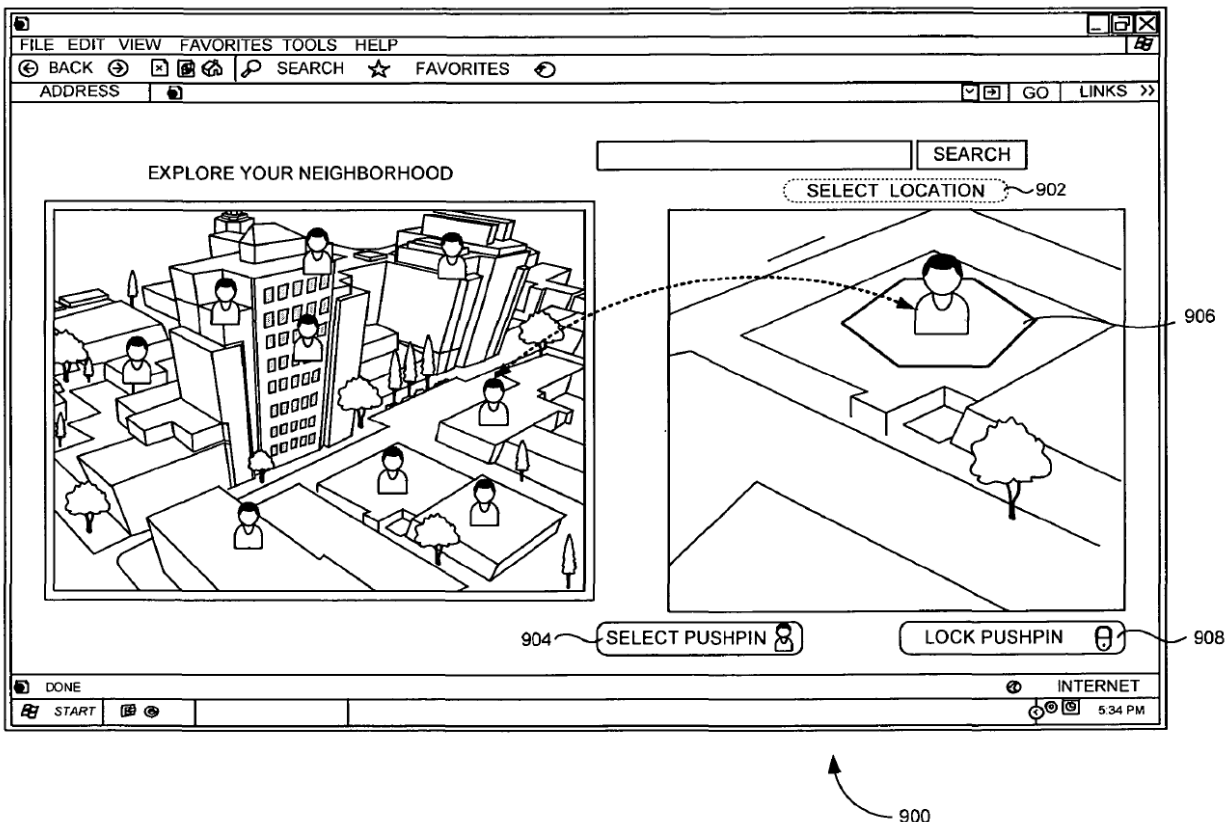


FIGURE 9

EX1005, Abhyanker, FIG. 9.

49. Claiming such a wiki profile, Abhyanker explains, allows the user to control the information that is included in the profile and to prevent other users from relocating the marker to a different location. *See* EX1005, Abhyanker, ¶¶58, 63-64, 66.

B. Abhyanker fails to teach claim elements 1f, 11f, and 17d

50. Below, I reproduce claim elements 1f, 11f, and 17d.

[1f] responsive to receiving the designation of the building roof structure location, providing a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.

[11f] responsive to receiving the designation of the building roof structure location, provide a second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.

[17d] signaling, by the user, user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.

51. Claim elements 1f and 11f are nearly identical, but claim element 1 recites “providing,” whereas claim element 11f recites “provide.” Claim element 17d recites a similar feature using slightly different terminology. As I mentioned above, Petitioner relied on Abhyanker (and only Abhyanker) to address these claim elements. Additionally, Petitioner addressed claim elements 1f, 11f, and 17d using the same analysis – that is, Petitioner merely referenced its analysis of claim element 1f in Ground 1 to address claim elements 11f and 17d. Paper 5, Petition,

pp. 33-35 (addressing 1f in Ground 1), 60 (addressing 11f in Ground 1), 62 (addressing 17d in Ground 1), 74 (addressing 1f in Ground 3), 86 (addressing 11f in Ground 3), 88 (addressing 17d in Ground 3).

52. For these reasons, I focus my analysis below on claim element 1f, which also applies to claim element 11f and 17d. I also provide a brief discussion of claim element 17d below.

53. Claim 1 is directed to a computer-implemented process. Claim element 1f recites “a second computer input” that (1) has a temporal requirement: it is provided “responsive to receiving the designation of the building roof structure location” and (2) has a functional requirement: it is “capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.” EX1001, ’800 patent, 14:20-26. The ’800 patent defines “computer input” as “data, information and/or signals provided by a computer user. This may include numbers, words, mouse clicks, ‘enter’, check boxes, dialog boxes, and otherwise.” EX1001, ’800 patent, 3:11-15. And Figure 4D of the ’800 patent shows a non-limiting example of the claimed “second computer input” in which, after a user has designated the location of a roof, the computer provides a “checkbox” that enables the user to confirm the user’s prior designation of the location of the roof. Therefore, it is my opinion that

a POSITA would have understood that the claimed “second computer input” is a user interface element provided by the computer to the user in response to the user designating the location of a roof structure and that enables the user to confirm that its designation of the location of the roof structure is correct.

54. Regarding claim element 1f, Petitioner and Mr. Cummings first map Abhyanker’s drag-and-drop feature to the claimed “designation of the building roof structure location.” Paper 5, Petition, pp. 33-34; EX1003, Cummings Decl., ¶¶62-63; *see also* Paper 5, Petition, p. 33 (addressing element 1e, Petitioner stating that “[t]he selection of a roof location using the ‘drag and drop’ feature is the claimed ‘designation of the building roof structure within the first image.’”); EX1003, Cummings Decl., ¶61; EX2032, Cummings Dep. Tr., 81:8-85:1 (discussing his understanding of element 1f and his mapping of Abhyanker to element 1f).

55. Petitioner and Mr. Cummings also map Abhyanker’s “additional verifications,” described in paragraphs 11 and 53 of Abhyanker, to the claimed “second computer input capable of signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.” Paper 5, Petition, pp. 34-35; EX1003, Cummings Decl., ¶¶64-66. Petitioner also alleges that Abhyanker’s “marker locking” feature

described in paragraph 64 of Abhyanker, is an example of Abhyanker’s “additional verifications.” Paper 5, Petition, p. 34; EX1003, Cummings Decl., ¶65; EX2032, Cummings Dep. Tr., 76:13-77:4; 81:8-85:1. Here I note that Mr. Cummings clarified his position during his deposition and testified that Abhyanker’s lock pushpin option 908 shown in Figure 9 illustrates the user interface element that he is equating to the claimed “second computer input.” EX2032, Cummings Dep. Tr., 86:15-19.

56. In my opinion, Petitioner’s and Mr. Cummings’s arguments fail for at least three reasons. First, to start, they are incorrect that Abhyanker’s marker-locking feature is an example of Abhyanker’s additional verifications—these are separate and unrelated features, and neither of them satisfy the claimed “second computer input” of claim element 1f. Second, Abhyanker’s additional verifications fail to satisfy the “second computer input”—they are not computer input that is provided to the user and that enables the user to confirm the user’s prior designation of the location of a building roof structure. Third, Abhyanker’s marker-locking feature (1) is not provided in response to Abhyanker’s drag-and-drop (as Petitioner alleges) and (2) does not enable the user to confirm the user’s prior designation of the location of a building roof structure.

1. Abhyanker’s marker-locking feature is not an example of Abhyanker’s additional verifications.

57. Abhyanker’s marker-locking feature is not an example of

Abhyanker's additional verifications. The marking-locking feature and the additional verifications are separate and unrelated features of Abhyanker's disclosure and they occur/are used at different steps (operations) in Abhyanker's disclosed process.

58. Abhyanker mentions additional verifications in paragraphs 11, 53, and 104; in operation 1134 of Figure 11C; and in claim 10, each of which provides a very similar and very superficial description of the additional verifications. EX1005, Abhyanker, ¶¶11, 53, 104, FIG. 11C, claim 10. For example, I reproduce paragraph 53 of Abhyanker below:

Moreover, **a drag and drop algorithm** that enables the user to sequentially and/or concurrently relocate markers in the mapping environment 100 may be applied. Further, **additional verifications** may be iteratively performed when any particular marker has been previously moved when the previous movement was made after the generation and/or placement of the marker, using the algorithm and when the previous marker movement is associated with the polygon that is determined to approximately center on the rooftop rather than the street (e.g., based on a polygonal identification of sides of the rooftop being substantially more square than that of the street).

EX1005, Abhyanker, ¶53 (emphasis added).

59. As stated above, Abhyanker does not explain what the additional verifications are and does not provide any examples of the additional verifications.

Notably, Abhyanker does not teach that the user performs the additional verifications through a user interface. As I describe in more detail below, a POSITA would understand that Abhyanker's system, and not the user, programmatically performs the additional verifications when the three listed conditions are satisfied, that is: (i) when any particular marker has been previously moved; (ii) when the previous movement was made after the generation and/or placement of the marker, using the algorithm; and (iii) when the previous marker movement is associated with the polygon that is determined to approximately center on the rooftop rather than the street.

60. Abhyanker explains the polygon determination (condition iii) in paragraph 10: "In addition, the **method may include correcting an accuracy** of the placement of the relocated marker in a particular view using a polygonal resolution algorithm through a rendering of an approximate polygonal shape that matches a distorted perspective in any view desired with the relocated marker through a vector and color matching methodology." EX1005, Abhyanker, ¶10 (emphasis added). A POSITA would thus understand that previous determinations made by the system during marker placement and using the drag and drop algorithm would automatically be verified to hold through the programmatic additional verifications when conditions (i), (ii), and (iii) happen to transpire.

61. Paragraphs 11 and 104 repeat similar language as paragraph 53 with

additional verifications being performed when conditions (i), (ii), and (iii) happen to transpire. A POSITA would thus come to the understanding that the Abhyanker system automatically performs the additional verifications and not that the user performs them through one or more steps of user driven confirmations.

62. Moreover, and contrary to Petitioner's and Mr. Cummings's arguments, Abhyanker does not teach that the marker-locking feature is an example of an additional verification pertinent to claim 1f. Nor does Abhyanker link the two features in any way, which makes sense, because, as Abhyanker discloses, they serve different purposes.

63. Abhyanker discusses marker locking in the abstract, paragraphs 7, 64, 66, 99, Figure 11A, and claim 2. EX1005, Abhyanker, abstract, ¶¶7, 64, 66, 99, FIG. 11A, claim 2. For example, I reproduce paragraph 64 of Abhyanker below.

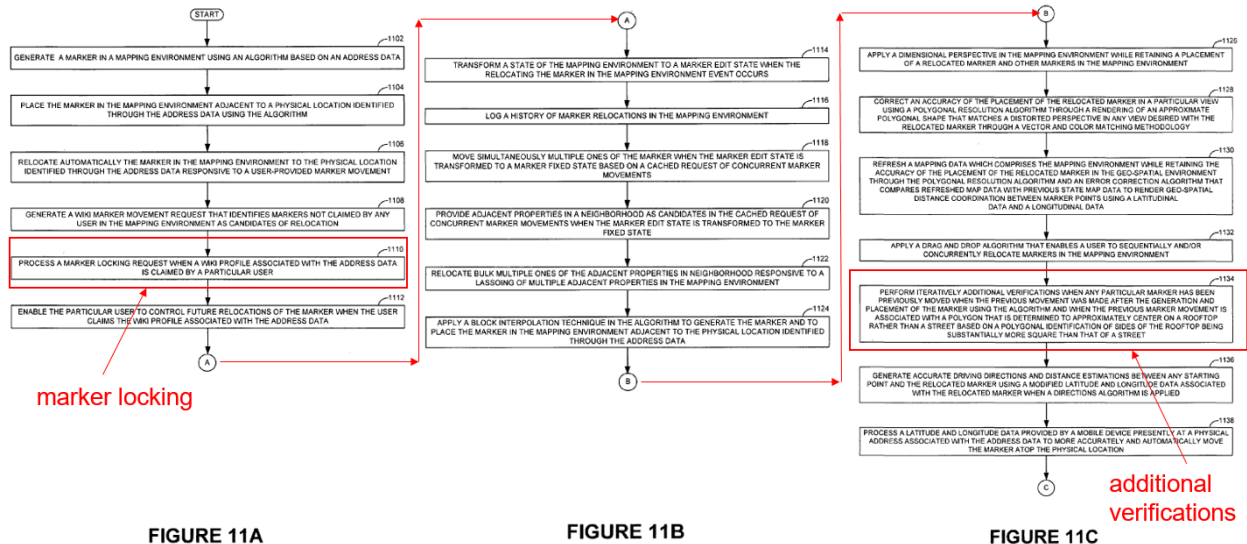
The location module 218 may capture (e.g., in the map) a graphical representation of locations physically present in the neighborhood through the set of markers indicating the profile (e.g., claimed profile, unclaimed profile) associated with the address data. The locking module 220 may process a **marker locking** request when the particular user claims the wiki profile associated with the address data. In addition, the locking module 220 may enable the user(s) to control the future relocation of the marker in the mapping environment. The selection module 222 may enable to select the physical location in the geospatial environment for physically relocating the pushpins to the desired location.

EX1005, Abhyanker, ¶64 (emphasis added).

64. Abhyanker does not teach that the marker-locking feature is an example of an additional verification as required by claim 1f. Nor does Abhyanker mention the additional verifications when discussing marker locking.

65. Based on Abhyanker's disclosure, a POSITA would not have understood Abhyanker's marker-locking feature to be an example of Abhyanker's additional verifications as required by claim 1f. Abhyanker discloses that Figures 11A-D illustrate a process flow that begins in Figure 11A and is continued through Figure 11D. EX1005, Abhyanker, ¶¶34-37, 98-106. Abhyanker's marker-locking feature is used in operation 1110 of Figure 11A. EX1005, Abhyanker, ¶99, FIG. 11A. Abhyanker's additional verifications are used in operation 1134 of Figure 11C. EX1005, Abhyanker, ¶104, FIG. 11C. Below is a reproduction of Figures 11A-11C of Abhyanker, showing how the process continues from Figure 11A to Figure 11C. As shown, operations 1110 and 1134 are performed at different stages of Abhyanker's process and are separated by 11 other operations. Operation 1134 does not refer to Abhyanker's marker-locking feature. EX2032, Cummings Dep. Tr., 80:13-81:2. And operation 1110 does not refer to Abhyanker's additional verifications. There is simply nothing linking Abhyanker's marker-locking feature to Abhyanker's additional verifications, and I note that Petitioner and Mr. Cummings do not point to any specific language or teaching in Abhyanker to

support their position.



EX1005, Abhyanker, FIGS. 11A-11C (annotated).

66. For these reasons, it is my opinion that Petitioner and Mr. Cummings are incorrect that Abhyanker’s marker-locking feature is an example of Abhyanker’s additional verifications. A POSITA, upon reading and understand Abhyanker’s disclosure, would simply not come to that conclusion. Nevertheless, below I analyze each of Abhyanker’s additional verifications and Abhyanker’s marker-locking feature with respect to the “second computer input” of claim element 1f. In my opinion, neither Abhyanker’s additional verifications nor Abhyanker’s marker-locking feature satisfies the claimed “second computer input.”

2. Abhyanker’s additional verifications do not satisfy the claimed “second computer input.”

67. It is my opinion that Abhyanker’s additional verifications do not

satisfy the claimed “second computer input” for two reasons. First, Abhyanker does not teach that the additional verifications are “computer input” that is provided by the computer to the user and that enables the user to confirm the user’s prior designation of the location of a building roof structure. As I discussed above, Abhyanker discusses the additional verifications in paragraphs 11, 53, and 104; in operation 1134 of Figure 11C; and in claim 10. EX1005, Abhyanker, ¶¶11, 53, 104, FIG. 11C, claim 10. Each of these discussions provides a very similar description of the additional verifications, as those performed by the Abhyanker system and not the user

68. In addressing the claimed “second computer input,” Petitioner and Mr. Cummings rely on and quote a **portion** of Abhyanker’s discussion of the additional verifications in paragraph 53. Paper 5, Petition, p. 34 (“Abhyanker also discloses that ‘*additional verifications* may be iteratively performed when any particular marker has been previously moved[.]’” (emphasis added)); EX1003, Cummings Decl., ¶64 (same). Below I reproduce the full quote in paragraph 53 of Abhyanker related to the additional verifications:

Further, additional verifications may be iteratively performed [1] when any particular marker has been previously moved [2] when the previous movement was made after the generation and/or placement of the marker, using the algorithm **and** [3] when the previous marker movement is associated with the polygon that is determined to

approximately center on the rooftop rather than the street (e.g., based on a polygonal identification of sides of the rooftop being substantially more square than that of the street).

EX1005, Abhyanker, ¶53 (bold and numbering added).

69. As shown by the added numbering, Abhyanker expressly discloses that the additional verifications are iteratively performed when three conditions are satisfied: (1) “when any particular marker has been previously moved”; (2) “when the previous movement was made after the generation and/or placement of the marker, using the algorithm”; and (3) “when the previous marker movement is associated with the polygon that is determined to approximately center on the rooftop rather than the street (e.g., based on a polygonal identification of sides of the rooftop being substantially more square than that of the street).” EX1005, Abhyanker, ¶53. Petitioner and Mr. Cummings did not even address the last two conditions, and thus their analysis is incomplete and inaccurate.

70. Abhyanker does not explain what the additional verifications are or provide any examples of the additional verifications. Nowhere does Abhyanker teach or suggest that the additional verifications are embodied as a computer input that is provided to the user or that the additional verifications enable a user to take an affirmative step to confirm the user’s prior designation of the location of a building roof structure. At best, Abhyanker explains when the additional verifications are performed (i.e., upon satisfying the three conditions), but does not

provide any explanation of what they are and does not teach that the user performs the additional verifications. As I mentioned above, based on my analysis of Abhyanker as a whole, it is my opinion that a POSITA would have understood that the computer system, not the user, performs the additional verifications.

71. The second reason that Abhyanker's additional verifications do not satisfy the claimed "second computer input" relates to Mr. Cummings deposition testimony about Abhyanker's additional verifications, which I disagree with. He testified that he interpreted Abhyanker's additional verifications to be when a user performs a drag-and-drop to move a marker to a new location. EX2032, Cummings Dep. Tr., 66:1-4, 68:15-69:12, 70:22-71:14. His interpretation incorrectly maps Abhyanker's drag-and-drop feature to two separate and distinct claim elements (that is, the "designation" and the "second computer input"), and also fails to satisfy the temporal requirement of the claimed "second computer input"—that is, Abhyanker's marker is already on the computer display during the drag-and-drop feature, it is not provided in response to the drag-and-drop feature.

72. Mr. Cummings testified that by "additional verifications" Abhyanker means the user dragging-and-dropping a marker to a new location on the map. EX2032, Cummings Dep. Tr., 64:4-71:14; *see* EX2032, Cummings Dep. Tr., 66:1-4, 68:15-69:12, 70:22-71:14. He first testified about the first time a marker is moved in Abhyanker's mapping environment. EX2032, Cummings Dep. Tr., 64:4-

69:12. Here, Mr. Cummings explained that Abhyanker's computer generates and initially places a marker at a given location on the map, and that the computer's initial placement of the marker on the map is a first "verification." EX2032, Cummings Dep. Tr., 68:15-17 ("[Q] Now, the first verification is when the marker is initially placed by the computer? A Correct."). He testified that a user's action to drag-and-drop the marker from its initial placement are Abhyanker's "additional verifications." EX2032, Cummings Dep. Tr., 66:1-4 ("Q So the additional verification is the drag and drop, is what you're saying? ... A Yes. That's what I'm saying."), 68:18-69:12.

73. Mr. Cummings then testified about subsequent marker movements using Abhyanker's drag-and-drop operation. EX2032, Cummings Dep. Tr., 69:13-71:14. Here, he testified that the user (or other users of Abhyanker's system) can use the drag-and-drop operation to move the marker to another location, and this movement of the marker is what Abhyanker means by "additional verifications." EX2032, Cummings Dep. Tr., 70:22-71:4 ("Q Okay. So in your opinion, in paragraph 53 of Abhyanker, when Abhyanker refers to 'additional verifications,' that's referring to the user moving the marker again? A That's my understanding of it.").

74. In my opinion, Mr. Cummings's understanding of Abhyanker is inconsistent with Abhyanker's disclosure. Paragraph 53 of Abhyanker illustrates

this point:

Moreover, a drag and drop algorithm that enables the user to sequentially and/or concurrently relocate markers in the mapping environment 100 may be applied. Further, **additional verifications** may be iteratively performed when any particular marker has been previously moved when the previous movement was made after the generation and/or placement of the marker, using the algorithm and when the previous marker movement is associated with the polygon that is determined to approximately center on the rooftop rather than the street (e.g., based on a polygonal identification of sides of the rooftop being substantially more square than that of the street).

EX1005, Abhyanker, ¶53 (emphasis added).

75. In the first sentence of paragraph 53, Abhyanker discusses the drag-and-drop feature. In the second sentence of paragraph 53, Abhyanker discusses the additional verifications. Abhyanker plainly describes them as two different things, and even shows them as separate steps in Figure 11C, operations 1132 (drag-and-drop) and 1134 (additional verifications). Mr. Cummings testimony that the drag-and drop and the additional verifications are the same does not make sense, is not consistent with Abhyanker's disclosure, and is not how a POSITA would have interpreted Abhyanker.

76. Nevertheless, even if the Board agreed with Mr. Cumming's interpretation of Abhyanker, which they should not, Abhyanker would still fail to

satisfy the claimed “second computer input.” Again, Petitioner and Mr. Cummings already map Abhyanker’s drag-and-drop feature to the claimed “designation of the building roof structure location.” Paper 5, Petition, 33-34; EX1003, Cummings Decl., ¶¶62-63; EX2032, Cummings Dep. Tr., 81:12-82:11. Mr. Cummings’s testimony during cross-examination would also map the same drag-and-drop feature to the claimed “second computer input.” This mapping fails because the claimed “designation of the building roof structure location” and the claimed “second computer input” are separate and distinct claim elements.

77. Mr. Cummings’s mapping also fails because it does not satisfy claim element 1f’s temporal requirement. Again, claim element 1f recites that the “second computer input” is provided “responsive to receiving the designation of the building roof structure location.” In Mr. Cummings’s mapping of both the claimed “designation” and the claimed “second computer input” to Abhyanker’s drag-and-drop feature, there is no “computer input” that is provided in response to moving the marker via a drag-and-drop, such as a checkbox that allows the user to take an affirmative step to confirm the location of a roof.

3. Abhyanker’s marker-locking feature is not provided in response to Abhyanker’s drag-and-drop and does not enable the user to confirm the user’s designation of the location of a building roof structure.

78. Abhyanker’s marker-locking feature also fails to satisfy the claimed “second computer input.” To start, Abhyanker does not teach that the marker-

locking feature is provided “responsive to receiving the designation of the building roof structure location,” which Petitioner and Mr. Cumming’s map to Abhyanker’s drag-and-drop feature. Abhyanker shows in Figure 9, reproduced below, the user interface element that enables a user to lock a marker in Abhyanker’s system: lock pushpin option 908. EX1005, Abhyanker, ¶95, FIG. 9; EX2032, Cummings Dep. Tr., 85:17-86:19. Abhyanker is silent regarding when lock pushpin option 908 is provided on the computer interface and what, if anything, causes lock pushpin option 908 to be provided on the computer interface.

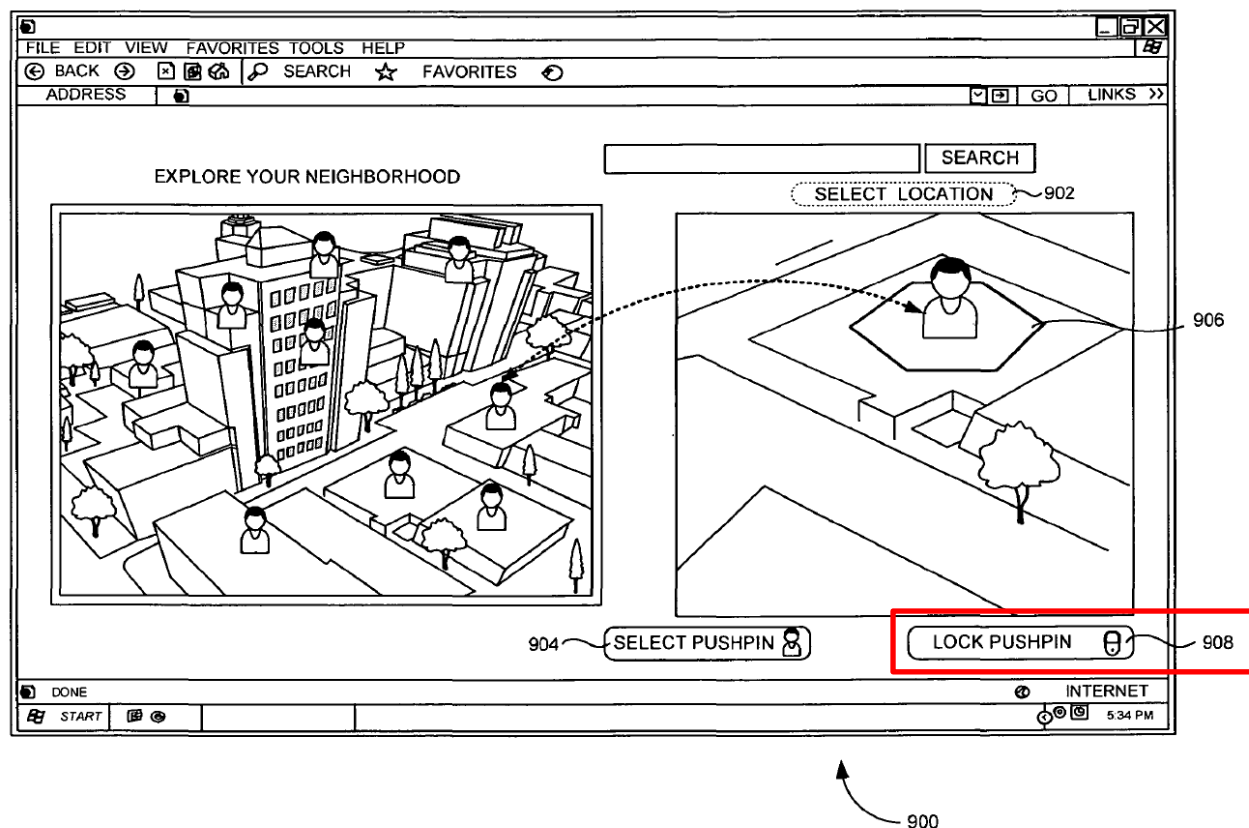
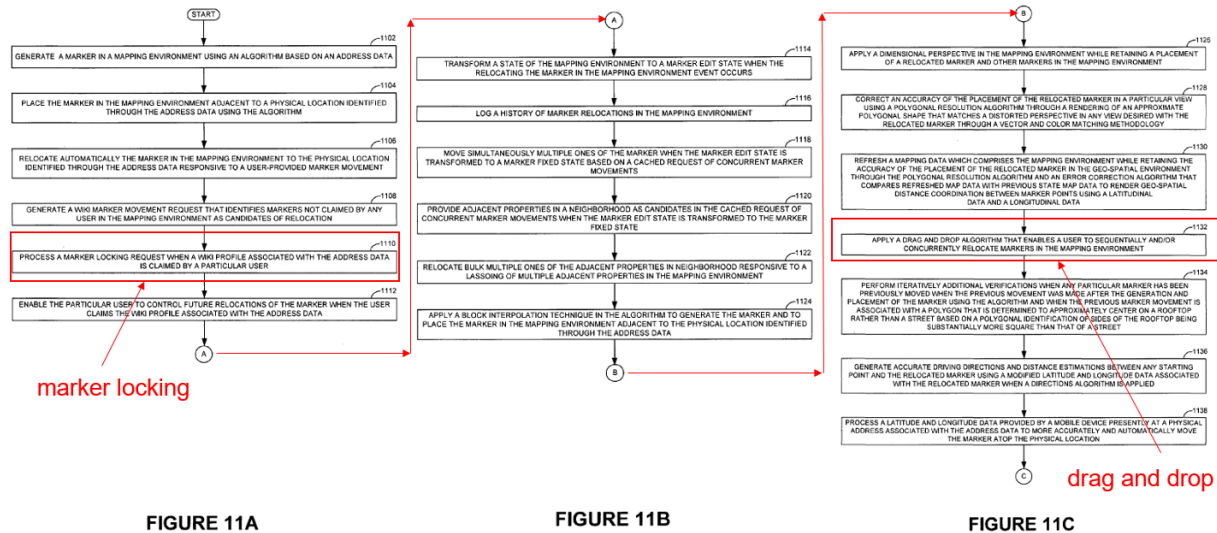


FIGURE 9

EX1005, Abhyanker, FIG. 9 (annotated).

79. Based on Abhyanker's disclosure, a POSITA would not have understood that lock pushpin option 908 would appear on Abhyanker's interface in response to use of the drag-and-drop feature. Abhyanker's marker-locking feature that Petitioner and Mr. Cummings rely on is performed in operation 1110 of Figure 11A of Abhyanker. Paper 5, Petition, pp. 34-35; EX1005, Abhyanker, ¶¶64-65; EX2032, Cummings Dep. Tr., 79:21-80:4. Abhyanker's drag-and-drop feature is performed in operation 1132 of Figure 11C. EX1005, Abhyanker, ¶104, FIG. 11C. As shown below, Abhyanker's marker-locking request in Figure 11A occurs well **before** (not after) use of drag-and-drop in Figure 11C, and the two operations are separated by 10 operations.



EX1005, Abhyanker, FIGS. 11A-11C (annotated).

80. Second, Abhyanker does not teach that the marker-locking feature is “capable of signaling user-acceptance of the building roof structure location within

the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.” Instead, Abhyanker teaches that the marker-locking feature is used to claim the “wiki profile” associated with the address at which the marker is located. EX1005, Abhyanker, ¶¶64 (“The locking module 220 may process a marker locking request **when the particular user claims the wiki profile associated with the address data.**”) (emphasis added), 66 (“In addition, a marker locking request may be processed when the wiki profile associated with the address data is claimed by the particular user.”), 99 (“The Operation 1110, a marker locking request may be processed **when a wiki profile associated with the address data is claimed by a particular user.**”) (emphasis added). Claiming such a wiki profile, Abhyanker explains, allows the user to control the information that is included in the profile and to prevent other users from relocating the marker to a different location. *See* EX1005, Abhyanker, ¶¶58, 63-64, 66. But claiming a wiki profile in Abhyanker has nothing to do with confirming the location of a building roof structure.

81. In sum, Abhyanker’s marker-locking feature does not satisfy the temporal aspect of the “second computer input” of element 1f—i.e., it is not provided “responsive to receiving the designation of the building roof structure location.” Nor does Abhyanker’s marker-locking feature satisfy the function required of the “second computer input” of element 1f—i.e., it is not “capable of

signaling user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.”

4. Independent claim element 17d.

82. Abhyanker also fails to teach claim element 17d, which recites:

signaling, by the user, user-acceptance of the building roof structure location within the first image, wherein user-acceptance is one or more affirmative steps undertaken by the user to confirm the designation of the building roof structure location.

EX1001, '800 patent, 16:21-25.

83. Petitioner and Mr. Cummings rely on their analysis of claim element 1f to address claim element 17d. Paper 5, Petition, p. 62; EX1003, Cummings Decl., ¶117. Despite the differences in claim language, which Petitioner does not address, Petitioner fails to prove that Abhyanker teaches claim element 17d for at least the same reasons as discussed above for claim element 1f. As explained in Section VII.B.1, Petitioner is incorrect that Abhyanker's marker-locking feature is an example of Abhyanker's additional verifications. As explained in Section VII.B.2, Abhyanker does not teach that the additional verifications enable the user to confirm the user's prior designation of the location of a building roof structure (or, in the language of 17d, “signal[], by the user, user-acceptance of the building roof structure location within the first image”). And as explained in Section

VII.B.3, Abhyanker’s marker-locking feature allows a user to claim a “wiki profile,” it does not enable the user to confirm the designation of the building roof structure location.

C. Petitioner and Mr. Cummings applied the wrong level of ordinary skill in the art.

84. Petitioner and Mr. Cummings allege that a POSITA “would have [a] bachelor’s degree in architecture or an equivalent with at least five years of experience performing roof estimation,” with the caveat that “more experience would compensate for less formal education, and vice versa.” Paper 5, Petition, p. 2; EX1003, Cummings Decl., ¶7. Mr. Cummings testified that his opinion was based solely on his “experience as an architect and, then, as an estimator,” EX2032, Cummings Dep. Tr., 34:19-36:5, which fails to account for critical factors such as the ’800 patent itself, the asserted references, and the general state of the art in the technology of the ’800 patent.

85. As I discussed in Section V.B above, a person of ordinary skill in the art (“POSITA”) of the ’800 patent would have had a bachelor’s degree in an academic area emphasizing the design of electrical, computer, or software technologies, or a similar discipline, and at least two years of experience related to computerized image analysis and three-dimensional modeling. In forming my opinion, I applied the factors for evaluating the level of ordinary skill in the art under the required legal framework based on the ’800 patent, the alleged prior art,

and my background and experience. As I mentioned, formal education and/or hands-on experience developing computer-implemented technologies are a necessary qualification of a POSITA of the '800 patent.

VIII. GROUNDS 1-2: DEPENDENT CLAIMS 9 AND 14 WOULD NOT HAVE BEEN OBVIOUS.

86. Claim 9 depends on claim 2, both of which are reproduced below:

2. The process of claim 1, further comprising providing visual access to one or more outline drawing corresponding to the roof structure of the building.

EX1001, '800 patent, 14:30-32.

9. The process of claim 2, further comprising, providing visual access to a **nadir** image from an imagery database corresponding to location coordinates of the building roof structure location, and wherein the outline drawing is super-imposed on the nadir image.

EX1001, '800 patent, 14:52-56 (emphasis added).

87. Claim 14 depends on claim 12, which recite substantially the same elements as claims 2 and 9. EX1001, '800 patent, 15:19-23, 15:28-16:3.

88. The '800 patent defines "outline drawing": "The term 'outline drawing' means drawing of lines around an outline." EX1001, '800 patent, 4:15-16. Mr. Cummings testified that an outline drawing of a roof would include all of the outer edges of the roof structure. EX2032, Cummings Dep. Tr., 44:11-15:3 ("If it's an outline drawing, it would have to include all of the outer edges."). I agree

that an outline drawing would include all of the outer edges of the roof structure.

89. In **Ground 1**, Petitioner alleges that the “scale marker” described in paragraph 32 of Pershing ’789 is the outline drawing of claim 9. Paper 5, Petition, p. 57 (“This ‘scale marker’ depicting ‘physical length’ between pixels constitutes an outline drawing that is super-imposed on the nadir image.”); EX1003, Cummings Decl., ¶98. To address claim 14, Petitioner merely refers back to claim 9. Paper 5, Petition, 61; EX1003, Cummings Decl., ¶111.

90. Pershing ’789’s scale marker is not an “outline drawing.” Pershing ’789 discloses, “During calibration, the distance in pixels between two points on the image is converted into a physical length. This calibration information is typically presented as a scale marker on the image itself, or as additional information supplied by the image database provider along with the requested image.” EX1004, Pershing ’789, ¶32. A POSITA would have understood that Pershing ’789’s scale marker simply indicates the scale of the physical length shown in the image so that a person viewing the image can understand the proportions of the object shown in the image. EX2033, RSMeans Illustrated Construction Dictionary, 477. Accordingly, Pershing-789 fails to teach the “outline drawing” of claims 9 and 14.

91. In **Ground 2**, Petitioner and Mr. Cummings allege that Pictometry’s disclosure of various tools for measuring certain attributes, such as distance, square

footage, angles, etc., in an image “expressly teaches superimposing drawings on a nadir image.” Paper 5, Petition, pp. 63-64; EX1003, Cummings Decl., ¶121.

Petitioner then concludes that “a POSITA would have been motivated to use an ‘outline drawing is superimposed on the nadir image’ in Pershing-789’s system based on the teachings of Bailey.” Paper 5, Petition, p. 64; EX1003, Cummings Decl., ¶121.

92. I disagree. As Mr. Cummings testified, an outline drawing of a roof would include all of the outer edges of the roof structure. EX2032, Cummings Dep. Tr., 44:11-45:3 (“If it’s an outline drawing, it would have to include all of the outer edges.”). Although Pictometry’s measuring tools allow a user to make certain measurements of objects in an image, Pictometry does not teach or suggests providing or superimposing an outline drawing on any user desired roof structure and in different views. Petitioner’s and Mr. Cummings’s interpretation extends Pictometry far beyond what it would have taught or fairly suggested to a POSITA.

IX. GROUND 3: DEPENDENT CLAIM 2 WOULD NOT HAVE BEEN OBVIOUS.

93. In Ground 3, Petitioner and Mr. Cummings allege that Kennedy discloses the features of claim 2, which recites: “The process of claim 1, further comprising providing visual access to one or more **outline drawing** corresponding to the roof structure of the building.” (Emphasis added.) I disagree. Petitioner alleges that use of Kennedy’s sizing tool teaches the claimed outline drawing.

Paper 5, Petition, p. 75. Similar to the discussion of claims 9 and 14 above, Kennedy merely discloses that the sizing tool enables the user to make measurements on an object in an image. EX1009, Kennedy, ¶¶58, 109-110. An outline drawing of a roof structure, by contrast, is a drawing that would include all of the outer edges of the roof structure. EX1001, '800 patent, 4:15-16; EX2032, Cummings Dep. Tr., 44:11-45:3 (“If it’s an outline drawing, it would have to include all of the outer edges.”). A POSITA therefore would not have understood Kennedy’s sizing tool to be (or to enable a user to create) an outline drawing of a roof structure.

X. CONCLUSION

94. In signing this declaration, I recognize that the declaration will be filed as evidence in an *inter partes* review before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

95. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on this 27th day of November, 2023, in Austin, Texas.



Chandrajit Bajaj, Ph.D.