UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

MEMORYWEB, LLC,
Patent Owner.

Case No. IPR2022-00031
U.S. Patent No. 10,621,228

DECLARATION OF DR. LOREN TERVEEN REGARDING U.S. PATENT NO. 10,621,228

I do hereby declare and state, 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, under Section 1001 of Title 18 of the United States Code.

Dated: 10/30/2021

/Loren Terveen/

Dr. Loren Terveen

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EXHIBITS CONSIDERED

No.	Exhibit Description
1001	U.S. Patent No. 10,621,228
1002	File History of U.S. Patent No. 10,621,228
1003	Declaration of Dr. Loren Terveen regarding U.S. Patent No. 10,621,228
1004	CV of Dr. Loren Terveen
1005	Aperture 3 User Manual, Apple Inc. (Feb. 2010) ("A3UM")
1006	U.S. Patent App. Pub. No. 2010/0058212 A1 to Belitz et al. ("Belitz")
1007	U.S. Patent No. 9,612,126 to Beletski et al.
1010	U.S. Patent No. 9,098,531 ("'531 patent")
1011	U.S. Patent No. 9,552,376 ("'376 patent")
1012	U.S. Patent No. 10,423,658 ("'658 patent")
1014	U.S. Patent No. 11,017,020 ("'020 patent")
1015	File History of U.S. Patent No. 9,098,531
1016	File History of U.S. Patent No. 9,552,376
1017	File History of U.S. Patent No. 10,423,658
1019	File History of U.S. Patent No. 11,017,020
1020	Declaration of Matthew Birdsell
1021	Apple Inc., www.apple.com (various) (Archive.org: Feb. 17 to Mar. 5, 2010)
1022	Standard Affidavit, Internet Archive (Oct. 8, 2021), available at https://archive.org/legal/affidavit.php
1028	U.S. Patent App. Pub. No. 2011/0074811 A1 to Hanson et al.
1029	*Top 11 Technologies of the Decade*, IEEE Spectrum, pp. 27-63 (Jan. 2011)
1030	Wikipedia Entry for "Photo sharing" (Archive.org: May 6, 2011), available at https://web.archive.org/web/20110506092919/http:/en.wikipedia.org/wiki/Photo_sharing

No.	Exhibit Description
1031	Wikipedia Entry for "Image organizer" (Archive.org: Apr. 27, 2010), available at https://web.archive.org/web/20100427092553/ https:/en.wikipedia.org/wiki/Image_organizer
1032	Todd Bogdan, "*Announcing Picasa 3.5, now with name tags, better geotagging and more*," The Official Google Blog (Sept. 22, 2009) (Archive.org: Nov. 11, 2009), available at https://web.archive.org/web/20091103113337/ http://googlephotos.blogspot.com/2009/09/announcing-picasa-35-now-with-name-tags.html
1033	Stephen Shankland, "*What's the best Web site for geotagged photos?*," CNET (Mar. 18, 2009), available at https://www.cnet.com/tech/computing/whats-the-best-web-site-for-geotagged-photos/
1034	Panoramio, "*Embedding a Panoramio map into your web page*" (Archive.org: Mar. 28, 2010), available at https://web.archive.org/web/20100328215828/ http://www.panoramio.com/help/embedding
1035	Shu-Wai Chow, *PHP Web 2.0 Mashup Projects*, Packt Publishing (2007)
1036	Exchangeable image file format for digital still cameras: Exif Version 2.2, JEITA CP-3451 (Apr. 2002), available at https://www.exif.org/Exif2-2.PDF.
1037	Information Interchange Model Version 4, IPTC-NAA (July 1999)
1038	Guidelines for Handling Image Metadata v. 1.0, Metadata Working Group (Sept. 2008), available at https://web.archive.org/web/20090206012835/ http:/metadataworkinggroup.org/pdf/mwg_guidance.pdf.
1039	iPhoto '09 Review (Archive org.: May 26, 2009), available at https://web.archive.org/web/20090901000000*/http://www.killersites.com/magazine/2009/iphoto-09-review/
1040	Google Code, Google Maps API Reference (Archive.org: Feb. 23, 2010), available at: http://code.google.com/apis/maps/documentation/reference.html

No.	Exhibit Description
1043	Flickr, Tour: Maps (Archive.org: Feb. 9, 2010), available at http://www.flickr.com/tour/maps
1047	Apple Inc., *Mac OS X v10.6.3 Update* (Mar. 29, 2010) (Archive.org Apr. 11, 2010), available at https://web.archive.org/web/20100411001846/ https://support.apple.com/kb/dl1018.
1048	Apple Inc., Apple Releases Aperture 3 (Feb. 9, 2010) (Archive.org May 20, 2010), available at https://web.archive.org/web/20100520085140/ https://www.apple.com/pr/library/2010/02/0.
1049	U.S. Patent App. Pub. No. 2007/0030391 A1 to Kim et al.
1050	U.S. Patent No. 7,978,936 B1 to Casillas et al.
1051	Apple Inc., *Exploring Aperture 3* (2010), available at https://manuals.info.apple.com/MANUALS/1000/ MA1522/en_US/ Exploring_Aperture_3.pdf.
1052	Sept. 17, 2021 eBay Order Confirmation for "Apple Aperture 3 Academic Software DVD With Serial Code"
1055	Apple Inc., http://documentation.apple.com /en/aperture/usermanual/ HTML Source File (Archive.org Feb. 17, 2010), available at view-source:https://web.archive.org/ web/20100217035925/http://documentation.apple.com/en/aperture/user manual/

I. INTRODUCTION

1. I have been retained on behalf of Petitioners to offer opinions regarding the invalidity, novelty, application of prior art, obviousness considerations, and understanding of a person of ordinary skill in the art in the industry as it relates to U.S. Patent No. 10,621,228 ("'228 patent") (EX1001), which is entitled "Method and Apparatus for Managing Digital Files."

A. Background and Qualifications

2. As indicated in my curriculum vitae ("CV"), EX1004, I am a professor in the Department of Computer Science and Engineering at the University of Minnesota. I received a B.A. in Computer Science, Mathematics, and History from the University of South Dakota in 1984, a M.S. in Computer Science from the University of Texas in 1988, and a Ph.D. from the University of Texas in Computer Science in 1991. My dissertation demonstrated and evaluated the application of Artificial Intelligence methods to produce more natural and effective interaction between users and computers.

3. I am a member of the Association for Computing Machinery (ACM), the oldest, largest, and most prestigious computing society in the world. From 2015-2018, I was the President of ACM's Special Interest Group on Computer-Human Interaction (SIGCHI), one of its largest and most active special interest groups. I also have been a member of the ACM Council, the highest governing

body of the ACM. I received the ACM Distinguished Scientist Award in 2009, and was inducted into the ACM SIGCHI Academy in 2019.

4. My research and teaching focus on human-computer interaction, user interface design, and social computing. I have several decades of experience in these specialties of computer science in both industry and academia. I worked for AT&T Laboratories from 1991 through 2002, during which time I conducted research and developed systems that solved problems in software engineering, information management, web information seeking and organization, and recommender systems. In all my research, I designed, implemented, and tested graphical user interfaces.

5. For example, I led multiple projects that involved collecting information from the World Wide Web; storing it on a server that I maintained; analyzing it to extract aggregate patterns, such as the most important information resources for a topic, including text documents, audio, image, and video files; and designing web-based graphical interfaces that gave users access to the aggregated information. As another example, I have researched geographically-based online communities and helped create novel open content systems to support geographically-based communities of interest.

6. I am a named inventor on 10 patents, including, for example, U.S. Patent Nos. 5,659,724, 5,806,060, 6,029,192, and 6,256,648. U.S. Patent No.

5,659,724 (entitled "Interactive data analysis apparatus employing a knowledge base") and U.S. Patent No. 5,806,060 (entitled "Interactive data analysis employing a knowledge base") described inventions to use a knowledge representation framework to create a graphical user interface that improved access to conventional databases. U.S. Patent No. 6,029,192 (entitled "System and Method for Locating Resources on a Network Using Resource Evaluations Derived from Electronic Messages") and U.S. Patent No. 6,256,648 (entitled "System and Method for Selecting and Displaying Hyperlinked Information Resources") described inventions for collecting, aggregating, and analyzing information from the World Wide Web and creating graphical interfaces for making the aggregated information available to users.

7. I have been an expert witness in multiple cases involving graphical user interface and have analyzed various products and patents. I have been retained on behalf of companies including Apple, Microsoft, Netflix, Roku, LG Electronics, and VIZIO. I have written multiple expert reports on these topics, been deposed seven times, and testified in court. Specific cases include: (i) *Motorola Mobility v. Microsoft*, No. 1:10-cv-24063 (S.D. Fla.); (ii) *In Re Certain Products Containing Interactive Program Guide and Parental Control Technology*, No. 337-TA-845 (USITC); and (iii) *Netflix, Inc. v. Rovi Corp.*, No. 4:11-cv-06591 (N.D. Cal.).

8. I have been employed full-time as a professor in the Department of Computer Science & Engineering at the University of Minnesota since 2002; my current title is Distinguished McKnight University Professor. I teach classes in computer science, human-computer interaction and social computing, and have conducted, supervised, and published research in the field. My research has been published in numerous journal and conference papers, as well as in a book I co-authored entitled "Foundational Issues in Artificial Intelligence and Cognitive Science: Impasse and Solution."

9. During my time at the University of Minnesota, I have led multiple projects involving location- and map-based systems and user interfaces. Some example publications based on this work include: Ludford, Pamela J., Dan Frankowski, Ken Reily, Kurt Wilms, and Loren Terveen, "*Because I carry my cell phone anyway: functional location-based reminder applications*," Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (2006); Zhou, Changqing, Dan Frankowski, Pamela Ludford, Shashi Shekhar, and Loren Terveen, "*Discovering personally meaningful places: An interactive clustering approach*," ACM Transactions on Information Systems (TOIS) 25, no. 3 (2007); Ludford, Pamela J., Reid Priedhorsky, Ken Reily, and Loren Terveen, "*Capturing, sharing, and using local place information*," Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, pp. 1235-1244 (2007);

Priedhorsky, Reid, and Loren Terveen, "*The Computational Geowiki: What, Why, and How*," Proceedings of the 2008 ACM Conference on Computer Supported Cooperative Work, pp. 267-276 (2008).

10. I have served on the editorial board of ACM's Transactions on Human-Computer Interaction and the Communications of the ACM, have led and served on the Program Committees for all the leading conferences in my research fields, and have served as a reviewer for numerous journals, including ACM Computing Surveys, IEEE Transactions on Data and Knowledge Engineering, the International Journal of Human-Computer Studies, and the Journal of Computer-Supported Cooperative Work.

B. Compensation

11. I am being compensated for my time at the rate of $600 per hour for my work in connection with this matter. I am being reimbursed for reasonable and customary expenses associated with my work in this investigation. This compensation is not dependent in any way on the contents of this Declaration, the substance of any further opinions or testimony that I may provide or the ultimate outcome of this matter.

C. Information Considered

12. My opinions are based on my years of education, research, and experience, as well as my investigation and study of relevant materials. In forming

my opinions, I have considered the materials I identify in this report and those listed in the attached Exhibit List.

13. I may rely upon these materials and/or additional materials to respond to arguments raised by MemoryWeb. I may also consider additional documents and information in forming any necessary opinions, including documents that may not yet have been provided to me.

14. My analysis of the materials produced in this investigation is ongoing, and I will continue to review any new material as it is provided. This declaration represents only those opinions I have formed to date. I reserve the right to revise, supplement, and/or amend my opinions stated herein based on new information and on my continuing analysis of the materials already provided.

II. LEGAL STANDARDS FOR PATENTABILITY

15. I have relied upon various legal principles in formulating my opinions. My understanding of these principles is summarized below.

16. I understand that a patent claim defines the metes and bounds of an alleged invention. I understand that for an invention claimed in a patent to be found patentable, it must be, among other things, new and not obvious from what was known before the invention was made.

17. I understand that the effective filing date of the claimed invention is the actual filing date of the claims, unless the applicant claims priority to an earlier

filed application that supports the claimed subject matter in the manner required by 35 U.S.C. § 112. I understand that this section requires the patent's specification to contain a sufficient written description of the claimed invention to demonstrate that the applicant actually possessed the invention as of the filing date as broadly as it is claimed. In considering whether this written description requirement is met, I understand that I should consider the written description from the viewpoint of a person of ordinary skill in the art. I also understand that I should consider whether this person of ordinary skill would have recognized that the written description describes the full scope of the claimed invention and that the inventor actually possessed that full scope as of the claimed effective filing date.

18. I understand the information that is used to evaluate whether an invention is new and not obvious is generally referred to as "prior art" and can include patents and printed publications. I also understand that a patent will be prior art if it was filed before the earliest effective filing date of the claimed invention, while a printed publication will be prior art if it was publicly available before that date. I understand that in this proceeding, the information that may be evaluated to show unpatentability is limited to patents and printed publications.

19. I understand that in this proceeding Petitioners have the burden of proving that the challenged claims are unpatentable over the prior art by a preponderance of the evidence. I understand that "a preponderance of the

evidence" is evidence sufficient to show that a fact is more likely true than it is not. I understand that there are two ways in which prior art may render a patent claim unpatentable. First, the prior art can be shown to "anticipate" the claim. Second, the prior art can be shown to have made the claim "obvious" to a person of ordinary skill in the art ("POSA").

A. Anticipation

20. I understand that, for a patent claim to be "anticipated" by the prior art, each and every requirement of the claim must be found, expressly or inherently, in a single prior art reference as recited in the claim.

21. I understand that claim limitations that are not expressly described in a prior art reference may still be there if they are "inherent" to the thing or process being described in the prior art.

22. I understand that it can be acceptable to consider evidence other than the information in a particular prior art document to determine if a feature is necessarily present in or inherently described by that document. For example, an indication in a prior art reference that a particular process complies with a published standard would indicate that the process must inherently perform certain steps or use certain data structures that are necessary to comply with the published standard.

23. I understand that if a reference incorporates other documents by reference, the incorporating reference and the incorporated reference(s) should be treated as a single prior art reference for purposes of analyzing anticipation.

24. I understand that to be anticipatory, a reference must not only explicitly or inherently disclose every claimed feature, but those features must also be "arranged as in the claim." Differences between the prior art reference and a claimed invention, however slight, invoke the question of obviousness, not anticipation.

B. Obviousness

25. I understand that a claimed invention is not patentable if it would have been obvious to a person of ordinary skill in the field of the invention at the time the invention was made. I understand that the obviousness standard is defined in the patent statute (35 U.S.C. § 103(a)) as follows:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if 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 to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

26. I understand that the following standards govern the determination of whether a claim in a patent is obvious. I have applied these standards in my evaluation of whether the asserted claims of the patent at issue here would have been considered obvious as of the relevant priority date.

27. I understand that the obviousness inquiry should not be done based on hindsight, but must be done using the perspective of a person of ordinary skill in the relevant art as of the priority date of the patent claim.

28. I understand that in determining whether a patent claim is obvious, one must consider the following four factors: (i) the scope and content of the prior art, (ii) the differences between the prior art and the claims at issue, (iii) the knowledge of a person of ordinary skill in the pertinent art; and (iv) objective factors indicating obviousness or non-obviousness, if present (such as commercial success or industry praise).

29. I understand the objective factors indicating obviousness or non-obviousness may include: commercial success of products covered by the patent claims; a long-felt need for the invention; failed attempts by others to make the invention; copying of the invention by others in the field; unexpected results achieved by the invention; praise of the invention by those in the field; the taking of licenses under the patent by others; expressions of surprise by experts and those skilled in the art at the making of the invention; and the patentee proceeded

contrary to the accepted wisdom of the prior art. I also understand that any of this evidence must be specifically connected to the invention rather than being associated with the prior art or with marketing or other efforts to promote an invention. I am not presently aware of any evidence of "objective factors" suggesting the claimed methods are not obvious, and reserve my right to address any such evidence if it is identified in the future.

30. I understand the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. I also understand that an example of a solution in one field of endeavor may make that solution obvious in another related field. I also understand that market demands or design considerations may prompt variations of a prior art system or process, either in the same field or a different one, and that these variations will ordinarily be considered obvious variations of what has been described in the prior art.

31. I also understand that if a person of ordinary skill can implement a predictable variation, that variation would have been considered obvious. I understand that for similar reasons, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using that technique to improve the other

device would have been obvious unless its actual application yields unexpected results or challenges in implementation.

32. I understand that the obviousness analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, but instead can take account of the "ordinary innovation" and experimentation that does no more than yield predictable results, which are inferences and creative steps that a person of ordinary skill in the art would employ.

33. I understand that sometimes it will be necessary to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art. I understand that all these issues may be considered to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

34. I understand that the obviousness analysis cannot be confined by a formalistic conception of the words "teaching, suggestion, and motivation." I understand that in 2007, the Supreme Court issued its decision in *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), where the Court rejected the previous requirement of a "teaching, suggestion, or motivation to combine" known elements of prior art for purposes of an obviousness analysis as a precondition for finding obviousness. It is my understanding that KSR confirms that any motivation that

would have been known to a person of skill in the art, including common sense, or derived from the nature of the problem to be solved, is sufficient to explain why references would have been combined.

35. I understand that a person of ordinary skill attempting to solve a problem will not be led only to those elements of prior art designed to solve the same problem. I understand that under the KSR standard, steps suggested by common sense are important and should be considered. Common sense teaches that familiar items may have obvious uses beyond the particular application being described in a reference, that if something can be done once it is obvious to do it multiple times, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. As such, the prior art considered can be directed to any need or problem known in the field of endeavor as of the effective filing date and can provide a reason for combining the elements of the prior art in the manner claimed. In other words, the prior art does not need to be directed towards solving the same problem that is addressed in the patent. Further, the individual prior art references themselves need not all be directed towards solving the same problem.

36. I understand that an invention that might be considered an obvious variation or modification of the prior art may be considered non-obvious if one or more prior art references discourages or lead away from the line of inquiry

disclosed in the reference(s). A reference does not "teach away" from an invention simply because the reference suggests that another embodiment of the invention is better or preferred. My understanding of the doctrine of teaching away requires a clear indication that the combination should not be attempted (*e.g.*, because it would not work or explicit statements saying the combination should not be made).

37. I understand that a person of ordinary skill is also a person of ordinary creativity.

38. I further understand that in many fields, it may be that there is little discussion of obvious techniques or combination, and it often may be the case that market demand, rather than scientific literature or knowledge, will drive design trends. When there is such a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within their technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious. The fact that a particular combination of prior art elements was "obvious to try" may indicate that the combination was obvious even if no one attempted the combination. If the combination was obvious to try (regardless of whether it was actually tried) or

leads to anticipated success, then it is likely the result of ordinary skill and common sense rather than innovation.

III. BACKGROUND OF THE ’228 PATENT

A. Priority Date

39. I understand that the earliest filing date to which ’228 Patent has claimed priority to is June 9, 2011.

40. I also understand that Patent Owner has indicated in a related litigation that claims 1-9, 12, 14-15, and 17-19 of the ’228 patent are entitled to a priority date of February 28, 2014. My opinions would remain the same when applying this date because, for example, if the challenged claims would have been unpatentable by June 9, 2011, then they certainly would have been unpatentable by February 28, 2014.

B. Level of Ordinary Skill and the Date Used for Measuring the State of the Art

41. I have been instructed that the claims of a patent are to be reviewed from the point of view of a hypothetical person of ordinary skill in the art most closely related to the subject matter of the patent at the time of the patent’s priority date. My opinions are therefore provided using the perspective of a person of ordinary skill in the art in early June of 2011 (*i.e.*, before June 9, 2011).

42. Based on my experience, I believe that a person of ordinary skill in the art in the field of the ’228 patent in early June of 2011 would have had (1) at

least a bachelor's degree in computer science, computer engineering, or electrical engineering, and (2) at least one year of experience designing graphical user interfaces for applications such as photo management systems.

43. As an expert in the field of graphical user interfaces since prior to 2011, I am qualified to provide an opinion as to what a person of ordinary skill in the art would have understood, known, or concluded as of 2011.

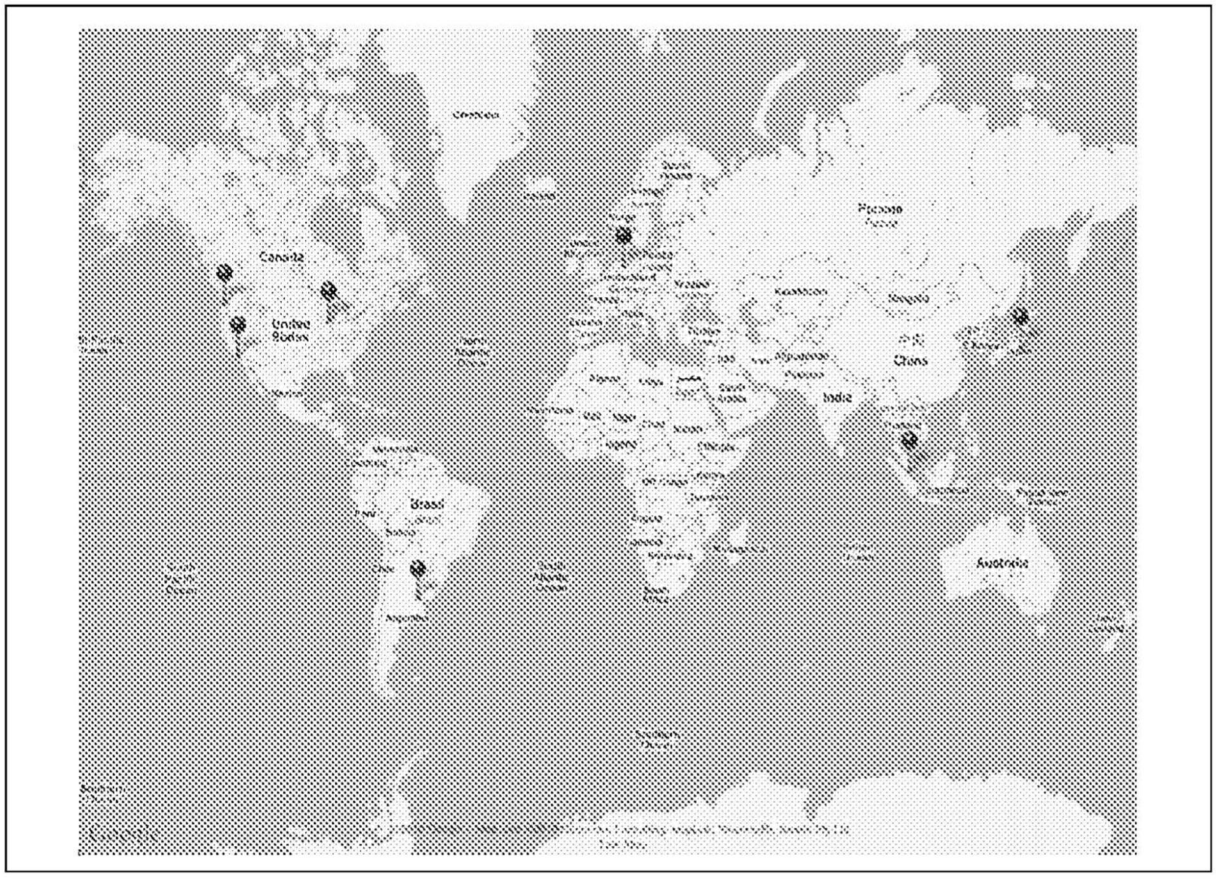
C. Overview of the '228 Patent

44. The '228 patent is entitled a "method and apparatus for managing digital files," and "relates generally to the management of digital files and, more particularly, to a computer-implemented system and method for managing and using digital files such as digital photographs." EX1001, Face, 1:21-24. The '228 patent explains that "[w]hat is needed to complement the widespread availability of digital files is a medium that allows people to organize, view, preserve and share these files …." EX1001, 1:61-67.

45. The '228 patent discloses a "web-based digital file storage system" including a "digital file repository for storing and retrieving digital files, such as photos, a digital tagging system configured to assign digital tags to the digital files, a sorting system, and a user interface." EX1001, 4:36-42. The '228 patent discloses "multiple views from which a user can display his or her digital media files and their tagged attributes." EX1001, 5:58-6:7.

46. One example of a view is in Figure 5, which depicts a Google Map with pins placed at various locations on it. EX1001, Fig. 5. The ’228 patent states that Figure 5 “is a screenshot of a location view of one embodiment of the disclosed system,” and that “[a] location view, as shown in Fig. 5, identifies within an interactive map (Google map shown as an example), where digital files were taken or originated.” EX1001, 6:18-20.

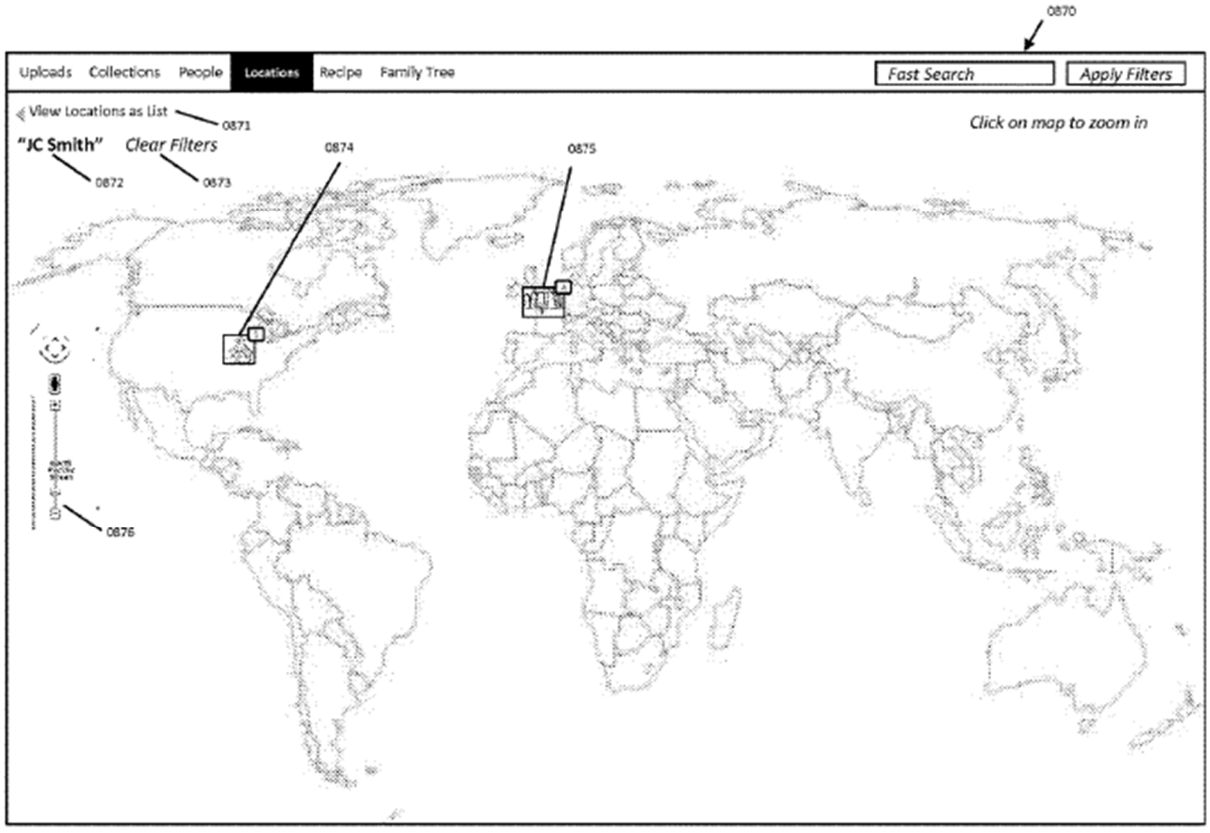
FIG. 5



EX1001, Fig. 5.

47. Another example of a "location" view is shown in Figure 41, which illustrates an interactive map (a Google Map) containing two different locations on a map. EX1001, 4:7-8 ("Fig. 41 is a screenshot of the Single Application Dot-Tag filter in Location Application View); 29:41-57 ("In FIG. 41, an illustration of the results for a Single Application Dot-Tag Filter in the Location Application View is depicted (0870). Within the Location Application View the Digital Files are displayed within an interactive map (Google map shown as an example).") A user can select an image thumbnail on the map to view digital files having that location. EX1001, 29:41-57.

FIG. 41

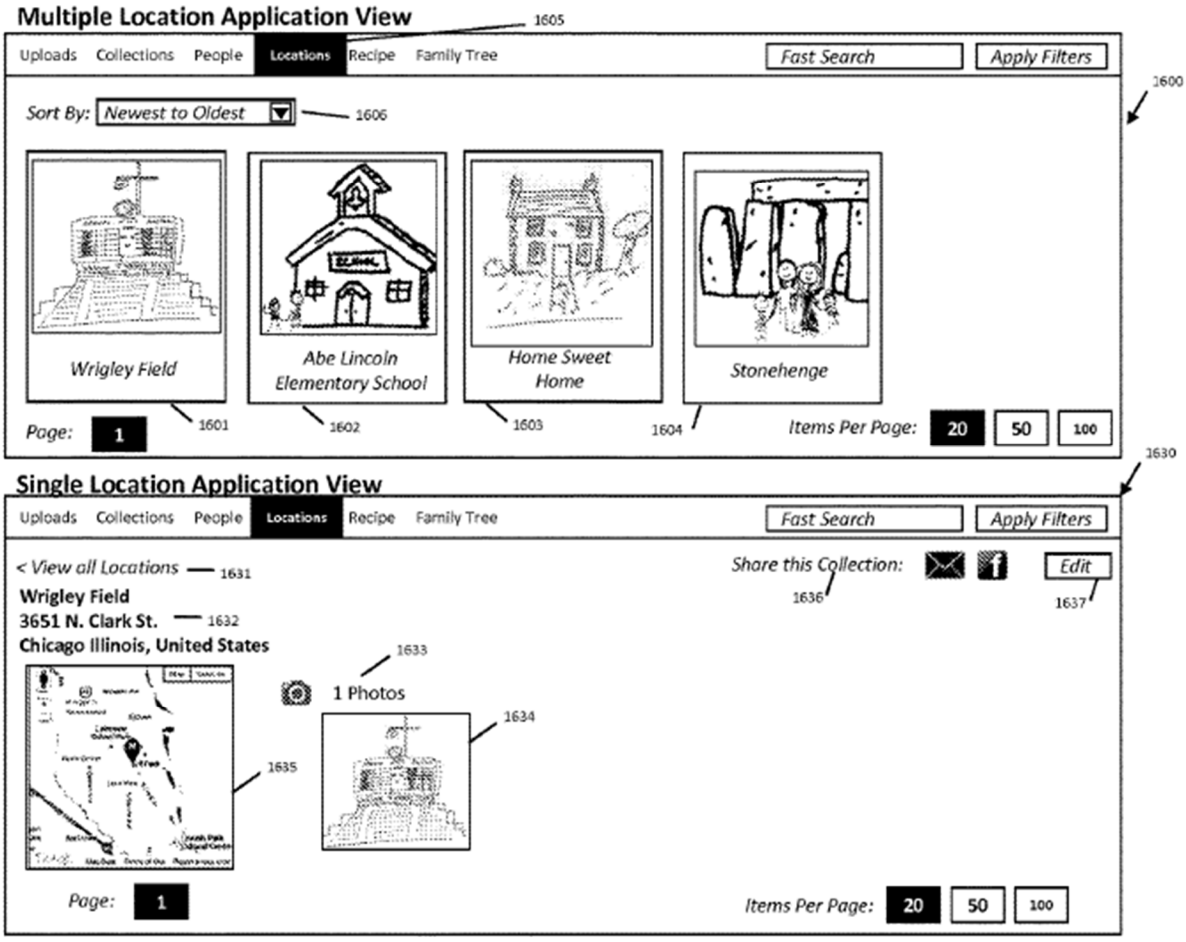


EX1001, Fig. 41.

48. I note that the primary difference between the Figure 5 and Figure 41 "location" views is the form of the marker used on the Google map—Figure uses pins and while Figure 41 uses thumbnails overlaid with numbers. Importantly, in both cases, the user interfaces allow a user to select a map marker to prompt display of photos at the location, and both interfaces can "provide additional outputs such as a journey route that identifies the specific locations for an event or trip that can be customized by users." EX1001, 6:18-23; 29:41-48.

49. By selecting one of the thumbnails in Figure 41, a user is shown a Single Location view as illustrated in Figure 34. EX1001, 24:16-36, 29:48-55.

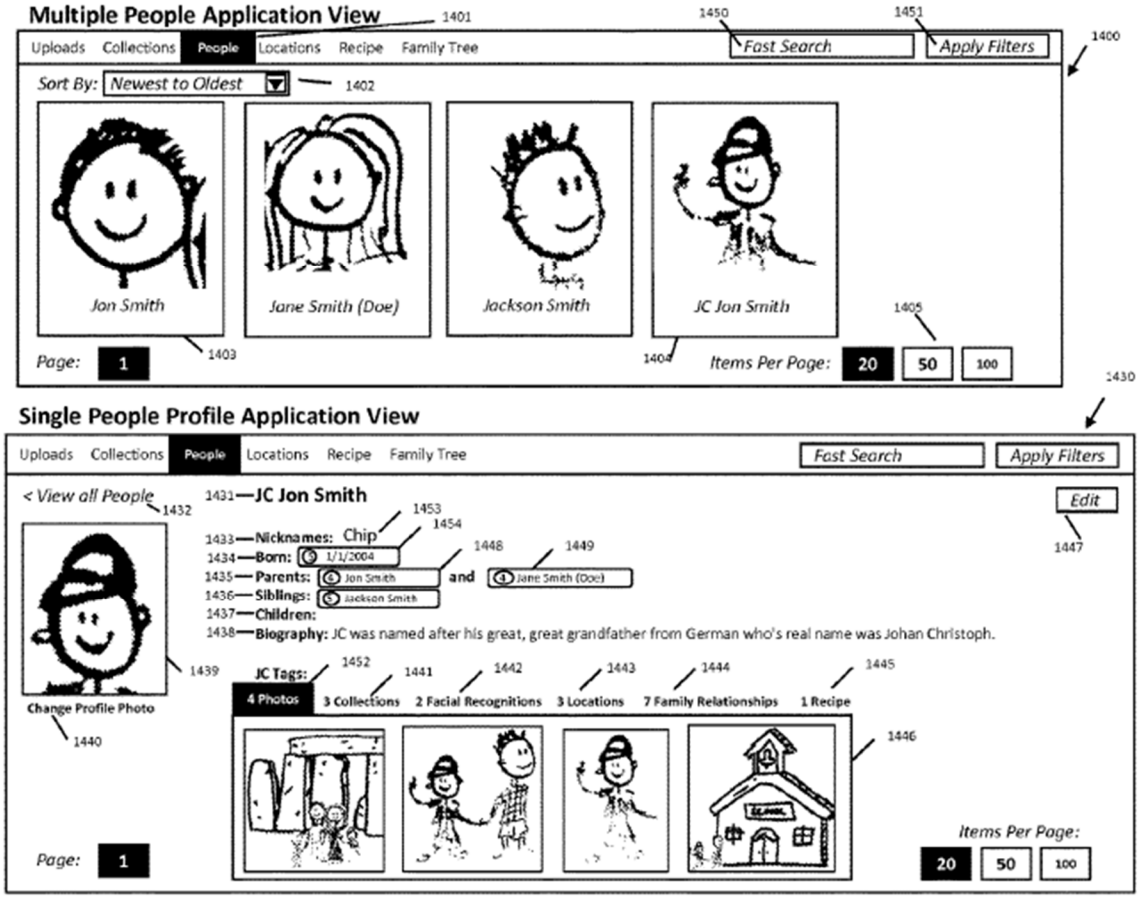
FIG. 34



EX1001, Fig. 34.

50. Another example is shown in Figure 32, which illustrates two related People Application Views. EX1001, 22:59-23:49. The Multiple People Application view displays multiple people represented by thumbnails of their face. EX1001, 22:59-23:11. By selecting one of these thumbnails, the user can view a Single People Profile Application View, which displays thumbnail images of the photos of that person (as well as other people in those same photos). EX1001, 23:12-49.

FIG. 32



EX1001, Fig. 32.

D. Prosecution History of the ’228 Patent

51. I understand that the ’228 patent is part of a family of related patents including U.S. Patent Nos. 9,098,531 (EX1010), 9,552,376 (EX1011), 10,423,658 (EX1012), and 11,017,020 (EX1014). I have reviewed the file histories of the ’228 patent and each of these patents as part of forming the bases of my opinions offered in this declaration. *See* EX1002 (’228 patent’s file history); EX1015 (’531

patent's file history); EX1016 ('376 patent's file history); EX1017 ('658 patent's file history); EX1019 ('020 patent's file history).

52. Based on my review, I did not identify any information in the prosecution histories that is contrary to the opinions I offer in this declaration.

E. Claim Construction

53. I understand that, in this proceeding, the claims are construed according to their ordinary and customary meaning in light of the specification and file history of the patent in which those claims appear.

54. Due to the parallelism between many of the '228 patent's claim limitations and the claims' overall length, I have analyzed certain parallel claim limitations by quoting them in bracketed form, *e.g.*, "*[first/second] location view*." In each such case, and unless stated otherwise, my analysis provides my understanding of how the functionality provided by the prior art satisfies both such "*first*" and "*second*" claim elements through its disclosure of multiple such elements.

IV. OVERVIEW OF THE PRIOR ART

A. Technical Background

55. Digital photography has exploded over the last 40-50 years and had almost universally replaced film photography by early 2011. The first digital photograph was taken in December of 1975 by an engineer at Eastman Kodak Co.

EX1029, 59. By 1989, you could buy a commercial megapixel digital camera for $23,000. EX1029, 60. Over time, digital cameras became cheaper and more capable. EX1029, 60-62.

56. In the early 1990s, several independent factors caused a rapid displacement of film photography by digital photography. These included the release of key standards in the early 1990s like the JPEG image compression standard and the EXIF standard governing metadata (*i.e.*, information about the camera type, picture location, date/time taken, etc.) encoded in digital image files; the growing availability of financially accessible consumer digital cameras in the late 1990s; and the rise of smartphones in the early to mid-2000s. The combined effect of these factors on the photography landscape was dramatic: "'It was like a snowball rolling down a mountain; it gathers more and more snow until it blew away everything in its track.'" EX1029, 62 (quoting an observer); EX1036 (EXIF). Widespread penetration of the smartphone eventually made digital camera capability ubiquitous. For example, by early 2010, easily hundreds of millions of iPhones and Android phones had been sold. The trend also touched existing print photographs, which many consumers chose to digitize and add to their growing libraries of digital photographs.

57. With the increased availability of digital cameras and their ability to take near unlimited photographs for free, users began accumulating large numbers

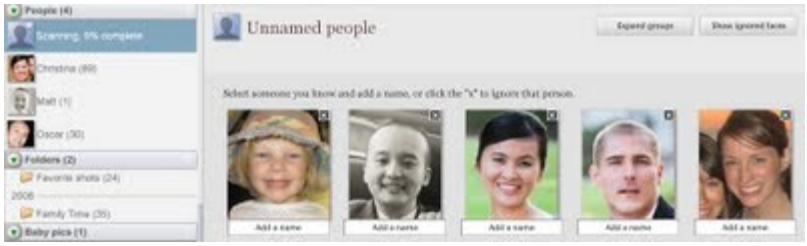
of digital photographs. *See* EX1029, 59 ("Digital images are free and easy and can be instantly distributed. As a result, the vast majority of photos are no longer taken to capture special moments; they're used to communicate the ordinary, with less forethought than a phone call."). As a result, the management of digital photographs became an increasing problem. EX1029, 62 ("The problem is what to do with the images once you've taken them. The scrapbooks and shoeboxes of the film world are being replicated in digital forms, but they're overloaded and becoming impossible to manage.").

58. Several technical standards that governed digital image metadata had been established by early 2010, including: (i) the Exchangeable Image File format ("EXIF"), (ii) the Information Interchange Model ("IIM") (aka "IPTC"), and (iii) the Metadata Working Group Guidelines ("MWGG"). EX1036 (EXIF); 1037 (IPTC); EX1038 (MWGG). MWGG provided the following summary of the value of metadata in managing collections of digital photos and videos:

> Metadata has become a powerful tool to organize and search through the growing libraries of image, audio and video content that users are producing and consuming. This is especially important in the area of digital photography where, despite the increased quality and quantity of sensor elements, it is not currently practical to organize and query images based only on the millions of image pixels. Instead, it is best to use metadata properties that describe what the photo represents and where, when and how the image was taken.

EX1038, 6. MWGG also discussed the key role metadata played "in the consumer workflow," and provided examples of user-defined keywords and location information (such as where a photo was taken or the location of its subject) as important types of metadata for digital files. EX1038, 16-18. The inclusion of standardized metadata in digital images was a key enabler and driver of the core functionalities of photo organizer applications and websites before 2010.

59. By 2010, a wide variety of photo organizer applications had been developed and released to allow users to manage the large number of digital photographs they were accumulating. Photo organizers are application software focused on organizing digital images. *E.g.*, EX1031, 1. Several photo organizer software products were known that had the ability to provide multiple views within the same photo organizer application. For example, by 2009, Google's Picasa application included both a People view, which allowed a user to view pictures of a given person, and a Places view, which allowed a user to view the locations where their pictures were taken. EX1032.

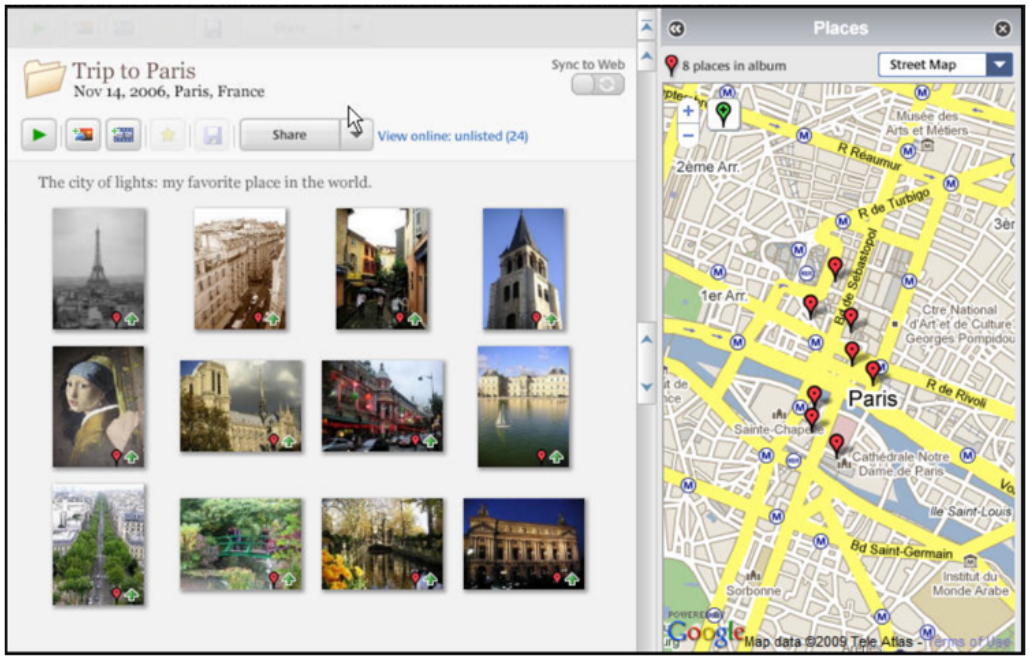


EX1032, 1-2.

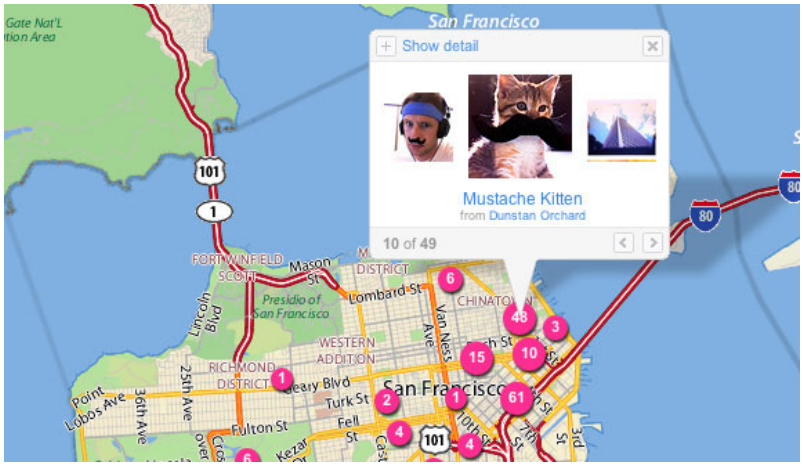
60. Versions of Apple's iPhoto product released after 2009 also provided a similar capability to view pictures having a person in them or pictures linked to a location (*e.g.*, where the photos were taken or using user-entered location data) on an interactive map. EX1039, 1-3.

61. By 2010, established photo sharing, including Flickr, Photobucket, Picasa, Shutterfly, and Wikimedia Commons, allowed users to upload and share their digital photographs. *E.g.*, EX1030, 1, 4. Most photo-sharing websites had functionalities similar to photo-organizing applications, including the ability to classify photos into albums, add annotations or metadata, and display thumbnails and slideshows. *E.g.*, EX1030, 1.

62. By 2010, certain photo-sharing websites included mapping functionality that allowed users to view geocoded photographs on a map. *E.g.*, EX1030, 3. For example, Picasa Web Albums allowed users to browse a map that displayed "thumbnails of a photo album's pictures." EX1032, 2.



Flickr also provided a map-based interface for its site, allowing users to view collections of photos linked to locations on the map.



EX1043, 1.

63. Photo-sharing websites like Flickr included powerful filtering functionality that let users filter by specific users or tags, allowing users to identify photographs more quickly. EX1033, 2 ("For example, you can see a high-level

view of all your geotagged photos, and you can filter that view with parameters such as your photos, your friends' or contacts' photos, anyone's photos, and most important in my opinion, specific tags. That's a handy interface when you are trying to find photos of, say, Yosemite National Park, but you can't remember which of several trips a particular photo is associated with.").

64. The extensive overlap in the features and functionalities found in pre-2011 photo organizer applications and websites shows that developers of photo-organizer applications and photo-sharing services were constantly adopting functionalities, techniques and interface concepts found in peer products. Many of these photo organizers (both applications and websites) also provided rich data services (*e.g.*, Google Maps) within their interfaces by making calls to application programming interfaces (APIs) of publicly accessible network data services. It was similarly common before 2011 for developers of image organizers to incorporate and combine information from multiple services into a single application (*i.e.*, a "mashup"). *E.g.*, EX1035, 7. One common example was to take an existing geotagged data set and display that information using mapping functionality provided by services such as Google Maps.

65. An April 2010 Wikipedia article provided a summary of common features found in photo organizer applications and websites before June 2010.

EX1031, 1-4. The article identifies as "common image organizers features" the following capabilities:

> Common image organizers features [edit]
>
> - Multiple thumbnail previews are viewable on a single screen and printable on a single page. (Contact Sheet)
> - Images can be organized into albums
> - Albums can be organized into collections
> - Adding tags (also known as keywords, categories, labels or flags). Tags can be stored externally, or in industry-standard IPTC or XMP headers inside each image file.[3]
> - Resizing, exporting, e-mailing and printing.

EX1031, 1. By 2010, many of these applications shared several functions that proved useful to consumers in managing metadata-encoded digital photographs and videos including (*see, e.g.*, EX1031):

a. allowing images to be organized into user-defined albums or collections,

b. providing thumbnail previews of images to enable users to quickly browse sets of digital images and select desired images,

c. including industry standard headers inside each image storing both user-defined metadata (*e.g.*, keywords) and standards-based metadata (*e.g.*, date/time of capture, geolocation data, photographic parameters, etc.).

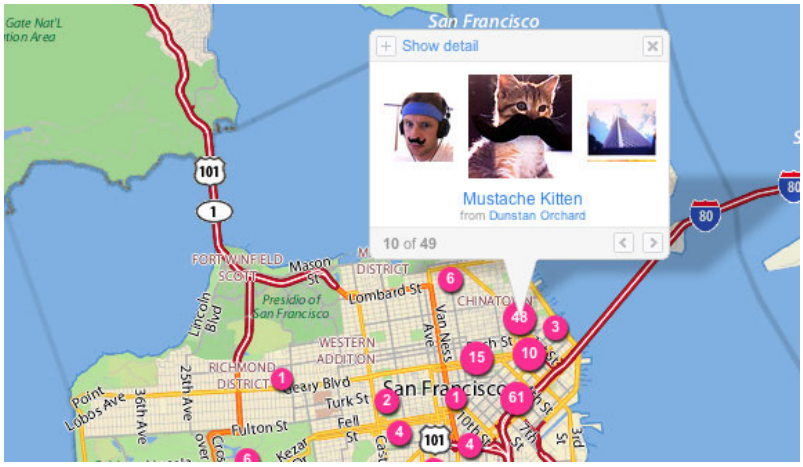
d. grouping or sorting photographs by date, location, or other metadata,

e. providing slideshow functionality, and

f. facial recognition of individuals in images.

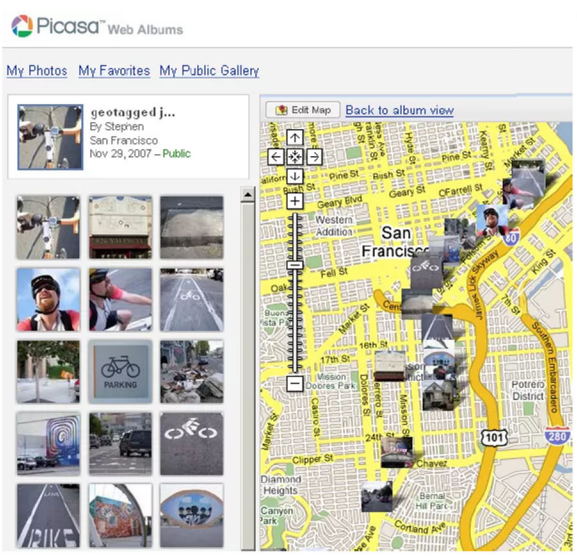
66. It was routine by 2010 for third party developers to incorporate and combine multiple functionalities into a common application based on publicly available application programming interfaces (APIs). For example, third-party developers were provided rich capabilities to extend Google Maps via the official Google Maps API ("GM-API"), which allowed applications to create custom maps for use with their applications. *E.g.*, EX1035, 203-278; EX1040. This included displaying custom map markers. EX1040, 2-11 (describing the central "GMap2" class that is used to create a map), 42-46 (describing the "GMarker" class that is used to create markers on the map; the constructor for this class takes an "icon" parameter which is an instance of the class GIcon, which "specifies the images used to display a GMarker on the map" (EX1040, 40)), 51-52 (describing the "GOverlay" interface that is used to "display custom types of overlay objects on the map"); *e.g.*, EX1035, 239 ("GMarker can take a second parameter, a GMarkerOptions object. This is an object whose sole purpose is to tweak the marker. Using it, you can do things like add your own custom[] icons …."), 243 ("[W]ith the GMarkerOptions object, you can create custom markers."). A developer utilizing the Google Maps API ("GM-API") could create photo collection applications and websites that display an interactive map that placed

interactive map markers at specified locations using simple API calls enabling retrieval and display of photos at those locations:

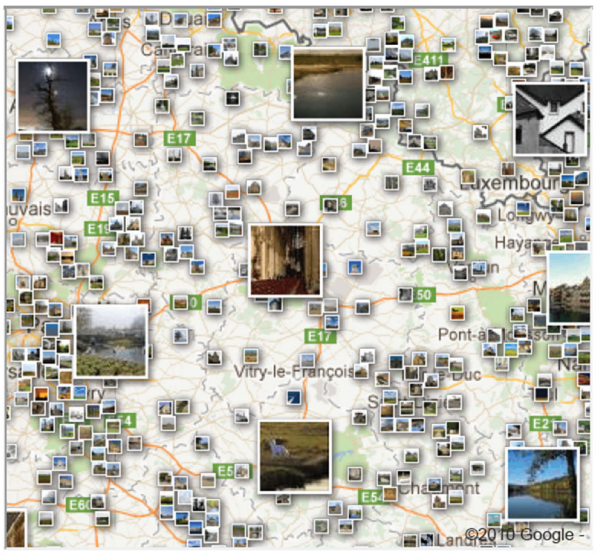


EX1043.

67. Many developers had (before 2011) used the functionality within the Google Maps API to develop solutions beneficial to photo applications, such as displaying small images on the map itself. Google included such functionality in its Picasa Web Albums (EX1033, 2) and Panoramio (EX1034, 1) products, as shown below:



Picasa (2009)



Panoramio (2010)

EX1033, 2 (Picasa); EX1034, 1 (Panoramio).

68. Thus, based on the above evidence relating to the capabilities and knowledge of a skilled artisan would have possessed, they would have found it within their ordinary abilities to develop an interactive map (such as via Google Maps) with locations marked with thumbnails of digital images, and to retrieve and display information linked to those marked locations. These capabilities would have been provided natively by existing mapping applications such as Google Maps, were supported by extensive documentation (described above), and would have been something that a skilled artisan would have had a reasonable expectation of success given the level of skill.

B. Aperture 3 User Manual ("A3UM") (EX1005)

1. Publication of A3UM

69. Evidence I have reviewed indicates to me that the Aperture 3 User Manual ("A3UM") (EX1005) was made publicly accessible to skilled artisans in early 2010 in at least two ways: (i) as documentation included with retail copies of Aperture 3 and (ii) as a webpage compilation on www.apple.com. As such, and for at least these reasons, I understand that A3UM would be prior art to the '228 patent.

70. Some of the evidence I discuss below is from the Internet Archive's Wayback Machine. The Wayback Machine is a widely known and respected archive of the Internet that provides a database of date-stamped copies of old webpages. Researchers and experts such as myself regularly rely on the Wayback Machine to review archived webpages to understand how they looked and operated in the past. Wayback Machine webpages include the date and time of the website capture both in the URL and generally in a header bar on the page (which can optionally be hidden). EX1022 (Archive.org's standard affidavit). Researchers and experts such as myself regularly rely on the accuracy of this date and time information.

a. Retail Copies of Aperture 3

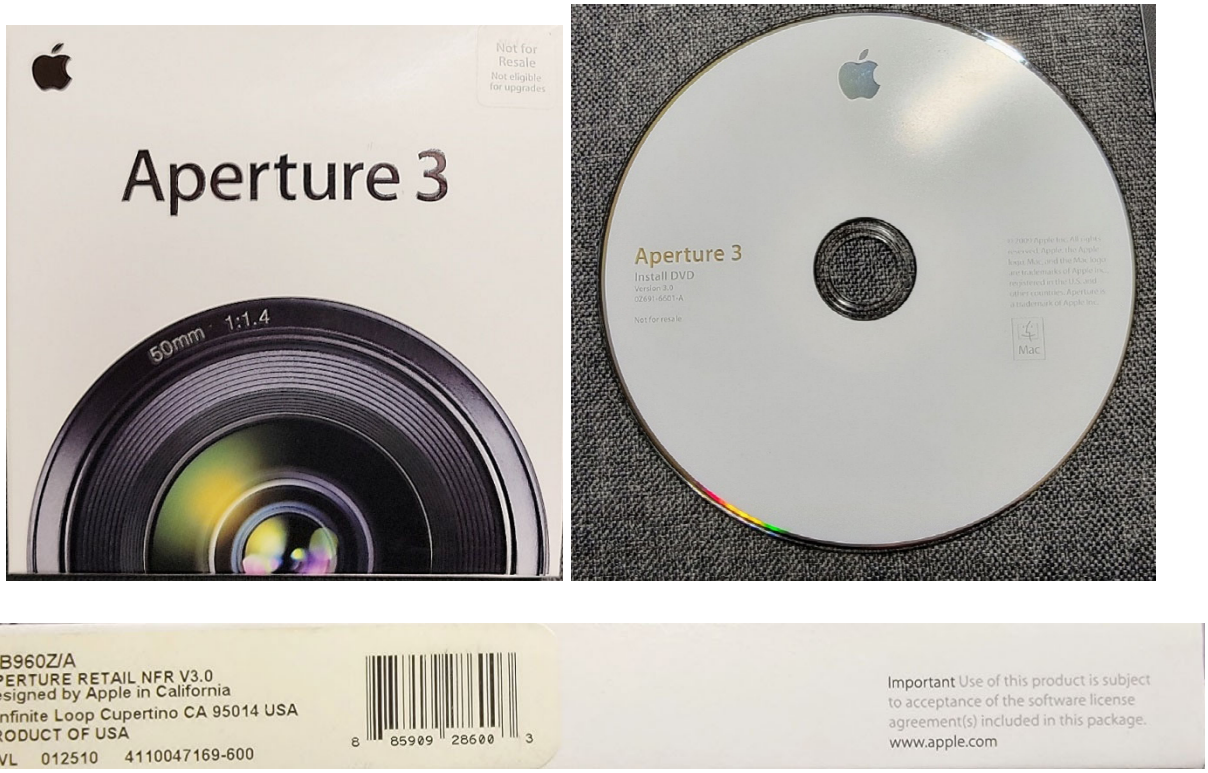
71. Evidence I have reviewed suggests that A3UM was actually disseminated to interested users in early 2010 as documentation included with retail copies of Aperture 3.

72. I understand that Apple began selling Aperture 3.0 to members of the public in February 2010. EX1021, 2 (showing "Buy Now" link for Aperture 3); EX1048 (announcing Aperture 3's release on February 9, 2010).

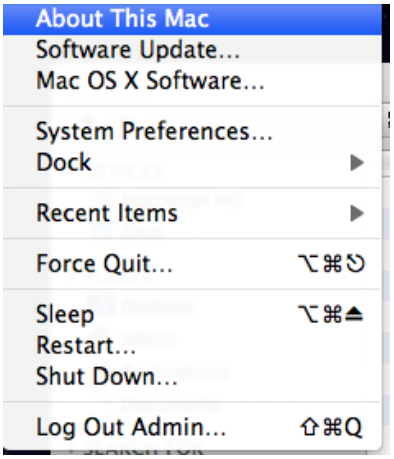
73. As I explain below, I personally installed and reviewed the Aperture 3 User Manual using a retail copy of Aperture 3.0 that was provided to me by Apple. That retail copy of Aperture 3.0 contains in-application Help functionality that describes certain aspects of the Aperture 3.0 software product and its user interface. A3UM (EX1005) is a true and accurate copy of the underlying HTML files containing the Aperture 3 User Manual that is made available to users through the in-application Help functionality of the Aperture 3.0 product.

74. The following pictures are of the top and side of the retail box of Aperture 3 that I received from Apple, as well as of the installation DVD contained within the retail box. I examined the box and the installation DVD and each appeared to be a genuine Apple software product. Additionally, as I discuss below, the software that the installation DVD installed identified itself as Aperture 3, consistent with the retail box and installation DVD. Based on all of the physical

evidence I have reviewed and discuss in this report, the copy of Aperture 3 provided to me by Apple appears to be a genuine copy of Aperture 3.

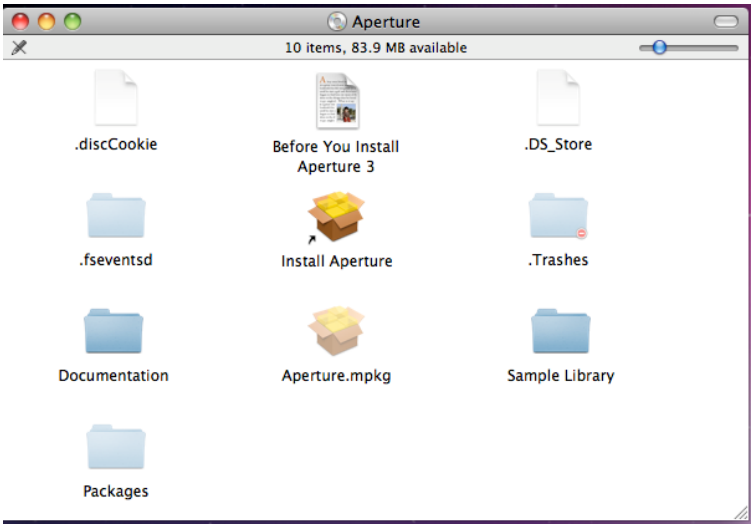


75. I installed Aperture 3 using a Mac laptop operating Mac OS X Software Version 10.6.3. First, I identified the software version of the Mac laptop I was using by selecting "About This Mac" from the Apple menu, as illustrated by the screenshots below:

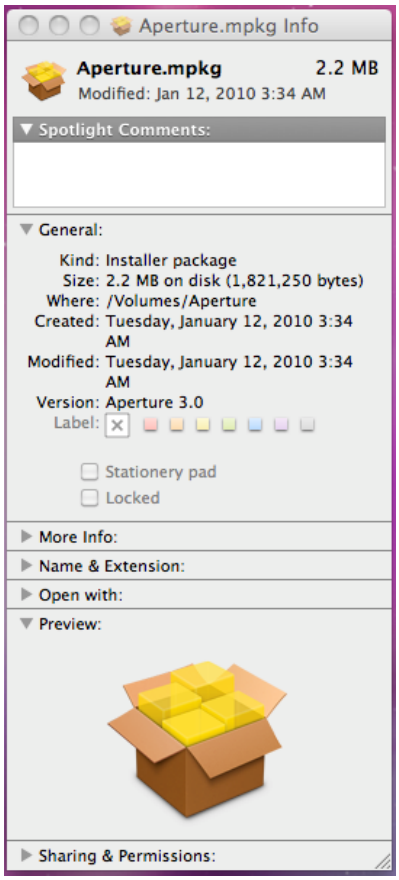


76. I understand that Mac OS X Software Version 10.6.3 was a software version used on Mac computers made available in late March 2010. EX1047 ("Post Date: Mar 29, 2010").

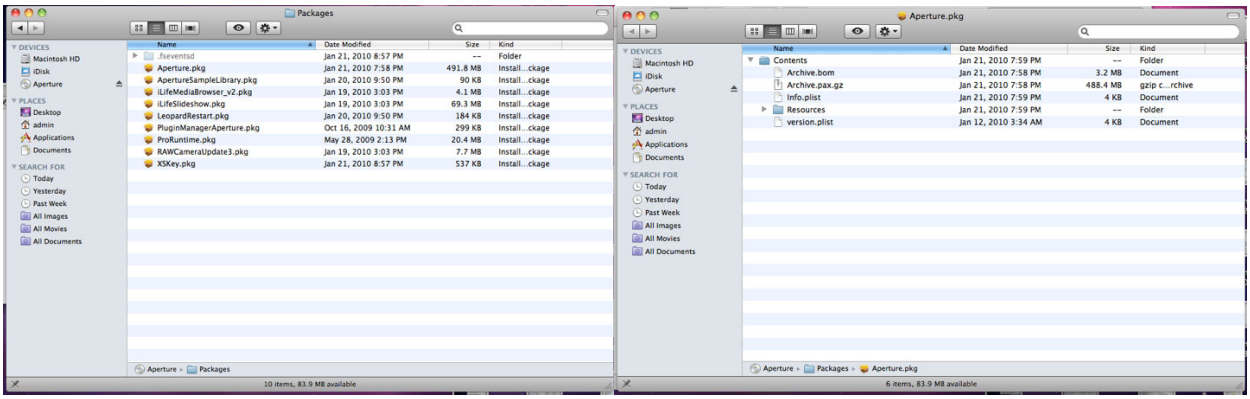
77. Initially, I configured the Mac laptop to show all files (both visible and "invisible"). Next, I inserted the Aperture 3 installation DVD into the DVD drive on the Mac laptop. Upon inserting the installation DVD, the following window appeared on the laptop screen:



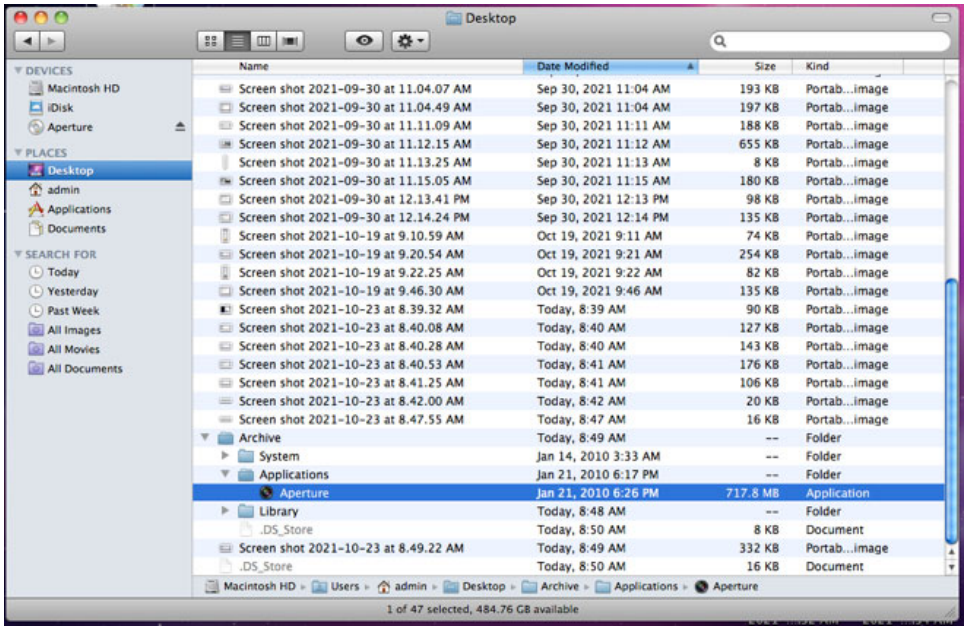
78. I confirmed that the version of the installation DVD I was using was Aperture 3 by right-clicking the "Aperture.mpkg" file. The below screenshot illustrates the window that appeared on the screen, indicating that the DVD contained "Aperture 3.0" with a creation date of January 12, 2010:



79. I also inspected the ordinarily hidden package files (*.pkg) on the Aperture 3 installation DVD. I did that by navigating to the Packages folder (below), and then I displayed the contents of the Aperture.pkg file using the "Show Package Contents" option.

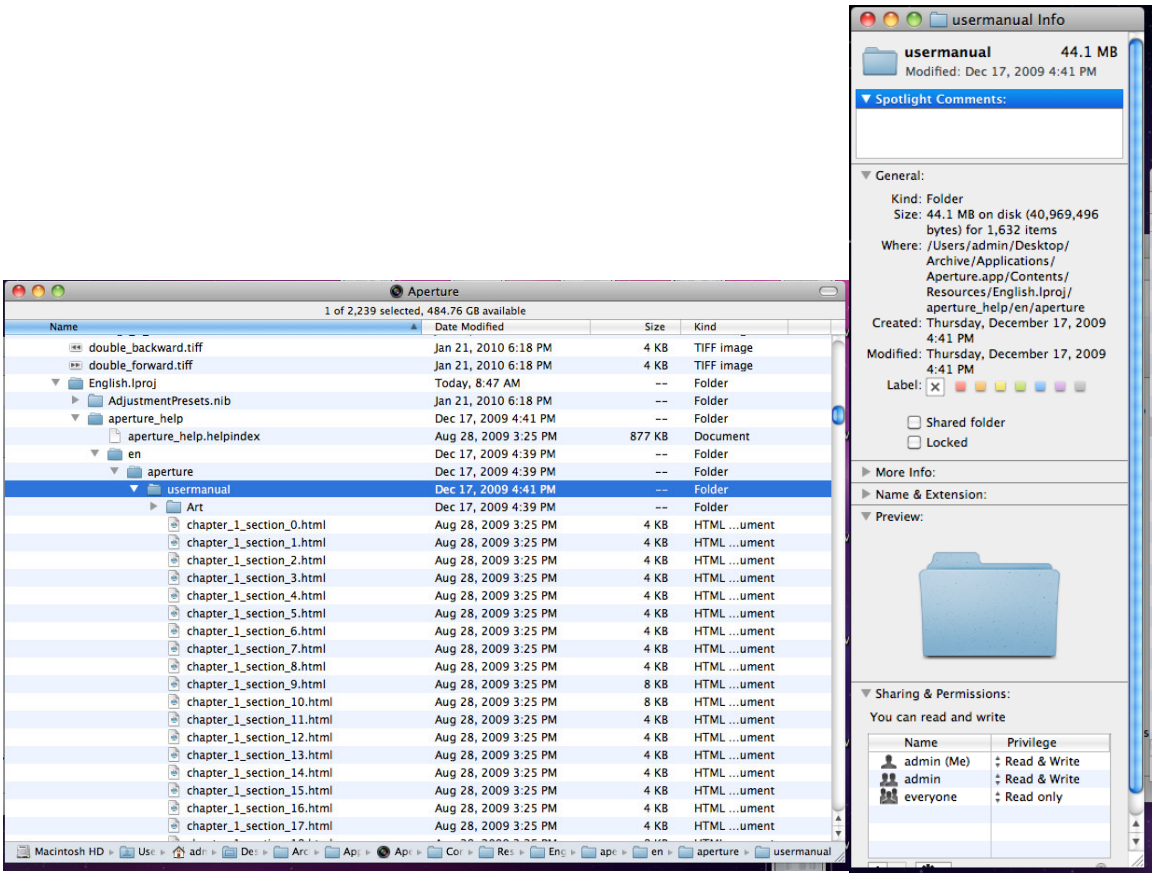


80. The Aperture.pkg package contains compressed files including one named "Archive.pax.gz." I copied this file to the desktop of the local hard drive of the Mac and decompressed it, which yielded an "Archive" folder on the desktop containing three subfolders (System, Applications, Library) (below). The Applications folder contained the Aperture.app file.

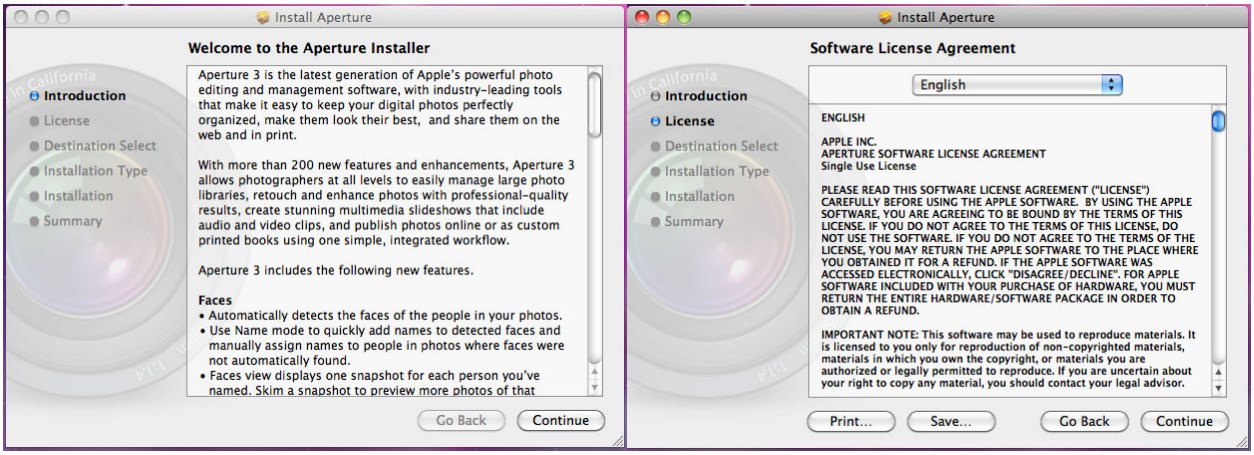


81. I inspected the contents of the Aperture.app file using the Show Package Contents command. The Aperture.app file is actually an application

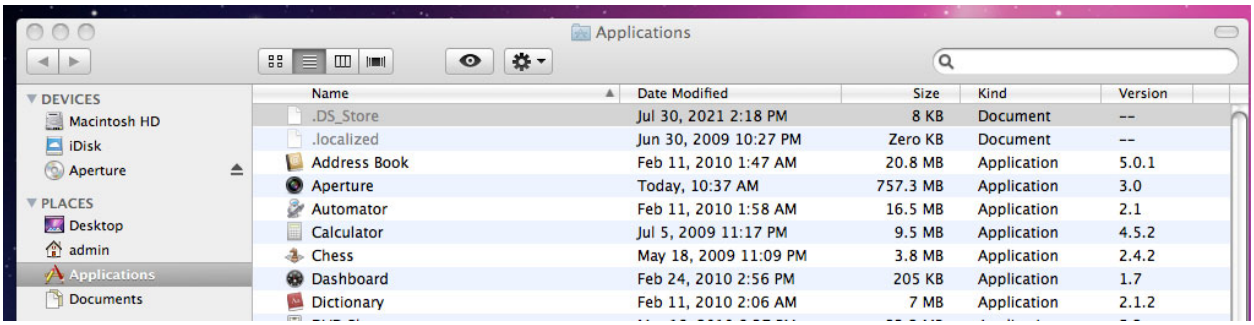
bundle that contains, among other things, resources used by the Aperture 3 application. As shown by the following windows, there is a folder called "usermanual" at the path "/Archive/Applications/Aperture.app/Contents/Resources/English.lproj/aperture_help/en/aperture/". I used the "Get Info" command to inspect the "usermanual" folder at this path, which showed that it has a size of 44.1 megabytes (40,969,496 bytes), and contains 1,632 items (*i.e.*, files). The "creation" date and "modified" date for this folder is December 17, 2009. I note that the size of the folder and number of files in it matches the size and number of files within the Aperture 3 application when it is installed on the Mac computer hard drive using the installer, as I explain below.



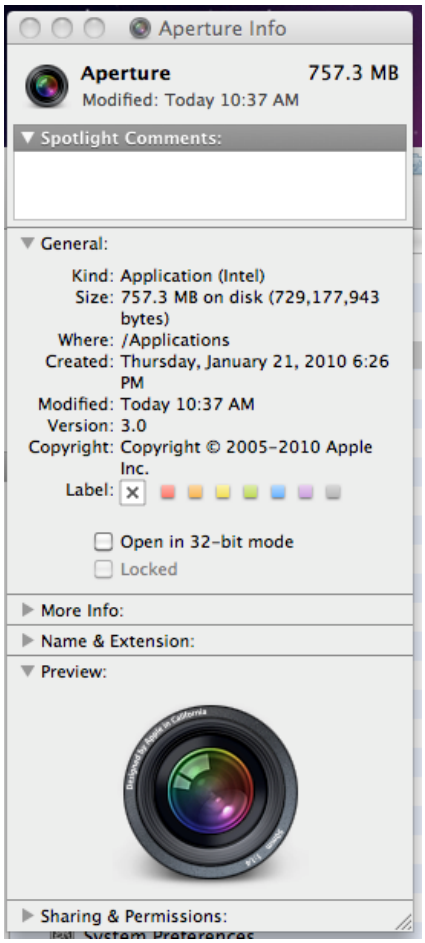
82. Returning to the Aperture installer window shown above, I selected "Install Aperture." As shown below, I followed the prompts on the screen to complete the installation.



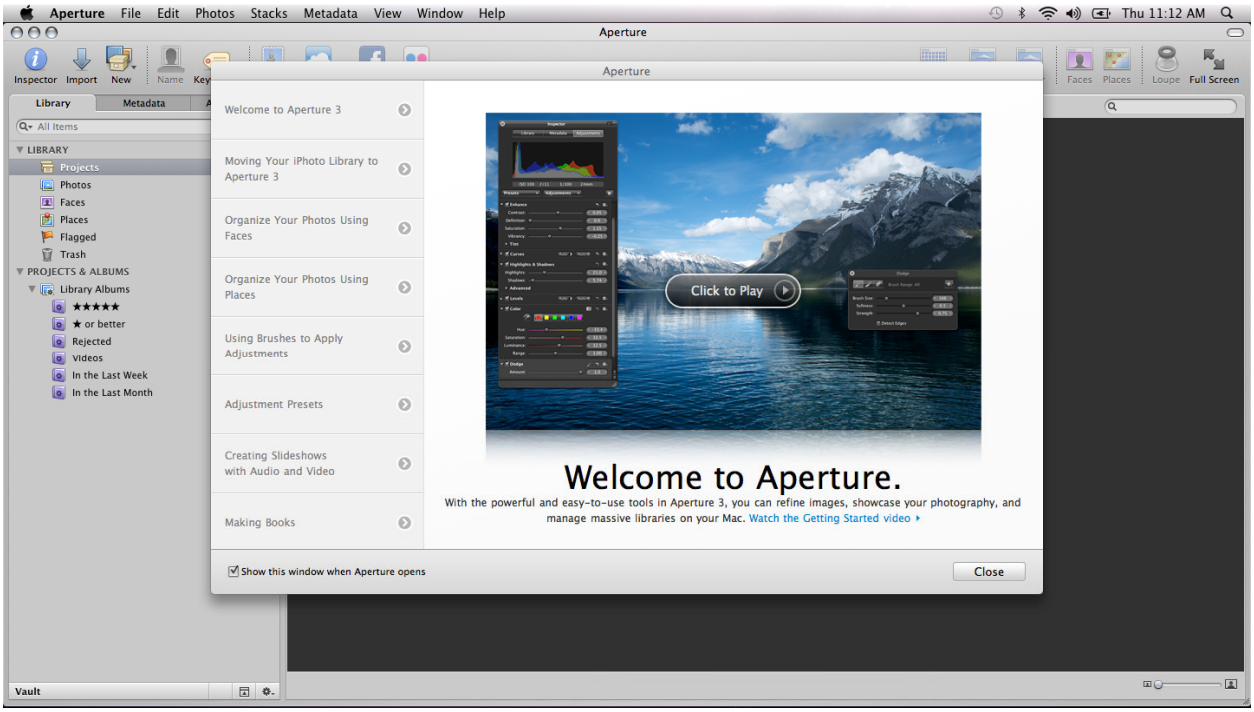
83. Once the installation of Aperture 3 was complete, I navigated to the Applications folder on the Mac laptop. As illustrated below, I confirmed that Aperture 3.0 was installed on the laptop:



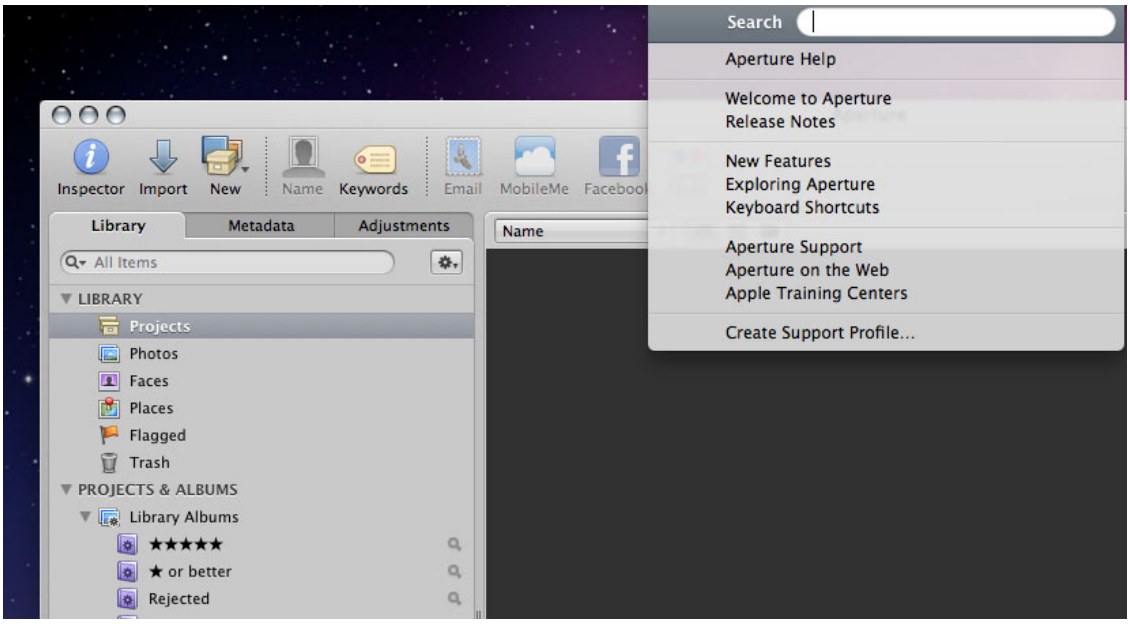
84. I right-clicked on the Aperture item in the Applications folder and selected "Get Info" from the drop-down menu to confirm that the installed version of Aperture was 3.0. The following window appeared on the screen, indicating that "Aperture 3.0" was installed on the laptop (with a "Created" date of January 21, 2010):



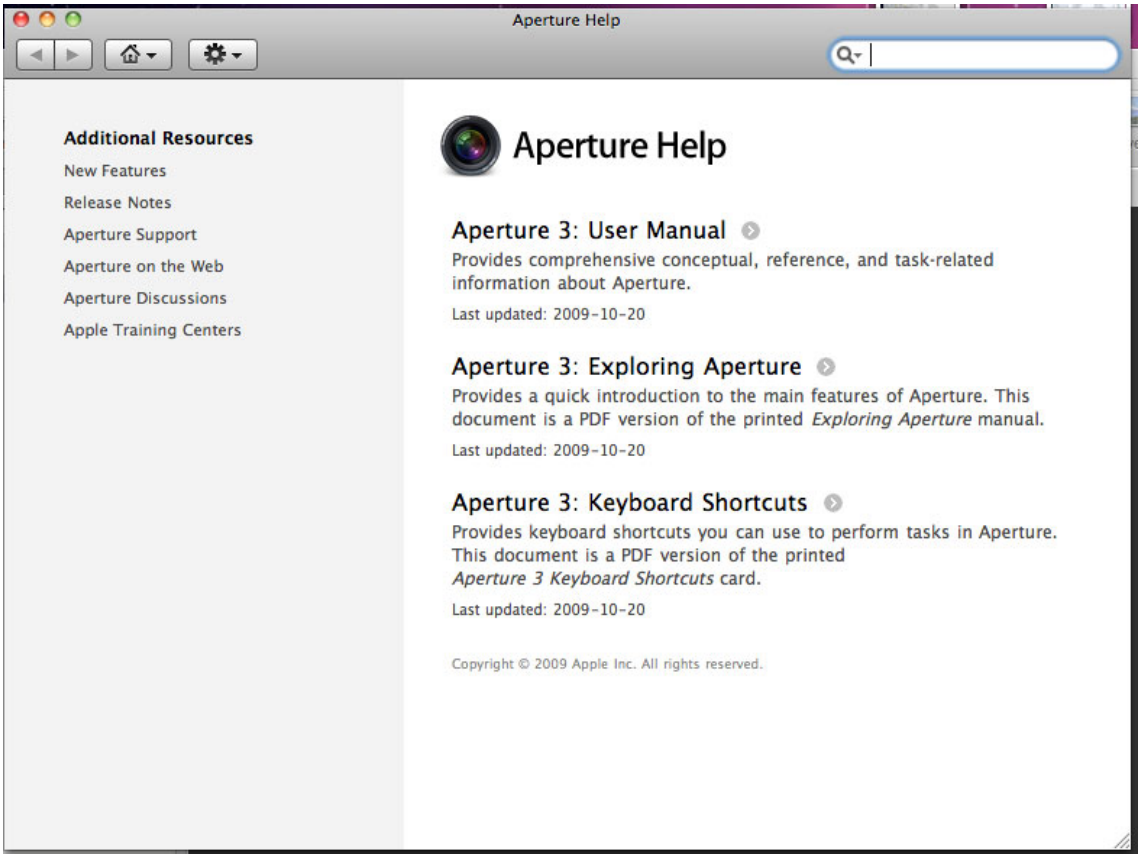
85. I then selected the Aperture 3 icon at the bottom of the laptop screen to launch Aperture 3. The following screen appeared on the laptop:



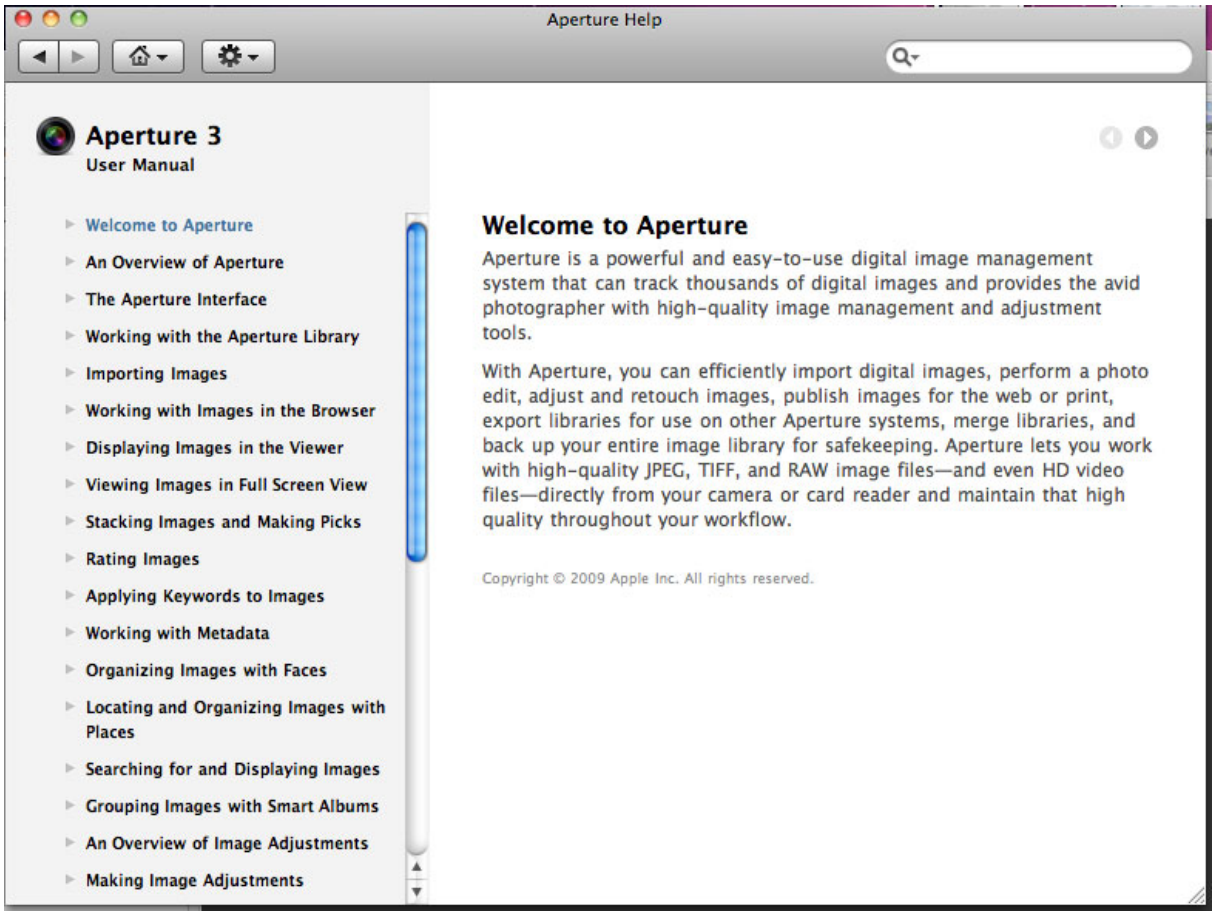
86. I closed the "Welcome to Aperture" dialog box and selected the "Help" drop-down menu, as illustrated below:



87. I then selected "Aperture Help" from the help drop-down menu and the following "Aperture Help" window appeared on the screen:

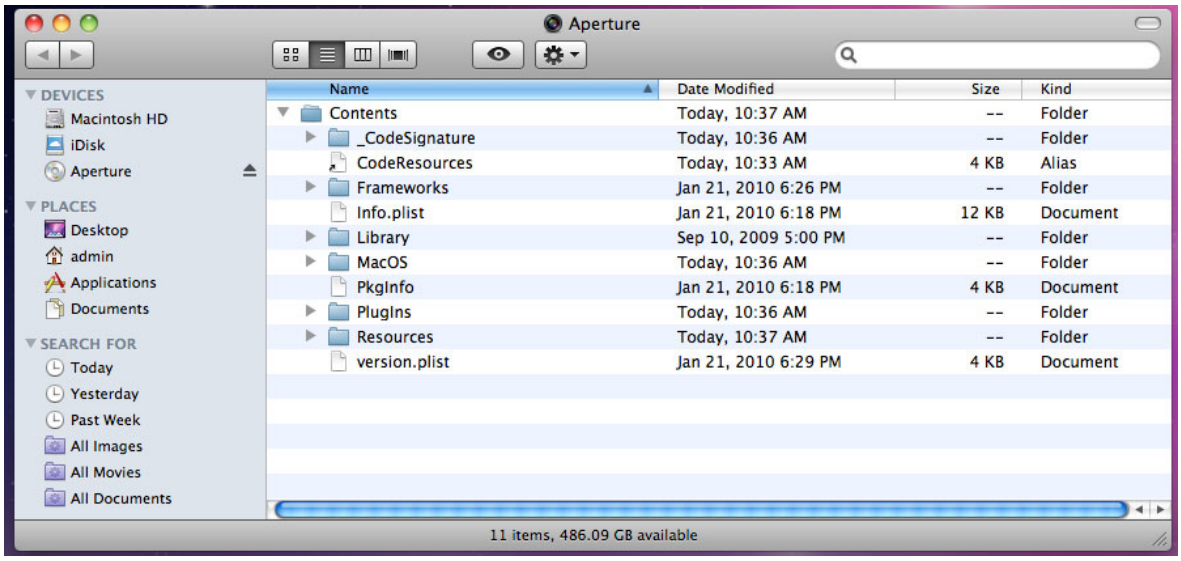


88. Next, I selected "Aperture 3: User Manual" and the Aperture 3 User Manual appeared on the screen as illustrated below, with a list of the content in the left pane:

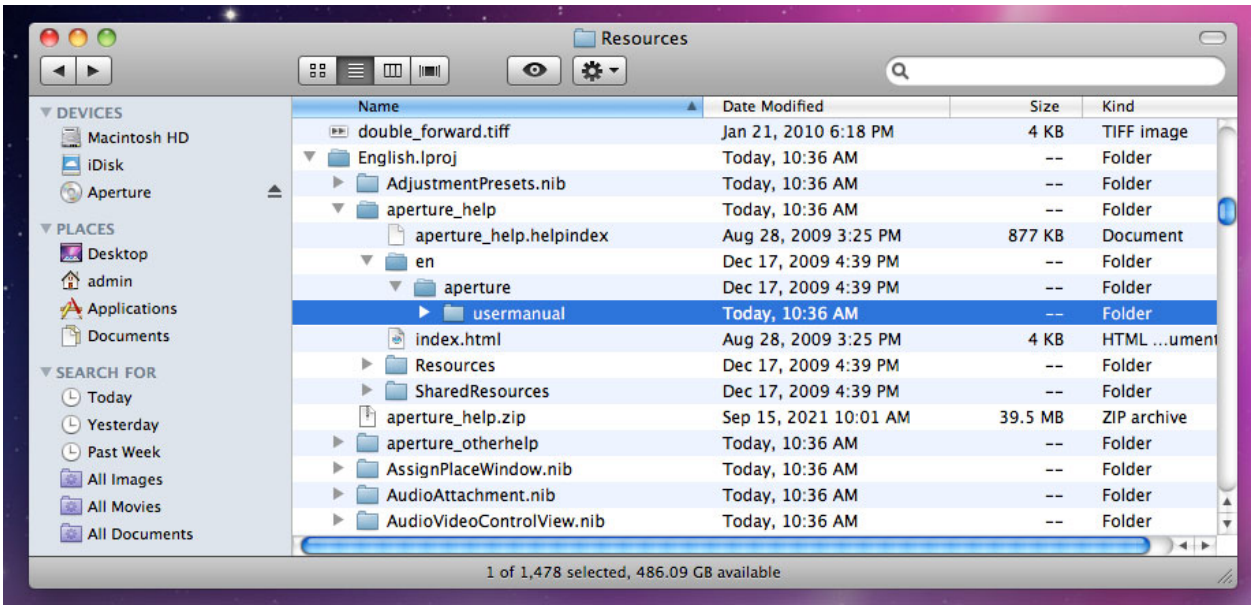


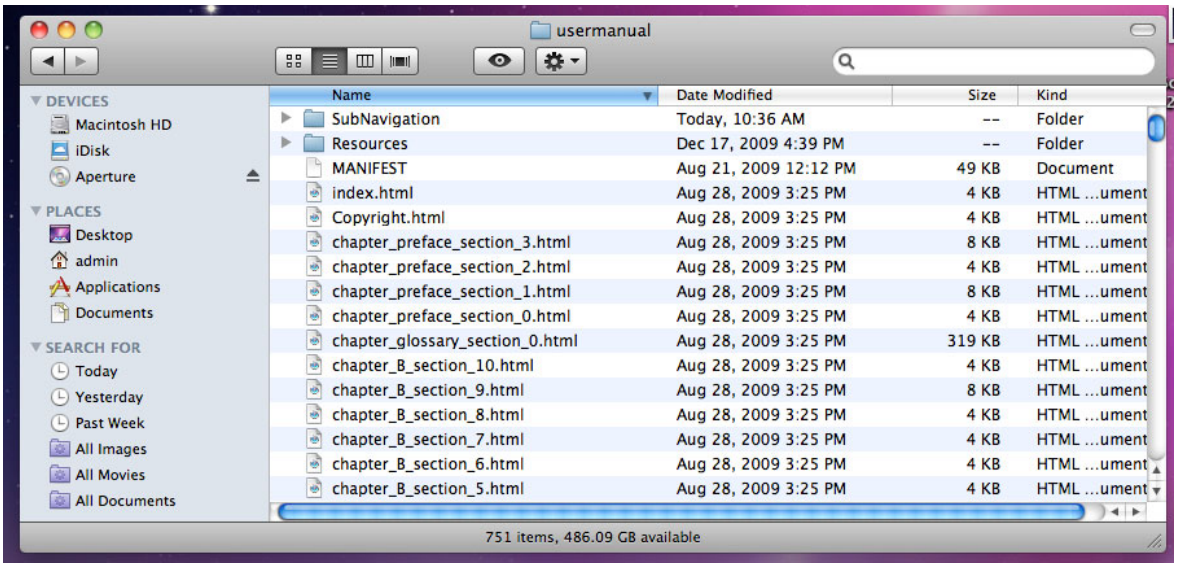
89. Selecting the small arrow on the left of the side bar will drop down a list of sub-sections of that chapter. By navigating this menu, the full contents of A3UM (EX1005) are made available to a user of Aperture 3.

90. The Aperture 3 User Manual can also be accessed via the file system. Returning to the Applications folder on the Mac laptop, I right-clicked on the Aperture item in the Applications folder and selected "Show Package Contents" from the drop-down menu. The following window appeared on the screen:

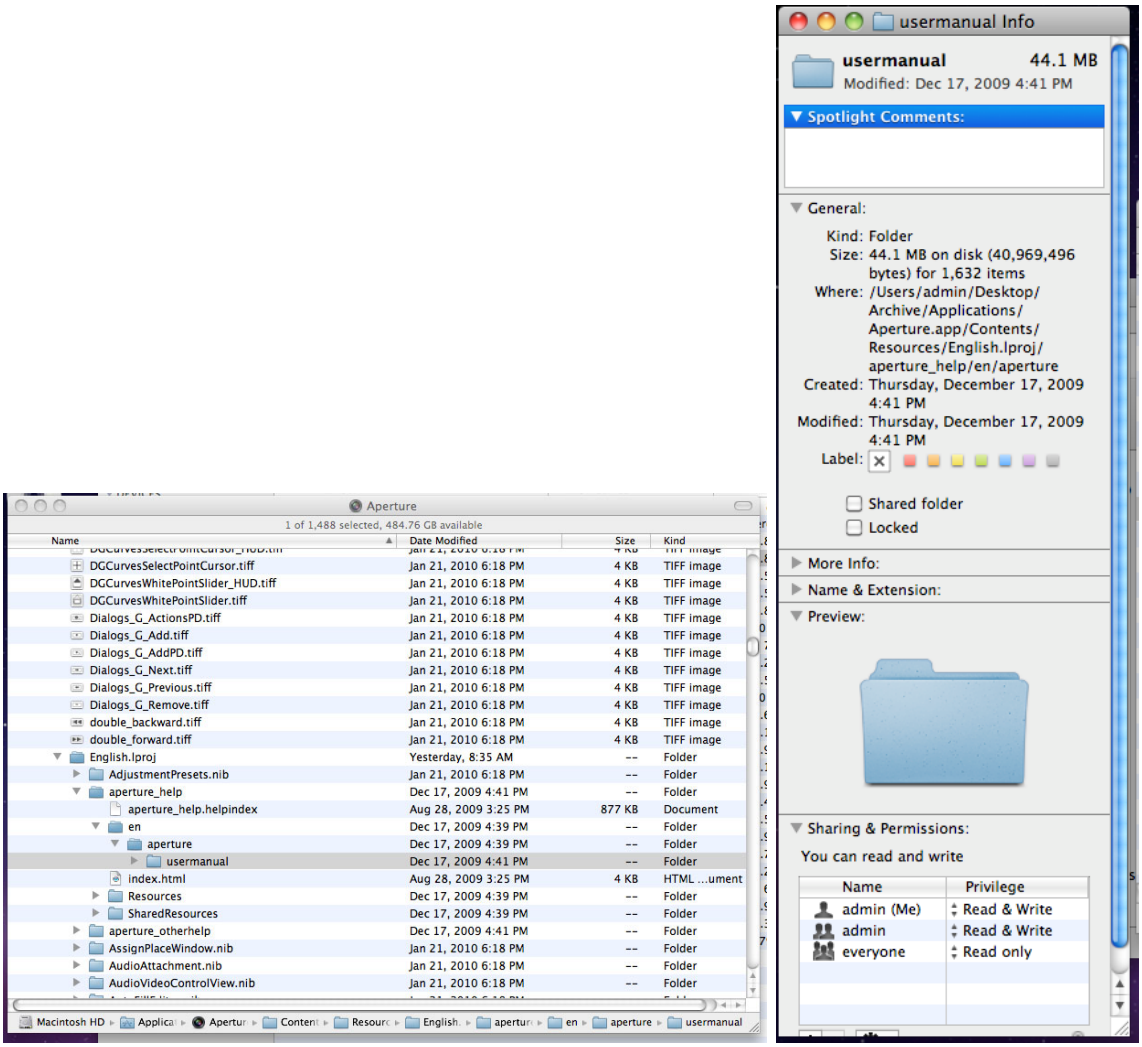


91. I selected the Resources folder and expanded the folders to display the window below, which includes a folder entitled "usermanual" that can be selected to view a large number of HTML files (and certain subfolders):





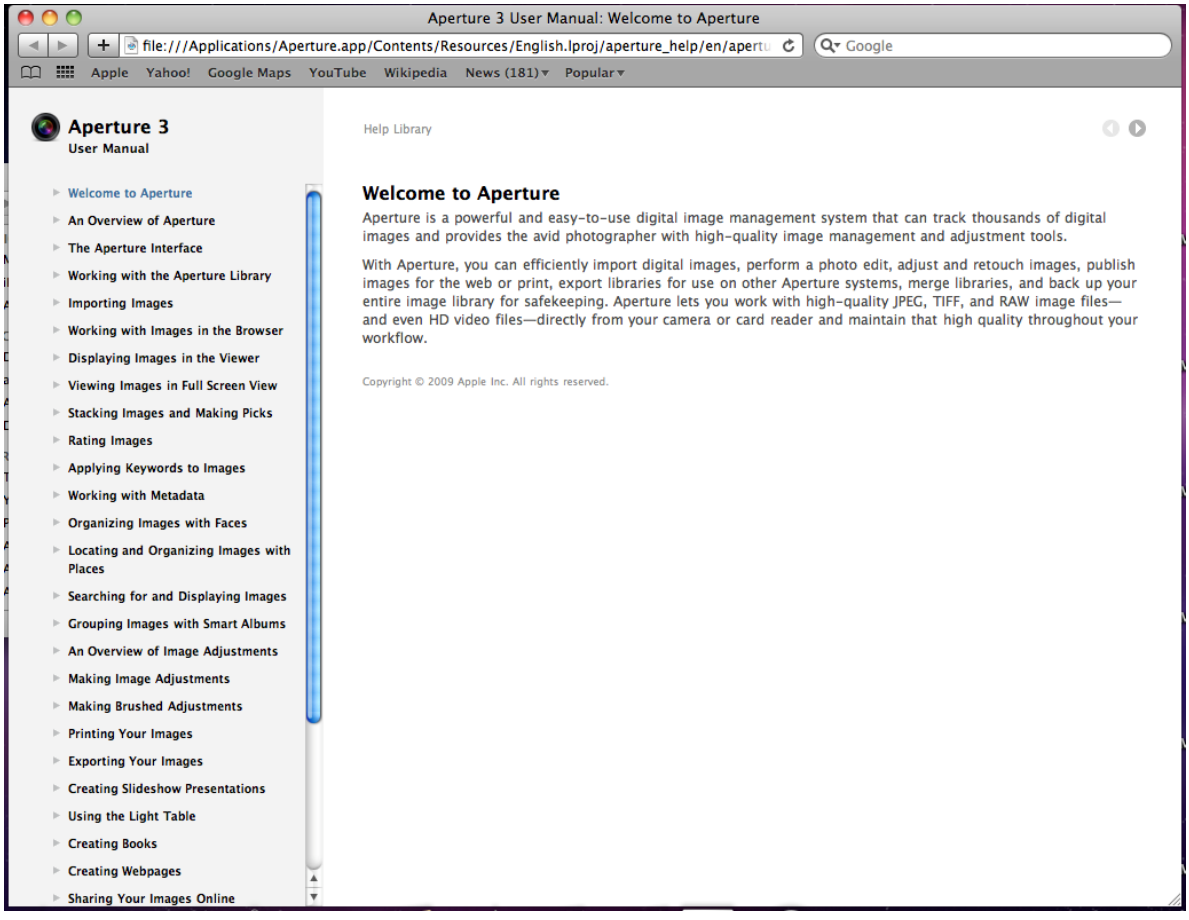
92. I used the "Get Info" command on the "usermanual" folder at the path "/Aperture.app/Contents/Resources/English.lproj/aperture_help/en/aperture/". It reports the usermanual folder has a size of 44.1 megabytes (40,969,496 bytes) and contains 1,633 items. It also shows "Created" and "Modified" dates of December 17, 2009. This matches the size, number and created/modified dates of the "usermanual" folder at the same location within the Aperture.app application bundle on the Aperture 3 installer DVD that I reported in ¶ 81 above.



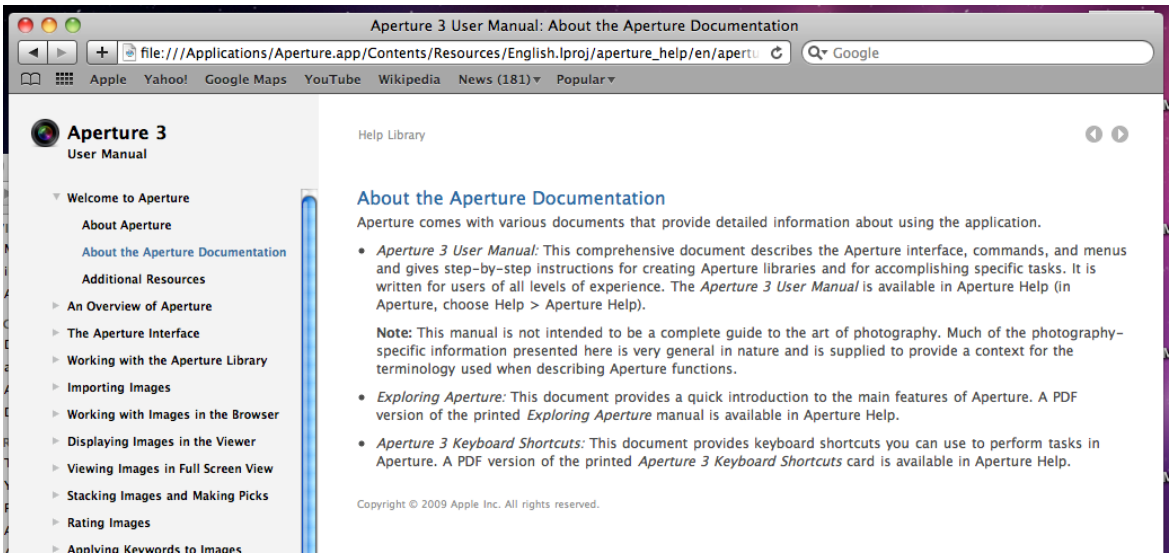
93. I believe a skilled artisan would have been familiar with the application bundle structure used with Mac applications in the 2010-time frame and would have known that application-specific resources are stored in the "Resources" folder of the application bundle. I also believe a skilled artisan would have been able to readily locate and display the files that make up the Aperture 3 user manual within the "usermanual" subfolder within the Aperture 3 application bundle, both as stored within the compressed Archive.pax.gz file in the

Aperture.pgk file on the Aperture 3 installation DVD and as stored on the computer's hard drive following installation of the Aperture 3 product.

94. Returning to the usermanual folder within the Resources folder of the Aperture 3 application bundle as installed on the computer, I selected the "index.html" file which launched the Safari web browser and displayed the first page of the Aperture 3 user manual, as illustrated below. A pane appeared on the left side of the screen, listing the contents of the user manual.



95. I expanded "Welcome to Aperture" in the pane on the left side of the screen and selected "About the Aperture Documentation," as illustrated below:



96. By navigating this web-based menu, the full contents of A3UM (EX1005) are made available to a user of Aperture 3.

97. In addition to the copy of Aperture 3 that was provided to me by Apple, I also received a copy of Aperture 3 that was purchased by Apple's counsel from a third party via eBay. *See* EX1052 (eBay order details, redacted to remove counsel's personal information). This copy was indistinguishable physically from the Apple-provided copy other than a sticker on the front that said "Academic." Once I installed this copy of Aperture 3 using the same steps I outlined above for the Apple-provided copy, I was provided access to the same Aperture 3.0 software product as well as the same Help and HTML versions of the Aperture 3 User Manual that I describe below. Based on my review, the content of the Aperture 3 User Manual is the same in both copies of the Aperture 3 product that I installed. For example, I compared the sections describing the "Faces" and "Places"

functionality in EX1005 and compared them to the eBay-sourced copy of Aperture 3, and they are the same.

98. My investigation is consistent with other contemporaneous documentation provided by Apple that describes Aperture 3. For example, 2010 publications by Apple state that the Aperture 3 "user manual" was provided as part of the Aperture 3 software application. *E.g.*, EX1051, 7 ("*If you prefer to start by reading in-depth explanations of concepts and procedures used with Aperture*: Open Aperture, then choose Help > Aperture Help. Then click the link to the user manual.") 135 ("Be sure to check out the many features of Aperture book albums in the *Aperture User Manual*, available in Aperture Help."), 159 ("**Open the Aperture User Manual**[:] In Aperture, choose Help > Aperture Help, then click the link to the user manual. Browse topics that interest you.").[1]

b. Website Compilation

99. Evidence I have reviewed shows that A3UM was made publicly accessible to interested users in early 2010 as a compilation of webpages on Apple's website.

100. Apple was an exceptionally well-known technology company in 2010. A skilled artisan interested in learning about Apple software would have known to

[1] https://manuals.info.apple.com/MANUALS/1000/MA1522/en_US/Exploring_Aperture_3.pdf

either directly visit www.apple.com or search for specific Apple software via well-known search engines such as Google and the search functionality provided on Apple's own websites. In 2010, a skilled artisan would have easily been able to identify the support documentation for an Apple product via Apple's website. As shown below, a skilled artisan interested in locating A3UM or learning about Apple's Aperture 3 software would have been able to locate A3UM via www.apple.com by simply visiting the dedicated Aperture 3 support page on Apple.com, which as annotated below in red contained embedded links to the Aperture 3 User Manual:

EX1021, 7 (annotated).

101. A skilled artisan would have been provided with a straightforward path to access the web-hosted version of A3UM from the www.apple.com homepage. A visitor to Apple's website (www.apple.com) in the February of 2010

timeframe could locate the web-based version of the Aperture 3 User Manual as follows:

a. Visit www.apple.com (EX1021, 1);[2]

b. Click "Introducing Aperture 3":

http://www.apple.com/aperture/ (EX1021, 2);[3]

c. Click "Resources": http://www.apple.com/aperture/resources/

(EX1021, 4-6);[4]

d. Click the "Learn more" link below "Aperture Support page":

http://www.apple.com/support/aperture (EX1021, 7);[5]

e. Click "Aperture 3 User Manual":

http://documentation.apple.com/en/aperture/usermanual/

(EX1021, 8);[6] and

[2] https://web.archive.org/web/20100219190653/https://www.apple.com/.

[3] https://web.archive.org/web/20100217062822/http://www.apple.com/aperture/.

[4] https://web.archive.org/web/20100305090412/http://www.apple.com/aperture/resources/.

[5] https://web.archive.org/web/20100217041537/http://www.apple.com/support/aperture.

[6] https://web.archive.org/web/20100217035925/http://documentation.apple.com/en/aperture/usermanual/.

f. Click links to individual sections of the Aperture 3 User Manual that were available on the side bar.

102. The Wayback Machine has 2010 captures of each URL indicated above, including the table of contents. The 2010 capture of the table of contents includes each of the sections in A3UM (EX1005), such as "Organizing Images with Faces" and "Locating and Organizing Images with Places." Although the Wayback Machine does not contain 2010 captures of the contents of individual sections, that does not indicate to me that they were not published, only that they were not captured by Wayback Machine's web crawler. In fact, right-clicking on the table of contents pane in the archive.org webpage corresponding to http://documentation.apple.com/en/aperture/usermanual/ (https://web.archive.org/web/20100217035925/http://documentation.apple.com/en/aperture/usermanual/) and selecting "view page source" displays the source code for the page, including links to each of the individual sections. EX1055. As a whole, this evidence further suggests to me that A3UM was made publicly accessible starting in early 2010 as a compilation of webpages on www.apple.com.

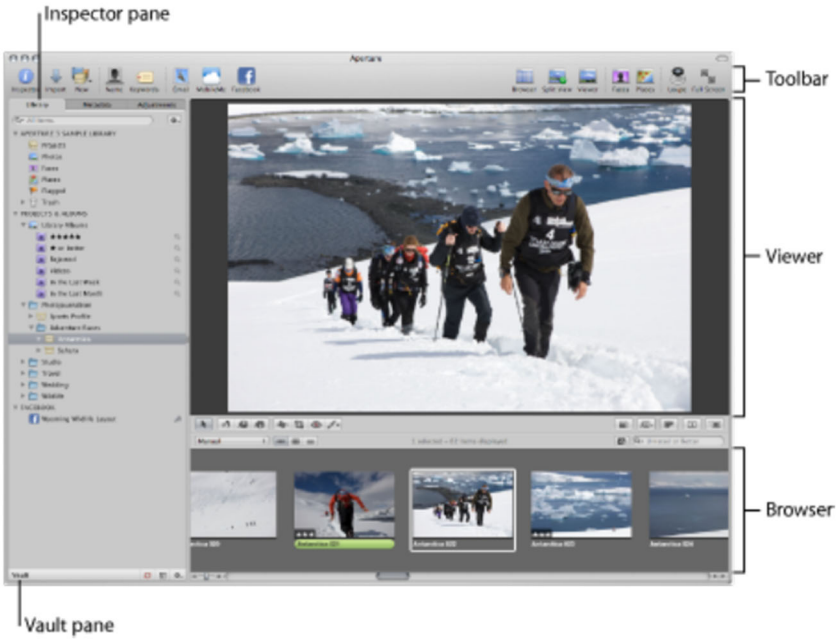
103. I have also reviewed a declaration from Matthew Birdsell (EX1020), who I understand has personal knowledge of A3UM's early 2010 publication and dissemination. Mr. Birdsell's description of the production and distribution of the Aperture 3 User Manual in its HTML format is consistent with the evidence I have

reviewed and what I have found in my investigations. For example, Mr. Birdsell explained that the same HTML file set that makes up A3UM (EX1005) is accessible from the Aperture 3.0 installation DVD and from a computer onto which Aperture 3.0 has been installed. That is what I also have found in my investigations. Also, Mr. Birdsell's explanation that the Aperture 3.0 product was distributed starting in February of 2010 via the Aperture 3 software product and on Apple's website is consistent with materials I have reviewed, including the archived web pages and other evidence I discuss above.

2. Overview of A3UM

104. A3UM describes, in part, the user interface of Apple's Aperture 3 digital image management software system. A3UM describes features of the Aperture interface (*e.g.*, the layout of the panes that make up the interface and various interface elements like buttons, menus, and lists). It also illustrates how various commands are performed and gives step-by-step instructions for creating Aperture libraries and for accomplishing specific tasks. EX1005, 2. Aperture 3 is a photo-organizer software program that runs on the Mac operating system, which is able to manage a large quantity (thousands) of digital images. EX1005, 1 ("Aperture is a powerful and easy-to-use digital image management system that can track thousands of digital images and provides the avid photographer with high-quality image management and adjustment tools.").

105. A3UM describes the various components of the Aperture graphical user interface below:



EX1005, 46. A3UM provides an overview of how these components are used. *E.g.*, EX1005, 5-44.

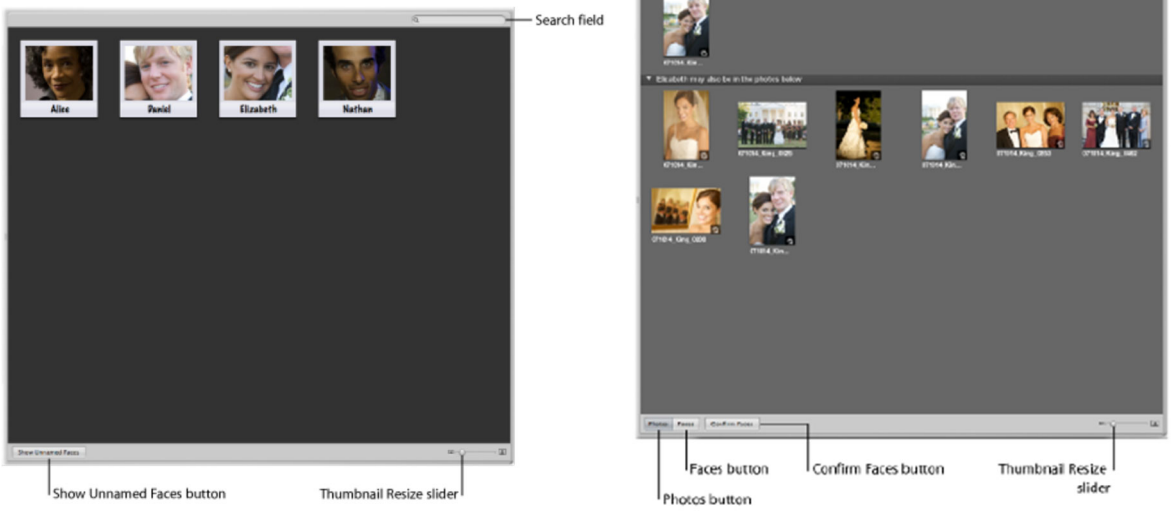
106. A3UM illustrates several views that allow users to more easily organize and manage their digital files. *E.g.*, EX1005, 28-29. One view is the "Places" view, which (1) displays, in the "Viewer" pane, a map with pins marking locations linked to particular images and (2) displays, in the "Browser" pane and in response to a selection of a map pin, the images with the selected location. EX1005, 30 ("In Aperture, you can use Places to organize your images by the locations where they were taken. If you have a GPS-enabled digital camera or iPhone, Aperture categorizes the images by location and converts the GPS location

tags to place names, such as Vancouver, Canada. You can explore where your images were shot using the Places view."), 81-83, 429-466, 1115. As shown below, the Places view allows a user to view images linked to a location whose marker is displayed on an interactive map:

EX1005, 437.

107. A3UM illustrates a Faces view that displays in the "Viewer," thumbnail snapshots of people associated with images in either the library or, if an item (*e.g.*, an album) is selected in the Library inspector, in the selected item. EX1005, 28-29 ("Selecting Faces in the Library inspector displays the faces of all the people in images in the library who have been assigned names"), 78-80, 417-428. A3UM explains that selecting one of the displayed thumbnail snapshots in the

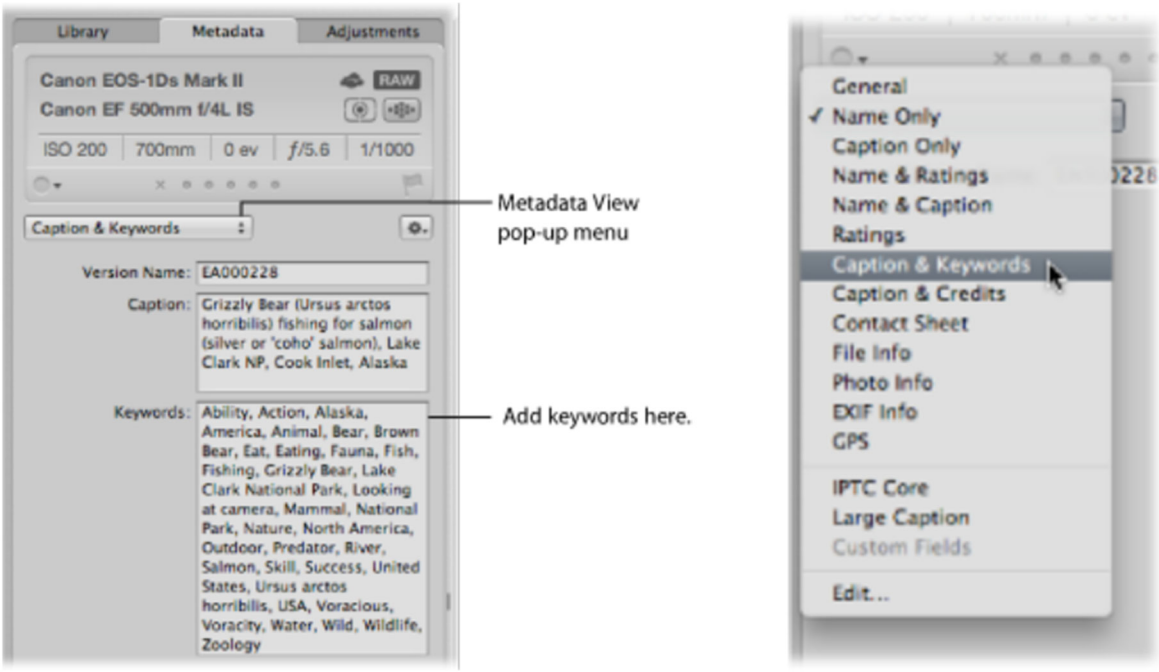
Faces view displays a "Faces Browser." EX1005, 29. The Faces Browser displays a visual representation of each image associated with the selected person. EX1005, 29 ("You can view all of the images in your library in which a person appears by double-clicking the person's snapshot in Faces view. All the confirmed images of the person appear in the Faces Browser.").



EX1005, 78-80.

108. A3UM also discloses extensive functionality that allows users to use device-captured or user-entered metadata associated with digital files to locate and display those files. For example, A3UM discloses a Metadata Inspector providing access to different categories of metadata, including user-defined "keywords." "GPS" location data and standardized metadata sets (e.g., "EXIF Info", "IPTC

Core"). EX1005, 348-351. This metadata inspector is illustrated below on the left, with various metadata displayed. EX1005, 347. By selecting the Metadata View pop-up menu, additional metadata can be displayed such as Name, GPS, etc. EX1005, 350.



EX1005, 347 EX1005, 350

109. A3UM also discloses functionality that allows users to add or modify metadata associated with digital files. EX1005, 345 ("Keywords are descriptive words assigned to image versions and saved as metadata."). For example, A3UM discloses that users add names to computer-recognized faces, EX1005, 421-422, and that users can add location information by dragging photos to location on a map or by typing location names in search box and assigning found locations to digital files, EX1005, 443-446. A3UM's Places and Faces interfaces use this

metadata to select and display digital files. *E.g.*, EX1005, 78-80 ("When you click the Faces button in the toolbar, Faces view shows all the photos of people with assigned names in the item selected in the Library inspector."), 435 ("If you shot your images with a GPS-enabled camera or iPhone, Aperture automatically plots the location of each image on the map in Places view.").

C. U.S. Patent App. Pub. No. 2010/0058212 A1 to Belitz et al. ("Belitz") (EX1006)

110. U.S. Patent App. Pub. No. 2010/0058212 A1 to Belitz et al. ("Belitz") was published on March 4, 2010, and discloses a user interface for showing photographs on a map. EX1006, ¶1.

111. Belitz explains that electronic devices such as computers are being used for navigation and general map browsing. EX1006, ¶2. It is also increasingly "common to mark special locations on a map by associating a graphical object with that location," such as "photographs taken at such a location or an image of such a location." EX1006, ¶2. Belitz explains that it would be beneficial to provide a graphical user interface that can display on a map graphical objects that clearly illustrate the association of photographs and videos with their location without the images becoming cluttered. EX1006, ¶¶2-4.

112. Belitz describes and illustrates a graphical user interface for use in any electronic device such as a laptop. EX1006, ¶¶39, 50. The interface includes a map with various locations marked with graphical objects. EX1006, ¶¶6, 51. In

one embodiment, the graphical objects are thumbnails of photographs taken at that location. EX1006, ¶¶59, 62. These photographs can also be linked to the location of the object that they capture (*i.e.*, the subject of the photograph). For example, "pictures of an apartment" can be "associated with the location of the apartment." EX1006, ¶52. In Figures 4a-4b, Belitz illustrates several examples of locations marked with graphical objects:

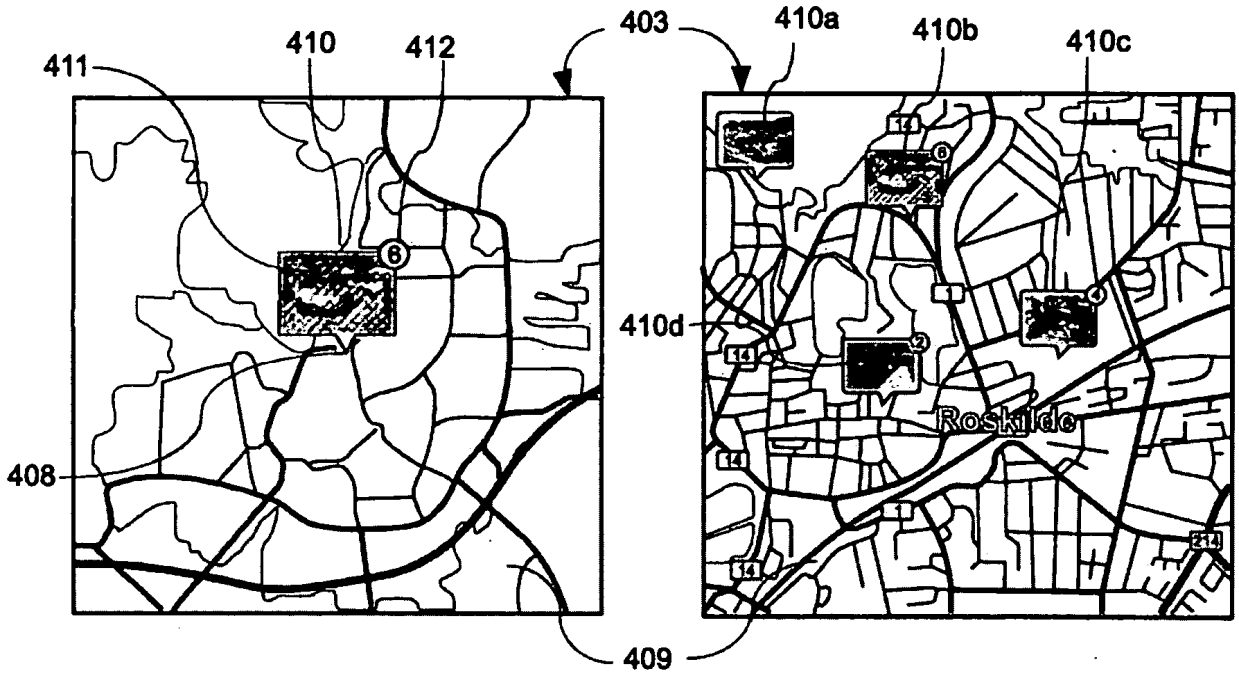


Fig. 4a Fig. 4b

EX1006, ¶¶51-53, 55, Figs. 4a-4b.

113. Belitz explains that the number of graphical objects displayed on the interactive map depends on the zoom level of the map. For example, Belitz describes a process for determining whether two graphical objects would appear in

such close proximity that they would overlap on the map. EX1006, ¶54. If that is the case, Belitz describes optionally creating a "third" graphical object by stacking the overlapping graphical objects. EX1006, ¶54. If the interactive map is subsequently zoomed in on the user interface of Figure 4a, the third graphical object 410 splits into graphical objects 410a, 410b, 410c, and 410d based on the location information linked to the media objects those graphical objects represent. EX1006, ¶55. Zooming back out would result in Figure 4a again. EX1006, ¶56.

114. As shown on annotated Figures 4a-4b, Belitz suggests that graphical objects displayed on its interface may additionally include a number (in green) overlaid on the top right corner of the graphical object thumbnail (in orange), which indicates how many graphical objects (*e.g.*, photographs) are associated with that location. EX1006, ¶54.

EX1006, Figs. 4a-4b (annotated and excerpted).

115. In the embodiment where all of the "graphical objects" are photographs, Belitz indicates the visual representations of the "graphical objects"

that are displayed on the map "are thumbnails of the photographs." EX1006, ¶62. Also, in this embodiment, the number of graphical objects being represented on the map at a location will be the number of photographs with that location. EX1006, ¶¶54, 59, 62. In this case, as illustrated on annotated Figures 4a-4b below, the thumbnails ("graphical objects") displayed on the Belitz interface can include a number (in green) overlaid on the top right corner of the thumbnail (in orange) representing the number of photographs that are associated with that location. EX1006, ¶54.

116. Belitz Figure 4c illustrates an exemplary user interface displaying a popup window showing visual representations of at least some of the photographs linked from a graphical object located on a map. EX1006, ¶60. Belitz explains that a user can navigate to this exemplary user interface by selecting a graphical object on the map by tapping the screen or clicking a cursor. EX1006, ¶60.

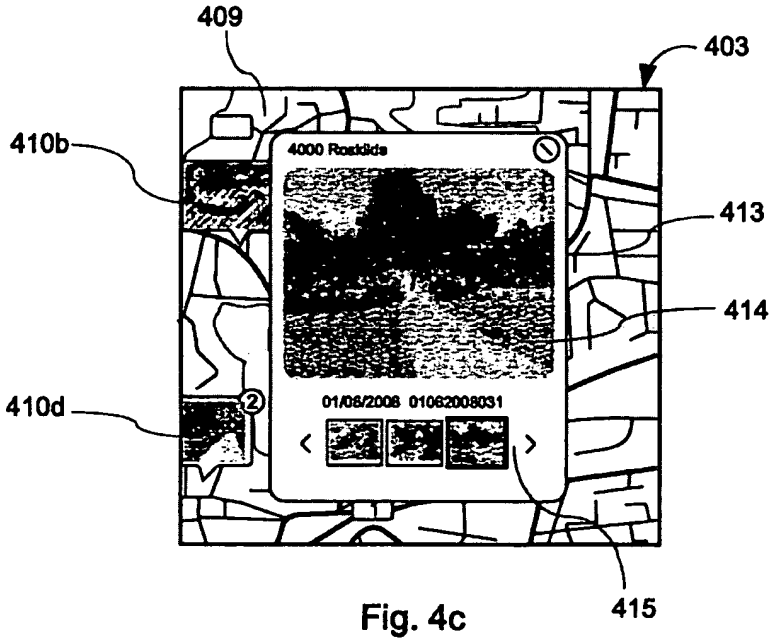


Fig. 4c

EX1006, Fig. 4c.

V. ANALYSIS OF THE PRIOR ART AND '228 PATENT CLAIMS

A. Claims 1-19 Are Obvious Over A3UM (EX1005) and Belitz (EX1006)

1. A Skilled Artisan Would Have Been Motivated to Combine A3UM and Belitz

117. As explained above (¶¶104-107), A3UM describes a photo organizer that can display an interactive map with multiple selectable pins at different locations. *E.g.*, EX1005, 1, 81-83, 430, 433-441. A3UM explains that these pins correspond to the locations of photographs or videos, *i.e.*, the geographic data encoded in photographs and videos. EX1005, 30, 81-83, 429-466. These pins can be selected to view photos with those locations. EX1005, 81-83, 435-437. As further explained below, it is my opinion that this functionality teaches, as recited by claim 1 of the '228 patent, "*causing a map view to be displayed on an interface*

… including: (i) an interactive map; (ii) a first location selectable … image at a first location on the interactive map; and (iii) a second location selectable … image at a second location on the interactive map." I understand that in litigation between Patent Owner and a litigant other than Petitioner, the issue of whether a map pin like the one disclosed in A3UM could constitute a "*thumbnail image*" was disputed. To the extent that map pins like the ones disclosed in A3UM are not "*thumbnail image[s]*," I believe it would have been obvious to a person of ordinary skill in the art by early 2010 to modify A3UM to incorporate Belitz's thumbnail functionality in a way that, as I explain below in greater detail, renders the claims obvious.

118. I believe a skilled artisan would have considered the teachings of A3UM and Belitz together for several reasons.

119. First, both references describe capabilities similar each other and analogous to the functionality being described in the '228 patent. For example, A3UM and Belitz both describe systems for "managing and using digital files such as photographs." EX1001, 1:21-24; EX1005, 1 ("Aperture is a powerful and easy-to-use digital image management system that can track thousands of digital images and provides the avid photographer with high-quality image management and adjustment tools."); EX1006, ¶¶1, 62 (describing "a user interface, a device and a method for showing clustered locations on a map," *e.g.*, "photographs").

120. Second, A3UM and Belitz provide user interfaces and photo management applications that a skilled artisan would view as solutions to the problems that the '228 patent identifies: allowing "people to organize, view, preserve and share" their digital photographs. EX1001, 1:61-67; EX1005, 1 (discussing a "powerful and easy-to-use digital image management system"); EX1006, ¶¶2-5 (discussing an approach and user interface methods that allow a user to better understand which pictures were taken at which location).

121. Third, they have similar functionality—both describe using geographic interfaces that represent digital photographs on an interactive map that enables a user to browse digital photographs based on their location. EX1005, 30, 81-83, 429-466; EX1006, ¶39, 50, 51-55, 62.

122. Both A3UM and Belitz use visual indicators on their map-based user interfaces to indicate the presence of content—*e.g.*, photographs—linked to a particular location. Belitz provides an example of a photo application that uses photo thumbnails ("*thumbnail images*") as visual indicators on an interactive map-based user interface. As explained above (¶¶110-115), Belitz illustrates an interactive map that allows a user to conveniently browse photographs taken at different locations. EX1006, ¶39, 50, 51-55, 62. Graphical objects in the form of photograph thumbnails (orange) are displayed on the interactive map and are optionally grouped together, depending on the level of zoom, to reduce the visual

clutter of the display. EX1006, ¶51-55, 62. Belitz describes an example of an interactive map with photo thumbnails marking various locations, the thumbnails being overlaid with counts (green) that represent the number of pictures at that location. EX1006, ¶54, 59, 62. Selecting the thumbnail (by clicking or tapping) invokes the software to display a picture viewer for images at that location. EX1006, ¶60.

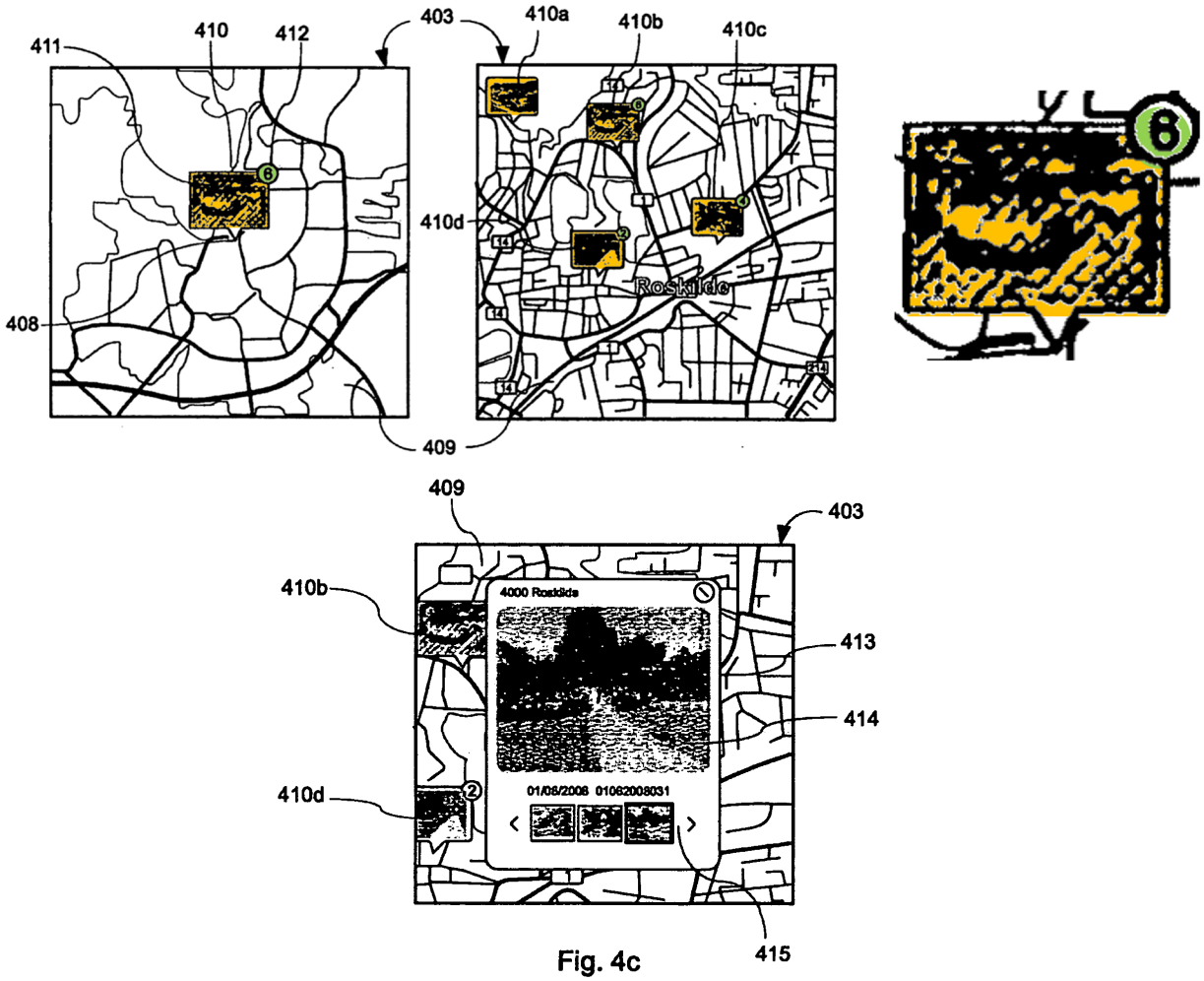


Fig. 4c

EX1006, Figs. 4a-4c (annotated).

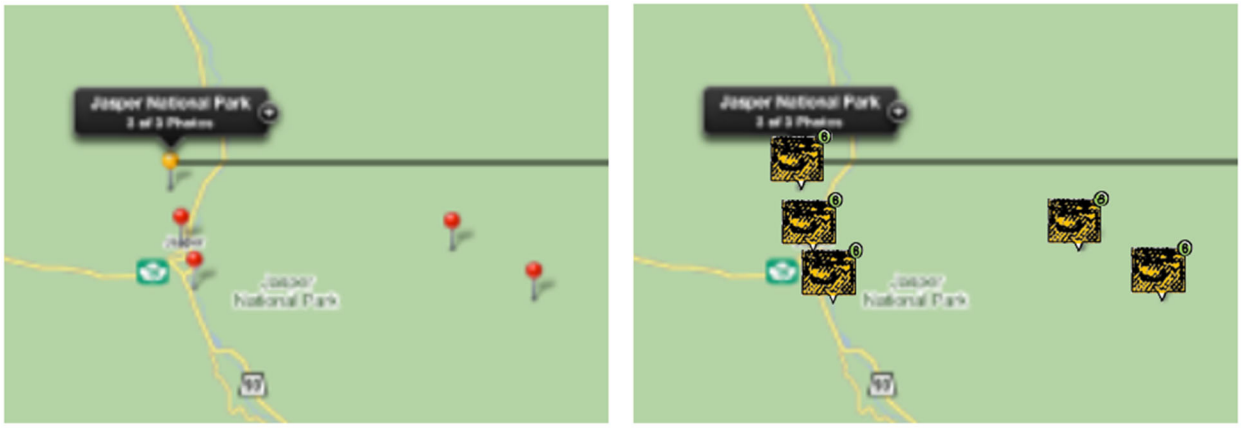
123. A skilled artisan would have recognized that Belitz's thumbnail map markers ("*thumbnail images*") are a functional equivalent of, and could be used as an alternative to the pins used in the A3UM interactive map; both are visual indicators that denote the existence of content such as photographs at the indicated location. And both A3UM and Belitz disclose similar functionality: each disclose a plurality of markers on a map that can be selected to display photographs with the location of the marker. EX1005, 30, 81-83, 430, 433-441; EX1006, ¶51-55. Both A3UM and Belitz discloses alternative techniques for representing a map marker and choosing between the two would have been a routine design decision for a skilled artisan.

124. Both A3UM and Belitz also dynamically group and ungroup related nearby markers into single markers to reduce visual clutter on the map. EX1005, 81-83, 437 ("Depending on the zoom setting in Places view, Aperture might use a single pin to represent a group of images shot in close proximity."); EX1006, ¶¶54-56. These markers allow users to access photos linked from the marker, such as photos having the same geo-tagged location as the marker.

125. A3UM and Belitz describe analogous ways of conveying the same information via their map interfaces: the number of photos at that location. A3UM discloses displaying that information after a user interaction with a pin while Belitz displays that information on the thumbnail image without requiring a user

interaction. EX1005, 436-437; EX1006, ¶¶51-55, Figs. 4a-4b. Displaying the count on the map as a popup window or via the marker itself would have been a routine design decision for a skilled artisan.

126. It would have been obvious to a skilled artisan before June of 2010 to modify A3UM's Places view to incorporate Belitz's graphical object functionality, including its thumbnails and counts, as illustrated below. This obvious modification would result in an interactive map displaying thumbnails with picture counts at locations where digital images are located, while allowing a user to interact with the thumbnail to display the name of the location and view pictures with that location:



A3UM A3UM-Belitz

EX1005, 437 (annotated).

127. Contemporaneous evidence demonstrates that Apple, the author of A3UM, considered markers and thumbnails to be interchangeable for photo mapping applications. *E.g.*, EX1028, ¶¶30, 34. U.S. Patent Application

Publication No. 2011/0074811 to Hansen et al. was filed on September 25, 2009 (less than 5 months before A3UM was published), assigned to Apple, and described a mapping application where selectable graphical pins representing images could instead be replaced with "smaller versions of the captured images (e.g., thumbnail images)." EX1028, ¶¶30, 34, Fig. 6 (referring to a "Places" view). That Apple chose a graphical pin for A3UM does not undermine a skilled artisan's understanding that markers and photo thumbnails were interchangeable. The prior art demonstrates that graphical pins and thumbnails were known alternatives and choosing between known alternatives involves the routine design tradeoffs familiar to a skilled artisan. EX1028, ¶30, 34.

128. A skilled artisan would have been motivated to modify A3UM's Places view to incorporate Belitz's graphical object functionality, including its thumbnails and counts. For example, Belitz explains the usefulness of its photo thumbnail technique, stating that it "would be useful to be able to present a user with an overview of associated images to special locations which enables to user to clearly see the associations." EX1007, ¶4; *see also* EX1006, ¶15 (explaining that providing the number of associated graphical objects "gives a user an indication how many objects are" linked from "said object and if further investigations of said objects would provide additional information"). A skilled artisan would recognize the complementary features of the Places interactive map in the A3UM interface,

that it dynamically groups and un-ungroups map markers and displays information about photos represented by map markers via pop-up windows on the map, including the number of photos at the map marker locations. *See* EX1005, 81-83, EX1005, 435 ("A location label appears above a pin in Places view, indicating the location where the image was shot. The location label indicates the name of the location and the number of images that were captured there."), 437-438 ("Depending on the zoom setting in Places view, Aperture might use a single pin to represent a group of images shot in close proximity. However, you can view the precise location where each image in the group was shot. . . . As you zoom in to the map, locations grouped together in a single pin begin to be marked by their own pins.").

129. A skilled artisan would have been motivated to modify A3UM's Places view to incorporate Belitz's graphical object functionality, including its thumbnails and counts because this combination would further improve the ease of use of A3UM. For example, Belitz displays thumbnails directly on the map, which can allow a user to more quickly identify which map marker they would like to select and display. *See* EX1006, ¶¶51-55, Fig. 4a-4b. Likewise, Belitz's count functionality displays the number of images linked from a marker overlaid on that marker's thumbnail, which can allow a user to more quickly identify which markers represent larger sets of photographs. *See* EX1006, ¶54. By disclosing

how to display this information in an accessible and non-cluttered way on the map itself, Belitz would have motivated a skilled artisan to make the combination in order to improve usability. *E.g.*, EX1033, 4 ("Where Picasa has the edge over Flickr and SmugMug is in showing thumbnails of each image on the map, not just a dot or pushpin, which I like better even though thumbnails can get pretty crowded.").

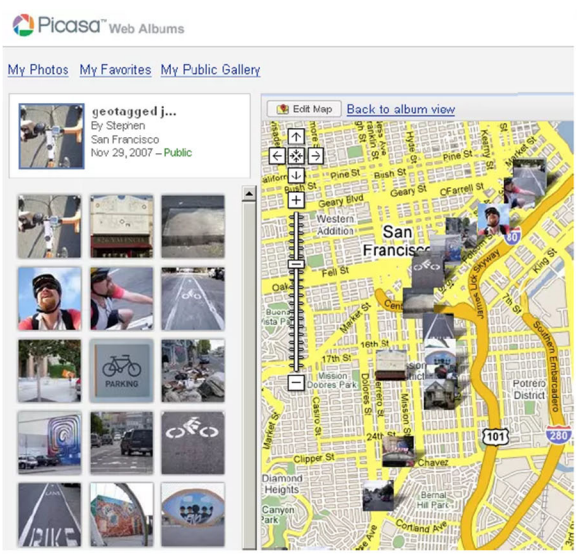
130. A skilled artisan would have had a reasonable expectation of success in modifying A3UM's Places view to incorporate Belitz's graphical object functionality, including its thumbnails and counts, because Belitz's techniques are readily combinable with A3UM's Places view. The prior art is replete with examples of displaying photo thumbnails on maps and a skilled artisan would have considered and could have accomplished such a modification. *See, e.g.*, EX1033, 2; EX1034, 1. Belitz's thumbnails overlaid with picture counts serve the same functional purpose in Belitz's photo-management system as A3UM's graphical pins serve in A3UM's photo-management system, so a skilled artisan would have expected the combination of A3UM and Belitz to yield predictable results. Also, as I explain below, the implementation details of such modifications were routine and well-within the ordinary abilities of a skilled artisan.

131. A3UM's use of Google Maps further supports the obviousness of the combination of A3UM and Belitz. EX1005, 434 ("Places view uses Google Maps

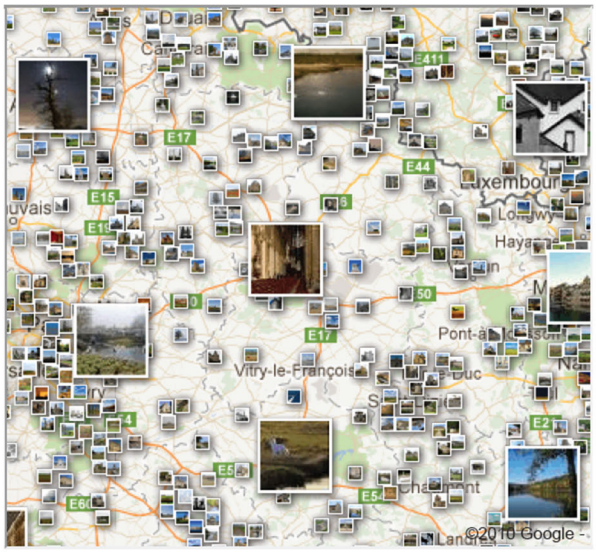
to plot the locations where your images were shot."), 1115 ("**Places view**[:] An area in Aperture where you can apply location information to an image selection and track the location of each shot using Google Maps."). A3UM's use of Google Maps is further clear from the screenshots disclosed by A3UM, each of which shows "Powered by Google" and contains the well-known and recognizable features of Google Maps. *E.g.*, EX1005, 433.

132. The pre-2011 Google Maps API would have enabled a skilled artisans to implement custom map markers such as photo thumbnails and overlays on embedded Google maps with routine effort. The Google Maps API at that time provided classes and functionality supporting custom overlay objects on custom maps. EX1040, 2-11 (describing the central "GMap2" class that is used to create a map), 42-46 (describing the "GMarker" class that is used to create markers on the map), 51-52 (describing the "GOverlay" interface that is used to "display custom types of overlay objects on the map"); EX1035, 239, 243. EX1035, 276-277 (explaining how callouts with thumbnails of photos overlaid on Google Maps via the API). Textbooks as early as 2009 provided step-by-step guides for creating a website that displayed pre-defined locations on a Google Map enabling a user to retrieve and display photos from, for example, Flickr matching those locations. EX1035, 203-207, 277.

133. Interactive maps with selectable photo thumbnails were well-known by early 2010. As explained above, numerous photo organizers and sharing websites included mapping functionality, and software applications and services were constantly looking to peer applications and services for data and techniques that could be used their functionality. *See* ¶¶55-67. This included examples of photo applications displaying portions of photos as small images on their interactive maps:



Picasa (2009)



Panoramio (2010)

EX1033, 2; EX1034, 1.

134. Thus, a skilled artisan would have found it obvious to modify A3UM's interactive map to use Belitz's thumbnails overlaid with photo counts (instead of a default pin marker) with a reasonable expectation of success. EX1040, 42-46, 51-52. This could have involved, for example, existing Google

Maps API functionality in a way that had already been performed by other systems before 2010. A skilled artisan would have considered the use of thumbnails as Belitz teaches in the A3UM interactive map to be nothing more than the predictable substitution of a known and equivalent interface element: using a marker or a photo thumbnail are two different ways of indicating a photo's location on a map. This an implementation would also have been the product of ordinary skill and common sense. As I explain above, the use of photo thumbnails on Google Maps-enabled photo applications was conventional by early 2010 and modifying A3UM to incorporate such functionality would have been obvious to try because a skilled artisan would have had good reason to pursue the known options, such as known alternatives, within his or her technical grasp.

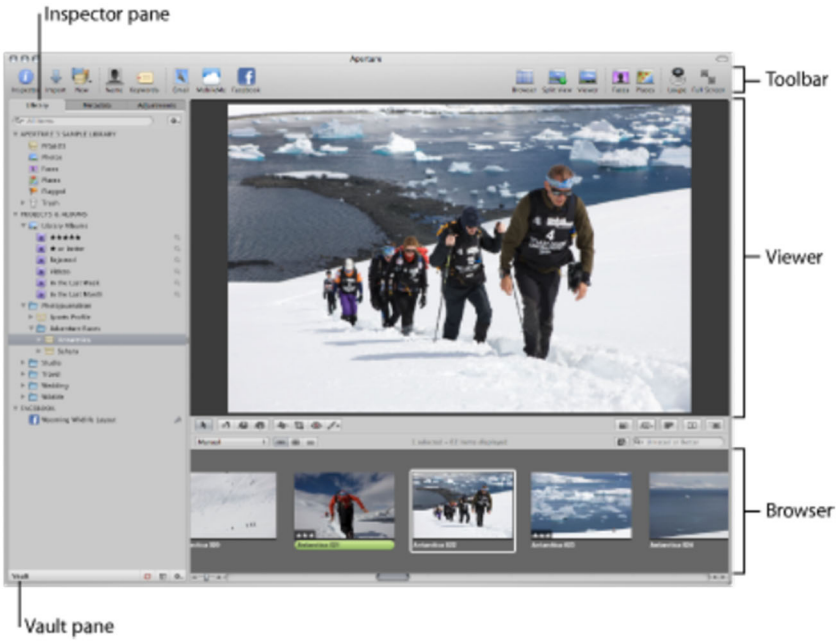
135. I discuss how this obvious combination of A3UM and Belitz satisfies the requirements of the challenged claims below, as well as several additional obvious modifications of that combination.

2. Claim 1

a. Preamble and Map View

136. Claim 1 recites "*[a] method comprising: responsive to a first input, causing a map view to be displayed on an interface, the map view including: (i) an interactive map*." The combination of A3UM and Belitz renders these features obvious.

137. A3UM describes an image management software system that can be installed on a computer to perform a software method. EX1005, 1 ("Aperture is a powerful and easy-to-use digital image management system that can track thousands of digital images and provides the avid photographer with high-quality image management and adjustment tools."). A3UM describes the process of setting up a computer to install and execute A3UM's recited software. EX1005, 1080-1088. A3UM explains that, once launched, the A3UM system displays a user interface for viewing, managing, and editing those photos. EX1005, 46. An example of this interface is displayed below:



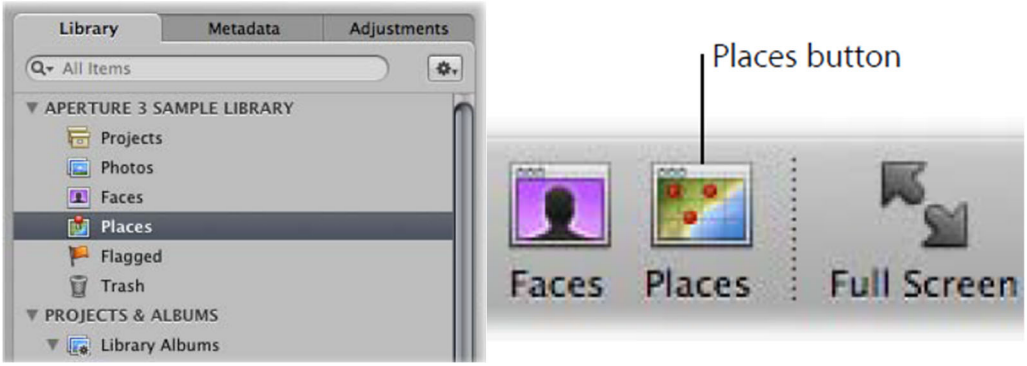
EX1005, 5-7, 46.

138. A3UM describes a process for causing the interface to display what it refers to as a Places view ("*map view*"), which includes a map that users can

interact with, such as by selecting pins, translating the map in different directions, or zooming in and out ("*interactive map*"). EX1005, 30 ("In Aperture, you can use Places to organize your images by the locations where they were taken. If you have a GPS-enabled digital camera or iPhone, Aperture categorizes the images by location and converts the GPS location tags to place names, such as Vancouver, Canada. You can explore where your images were shot using the Places view."), 81-83, 429-466, 1115 ("**Places view**[:] An area in Aperture where you can apply location information to an image selection and track the location of each shot using Google Maps. Images captured with GPS-enabled cameras provide their location information automatically.").

EX1005, 436-437.

139. The Places view in A3UM can be displayed by clicking via a mouse or pressure-sensitive tablet ("*first input*") either (1) the "Places" item in the Library inspector or (2) the Places button in the toolbar. EX1005, 81 ("To show the location information for images across the entire Aperture Library, select Places in the Library inspector."), 435 ("*To view the image locations for images in an item selected in the Library inspector*: Select an item in the Library inspector containing images that already have location information assigned to them, then click the Places button in the toolbar."), 438-439.



EX1005, 81, 435.

140. A3UM explains that a user can interact with the map in Places view by searching for locations in the search bar, selecting pins, changing the map view, and zooming in and out of the map. EX1005, 81 ("In Places view, you can search for locations where your images were shot, navigate to locations, zoom in to the map to view locations in detail, and change map views."). The interactive map in the Places view displays user-selectable markers (pins) at locations where photos

are located. EX1005, 30 ("In Aperture, you can use Places to organize your images by the locations where they were taken. … You can explore where your images were shot using the Places view."), 81-83 (commands), 429-466 (detailed description) , 896 ("**Places view**[:] An area in Aperture where you can apply location information to an image selection and track the location of each shot using Google Maps. Images captured with GPS-enabled cameras provide their location information automatically."). Also, once in Places view, a user "can search for locations where your images were shot, navigate to locations, zoom in to the map to view locations in detail, and change map views." EX1005, 81-83, 437-438. This input can either be a click of a mouse or a tap of a multi-touch trackpad. EX1005, 18, 437-438.

EX1005, 82.

141. A3UM discloses that its Places view (a "*map view*") is displayed on an "*interface*." For example, the Places view is displayed within the Aperture user interface as a whole, which is itself displayed on the display of a conventional computer when it is executing (each an "*interface*"). EX1005, 65, 81-82, 1081 (describing "a basic Aperture system" consisting of "[a] computer and display"), 1115 ("**Places view**[:] An area in Aperture where you can apply location information to an image selection and track the location of each shot using Google Maps.").

142. As I discuss above (¶¶117-135), it would have been obvious to modify A3UM in view of Belitz. Belitz describes and illustrates a graphical user interface including a map with various locations marked with graphical objects. EX1006, ¶¶6, 51. In one embodiment, illustrated in Figures 4a-4c, the graphical objects are thumbnails of photographs marking the location where the photographs

were taken. EX1006, ¶¶51-53, 55, 59, 62.

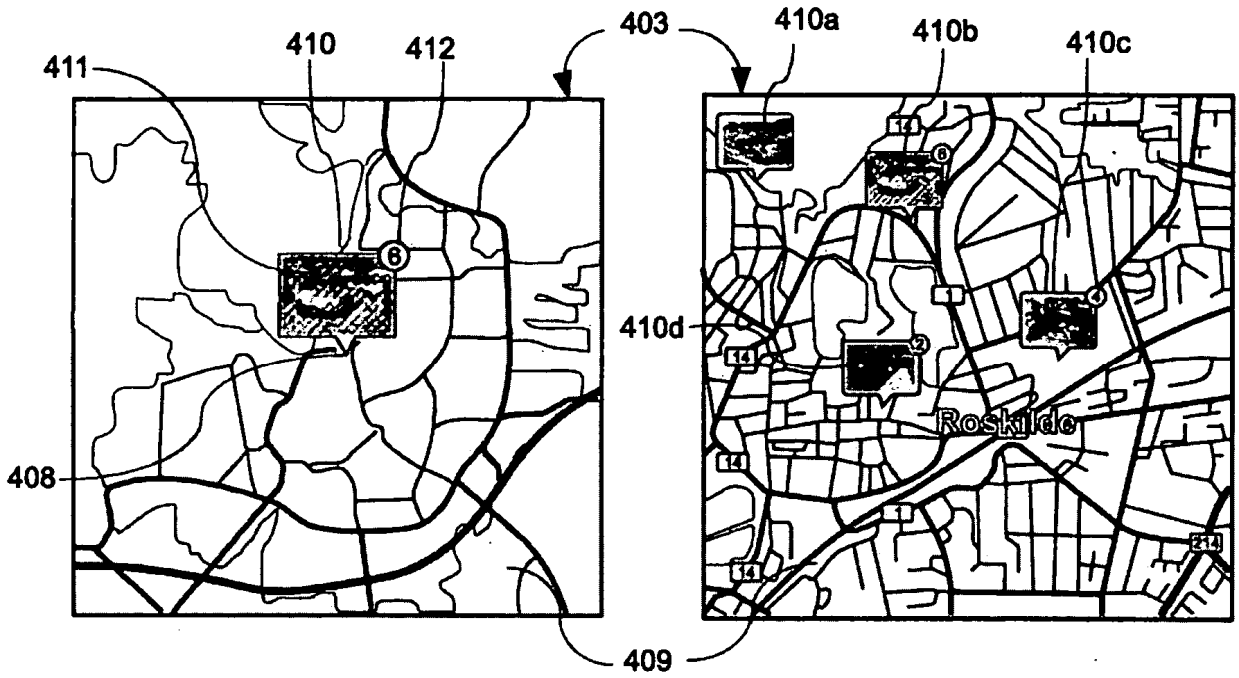


Fig. 4a Fig. 4b

143. Belitz Figure 4c illustrates an exemplary user interaction with its interface. It describes a popup window showing visual representations of at least some of the photographs linked from a graphical object located on a map; the popup window is displayed on the interface in response to a user clicking or tapping on the graphical object on the map. EX1006, ¶60 ("In this screenshot a graphical object 410c has been selected by a user, possibly by tapping on it with a stylus if the display 403 is a touch screen or by placing a cursor above it and clicking it. In this embodiment a popup window 413 is displayed over or instead

of the graphical object 410c. The popup window shows at least some of the visual representations 411 of the graphical object 410c.").

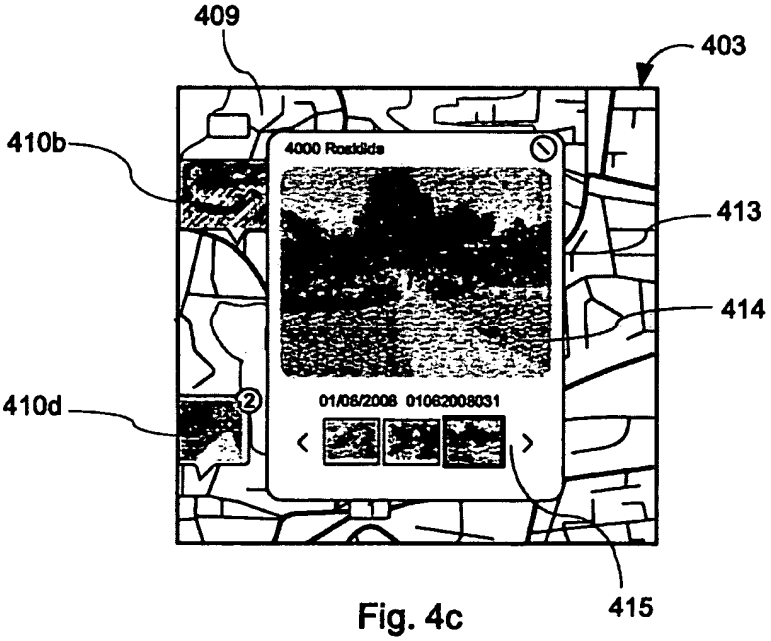


Fig. 4c

EX1006, Fig. 4c.

144. Thus, the combination of A3UM and Belitz renders obvious "*[a] method comprising: responsive to a first input, causing a map view to be displayed on an interface, the map view including: (i) an interactive map*."

b. First and Second Location Selectable Thumbnail Images

145. Claim 1 recites "*the map view including ... a [first/second] location selectable thumbnail image at a [first/second] location on the interactive map*." The combination of A3UM and Belitz renders these features obvious.

146. A3UM describes an interface with a variety of location selectable images (graphical pins) (*i.e.*, at "*first*" or "*second location[s]*") at geographic

coordinates on an interactive map, each representing one or more digital images (*e.g.*, photos). EX1005, 435 ("If you shot your images with a GPS-enabled camera or iPhone, Aperture automatically plots the location of each image on the map in Places view. … Red location pins mark the locations where images or groups of images were shot."). When selected, A3UM's graphical pins indicate the number of photos with the selected location and displays those photos in the Browser. EX1005, 436-437.

EX1005, 436-437.

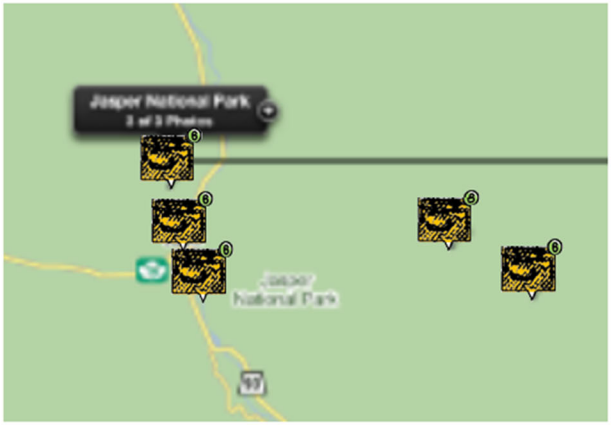
147. As I explain above (¶¶117-135), the combination of A3UM and Belitz would use Belitz's thumbnails (with counts) in place of A3UM's graphical pins. Belitz discloses a map displaying multiple user selectable markers (thumbnails) at

different locations which, when selected, prompt display of digital images at those locations. EX1006, Figs 4a-4c, ¶11 (explaining that a thumbnail "provides a user with an indication of the content of the graphical object, [*i.e.*,] the photograph, associated with the marked location."), ¶¶55-56.

EX1006, Figs. 4a-4b (annotated and excerpted).

148. When combined, the embedded Google Map in the A3UM Places view will display multiple of Belitz's thumbnails in place of pins at different locations on the interactive map (*i.e.*, "*a [first/second] location selectable thumbnail image at a [first/second] location on the interactive map*."), as shown below:

A3UM



A3UM-Belitz

EX1005, 437 (annotated).

149. To the extent the claims require the claimed "*thumbnail images*" to be reduced-size versions of the entire original image (*i.e.*, un-cropped), Belitz's thumbnails would satisfy such a requirement. Belitz suggests that each of its "*thumbnails*" are reduced-size versions of the entire original image through its disclosure of the selected thumbnail in Figure 4c being a reduced-size version of the image displayed above the row of thumbnails. EX1006, Fig. 4c, ¶¶57, (referring to the displayed thumbnails as "visual representations 411" of graphical objects), 60 (Fig. 4c "shows at least some of the visual representations 411 of the" selected "graphical object"). This is confirmed by an alternative embodiment proposed by Belitz where "the visual representations are always of the same size …." EX1006. ¶63. This is further confirmed by Belitz's disclosure that "[i]n one embodiment the image can be opened in ***full size*** by clicking or double clicking or tapping on it which launches an image browsing or editing application," EX1006,

¶60 (emphasis added), which makes sense if the thumbnail images were reduced size, *i.e.*, a (down)scaled uncropped versions of the "full size" image.

150. Alternatively, it would have been obvious by early 2010 to modify A3UM as combined with Belitz such that the thumbnails are reduced-size versions of the entire original image (*i.e.*, un-cropped). As I discuss above (¶67), the idea of showing small images on a map to indicate the existence of photos with that location was ubiquitous by early 2011. *E.g.*, EX1033, 2; EX1034, 1. Creating a smaller version of an image that maintains its aspect ratio without cropping the photo was well-known by 2010, EX1005, 48 (resizing thumbnails), 893 (resizing images), and Belitz suggests the benefits of enabling a user to "clearly see" picture information, EX1006, ¶4.

151. Additionally, there was a finite and small set of different types of images that could be used, such as pins, images that generally represented the photos at a location (*e.g.*, a cropped version of the image), and, most simply, a reduced-size (scaled) version of the image itself, *i.e.*, classical uncropped "thumbnails." There are only a handful of ways of creating a smaller image (*e.g.*, cropping the photo v. not cropping the photo, maintaining its aspect ratio v. not maintaining its aspect ratio), so choosing one would have been a routine design decision and thus obvious to a skilled artisan, and would have provided the benefit of better representing the picture represented by the map marker. As I discuss

above, putting a picture itself on A3UM's map would have been obvious, and choosing whether that picture was a cropped version or uncropped version of the larger picture it represented was one of the routine design decisions that would have been made by an ordinary artisan in early 2010. *See* EX1005, 614-617 (discussing cropping to "improve the composition" of an image while also showing that the uncropped version displays the entire image). As would have been apparent to any skilled artisan, choosing an uncropped "*thumbnail*" would provide the benefit of better representing the actual picture represented by the "*thumbnail*," and would have motivated a skilled artisan to consider and select that option.

152. Modifying A3UM to include uncropped photo thumbnails would also simply arrange old elements, each performing the same function it had been known to perform, to yield no more than one would expect from such an arrangement: the system of A3UM as modified in view of Belitz displaying uncropped "*thumbnails*" of larger pictures on the Places view map interface.

153. Thus, the combination of A3UM and Belitz renders obvious "*the map view including … a [first/second] location selectable thumbnail image at a [first/second] location on the interactive map*."

c. First and Second Location Views

154. Claim 1 recites "*responsive to an input that is indicative of a selection of the [first/second] location selectable thumbnail image, causing a [first/second]*

location view to be displayed on the interface, the [first/second] location view including (i) a [first/second] location name associated with the [first/second] location and (ii) a representation of at least a portion of one digital file in a [first/second] set of digital files, each of the digital files in the [first/second] set of digital files being produced from outputs of one or more digital imaging devices, the [first/second] set of digital files including digital files associated with the [first/second] location." The combination of A3UM and Belitz renders these features obvious.

155. A3UM discusses a software method that, "*responsive to an input that is indicative of a selection of the first location selectable thumbnail image, caus[es] a first location view to be displayed on the interface*." A3UM allows a user to click or tap on Places map markers to cause the Places view to focus on that specific location ("*[first/second] location view[s]*"). EX1005, 436-438 ("To view the images associated with a location … [s]elect a red pin."). Once selected, "the images or images associated with the location … are selected in the Browser" and displayed ("*[first/second] set of digital files*"). EX1005, 436-438. As shown, this further involves displaying (i) a callout containing the name of the location ("Jasper National Park") ("*location name*") and the number of digital images with location metadata matching the selected location ("1 of 3 Photos") and (ii) the digital images in the Browser with metadata matching that location ("Images shot

in the selected location"), each with a corresponding image label that contains another name of the location ("Canada"). EX1005, 436-437.

EX1005, 437.

156. A3UM discloses one example of this location selection functionality as follows, which shows a selected marker. EX1005, 436-438. A skilled artisan would understand that the functionality disclosed for the selected marker is representative of the functionality disclosed for each marker. A3UM discloses users being able to select any arbitrary "red pin" to view "images or images associated with the location," EX1005, 436-438, which a skilled artisan would understand to mean that the functionality disclosed for the "Jasper National Park" pin would likewise be the operation of A3UM's map interface for each of the other

pins, with corresponding different pictures, names, and image counts based on the underlying information and digital items stored by the system.

157. Belitz discloses that its graphical objects are selected by clicking or tapping on them. EX1006, ¶60 ("In this screenshot a graphical object 410c has been selected by a user, possibly by tapping on it with a stylus if the display 403 is a touch screen or by placing a cursor above it and clicking it. . . The popup window shows at least some of the visual representations 411 of the graphical object 410c.").

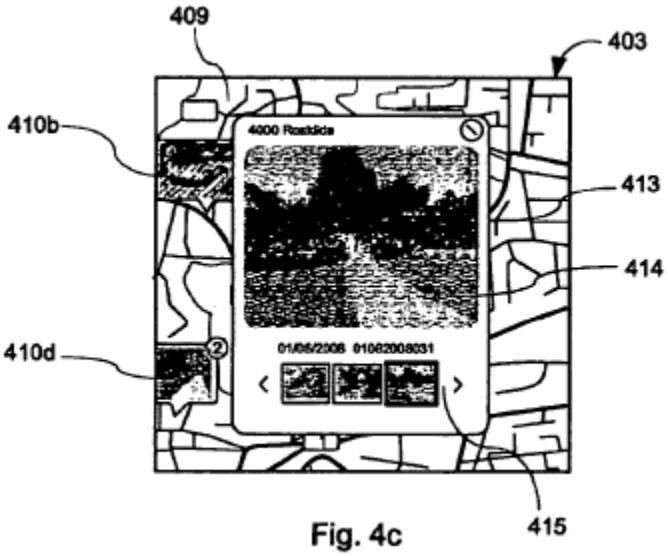


Fig. 4c

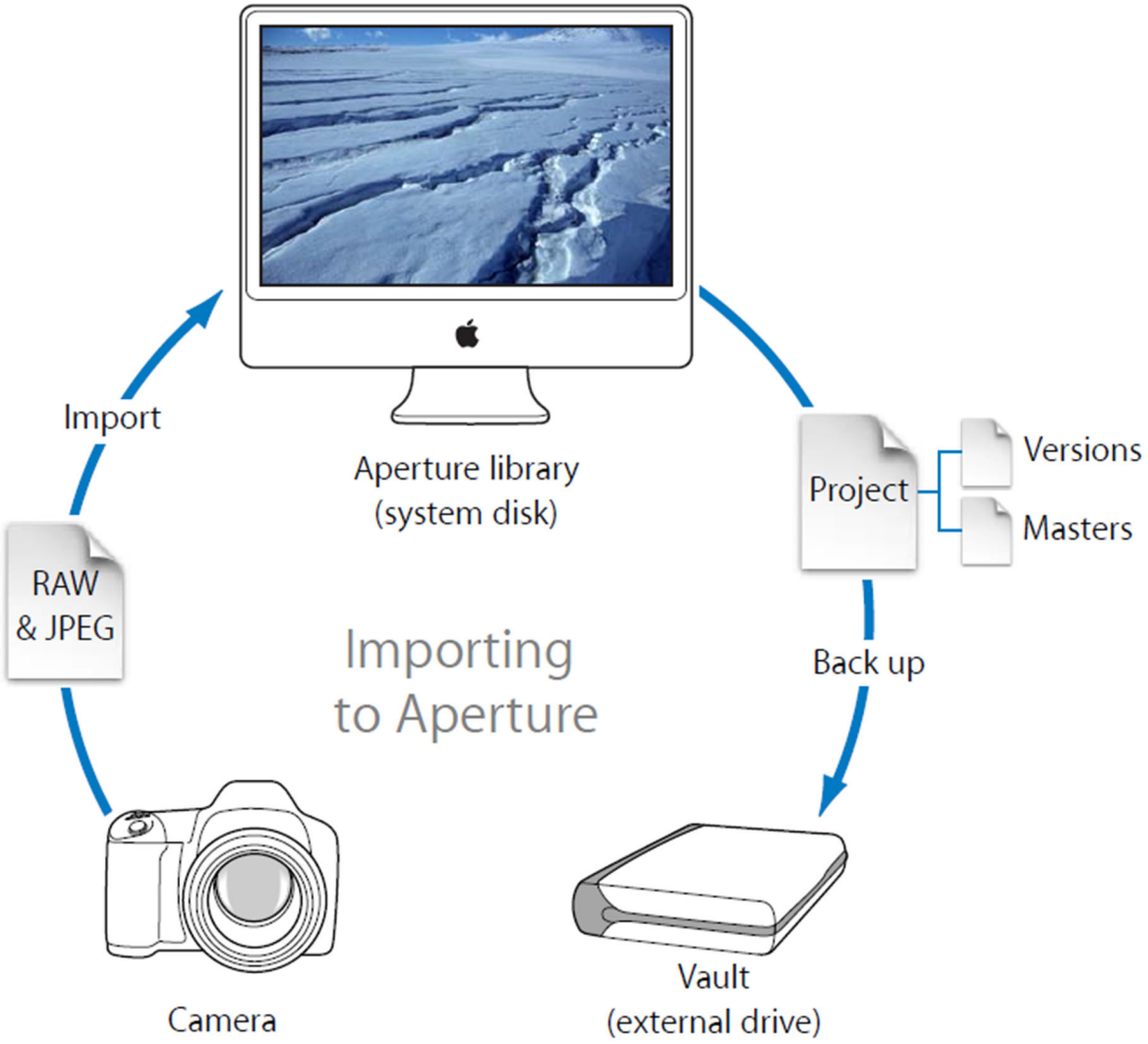
EX1006, Fig. 4c.

158. A3UM as modified by Belitz would thus use an interface that displays, in response to clicking or tapping on one of Belitz's thumbnails on the map ("*a selection of the [first/second] location selectable thumbnail image*"), a modified Places interface view that is focused on the selected location ("*causing a*

[first/second] location view to be displayed on the interface") such that it displays a location name in the form of the tool tip location name as well as location names in the image file names ("(*i) a [first/second] location name associated with the [first/second] location"*) and representations of the digital images with that location ("*(ii) a representation of at least a portion of one digital file in a [first/second] set of digital files,"*). EX1005, 436-438.

159. A3UM contemplates that the images with the selected locations are produced from digital cameras or other digital imaging devices ("*each of the digital files in the first set of digital files being produced from outputs of one or more digital imaging devices*"). EX1005, 5 ("Aperture is designed to be the center of your digital photography workflow.") 1114 (defining "photograph" as used in A3UM to mean "[a]n image created using a camera as a result of light interacting with a light-sensitive surface, usually film or a digital image sensor.") For example, A3UM explains that its workflow involves first importing digital photographs direct from a camera or card reader. EX1005, 8 ("To use Aperture, you first import your photos … directly from your camera or a card reader. . . [Y]ou can connect your digital camera or card reader to your computer and Aperture automatically detects it."), 157-158. A person of ordinary skill would understand from this disclosure that the pictures and videos that are used by A3UM's system comprise pictures and videos produced from the outputs of digital

imaging devices. Indeed, the alternative would be to use computer-generated images, but the vast majority of (if not every) photo and video disclosed by A3UM appears to be the result of a digital imaging device. As shown below, cameras ("*digital imaging devices*") output pictures ("*RAW & JPEG*") that are imported into A3UM's library:



EX1005, 158.

160. Belitz likewise discloses a system with comparable attributes to A3UM's system, such as: (1) displaying interface views prompted by selection of thumbnails on the interactive map (EX1006, ¶60); (2) displaying location names in addition to location-associated pictures when a graphical object is selected (EX1006, ¶60 (*e.g.*, "4000 Roskilde")); (3) displaying thumbnails of photographs associated with a location in a callout window (EX1006, Fig. 4c, ¶60 ("The popup window shows at least some of the visual representations 411 of the graphical object 410c. One 414 of the visual representations 411 or images as they are in this embodiment is shown in a larger size than the others which are shown in a list 415. A user can easily scroll back and forth among these associated images and preview them in the popup window 413. In one embodiment the image can be opened in full size by clicking or double clicking or tapping on it which launches an image browsing or editing application."), and (4) the digital images used in its system are produced by "electronic devices" (*e.g.*, EX1006, ¶2 (discussing "electronic devices such as computers, mobile phones, and Personal Digital Assistants (PDAs)" as source of "graphical objects [that] are photographs taken at" a particular location)).

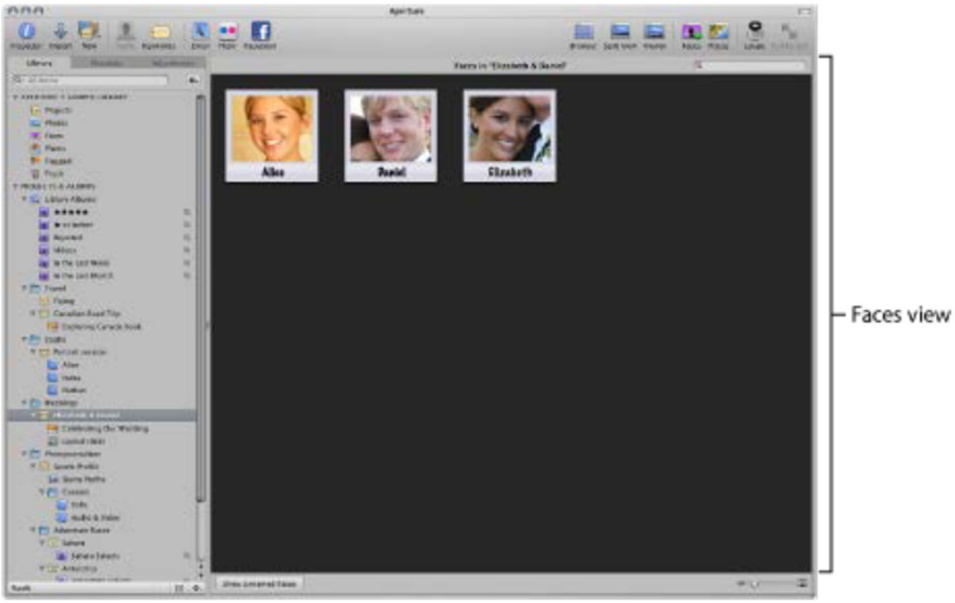
161. Thus, the combination of A3UM and Belitz renders obvious "*responsive to an input that is indicative of a selection of the [first/second] location selectable thumbnail image, causing a [first/second] location view to be*

displayed on the interface, the [first/second] location view including (i) a [first/second] location name associated with the [first/second] location and (ii) a representation of at least a portion of one digital file in a [first/second] set of digital files, each of the digital files in the [first/second] set of digital files being produced from outputs of one or more digital imaging devices, the [first/second] set of digital files including digital files associated with the [first/second] location."

d. People View

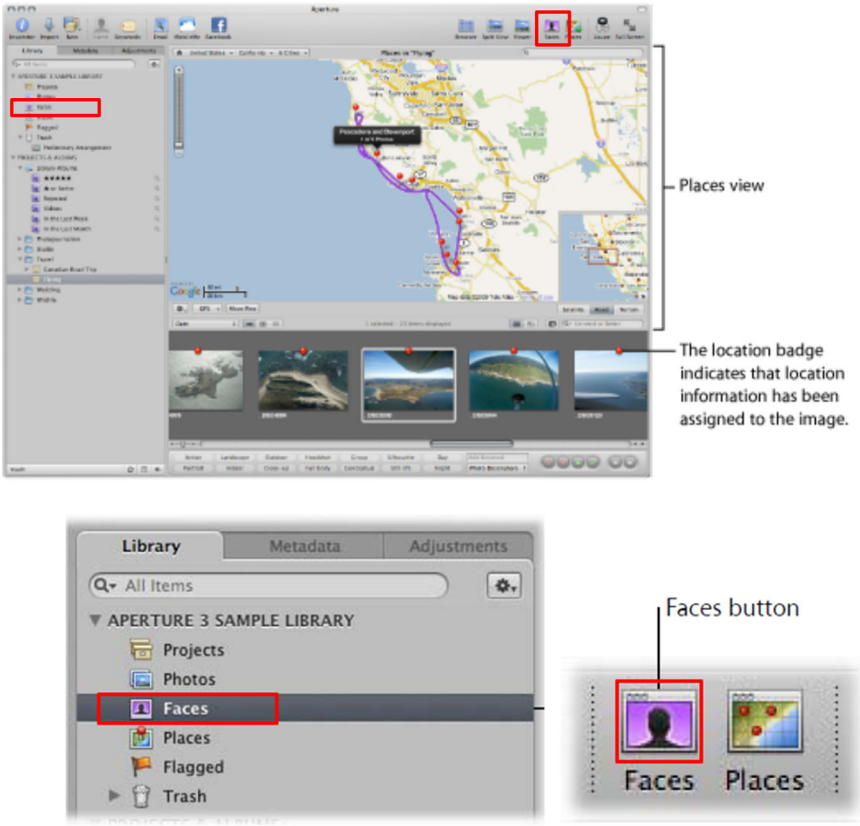
162. Claim 1 recites "*responsive to a second input that is subsequent to the first input, causing a people view to be displayed on the interface*." The combination of A3UM and Belitz renders these features obvious.

163. A3UM depicts a Faces view ("*people view*") that includes visual representations of people associated with photographs in the Aperture Library or a specific item within Aperture, and specifically displays snapshots of people in images in the library or in an item selected in the Library inspector that have been assigned names. EX1005, 28-29 (overview of Faces view), 78-80 (description of user interface commands related to Faces view), 417-428 (detailed description of the Faces view).



EX1005, 29, 427.

164. A3UM explains numerous ways to display its Faces view, including selecting either the Faces button in the toolbar or the Faces item in the Library inspector. EX1005, 28 (Faces view is "accessed by selecting Faces in the Library inspector or selecting an item in the Library inspector and then clicking the Faces button in the toolbar."), 81. These two "Faces" user interface elements are displayed when in, and can be selected directly from, the Places view ("*second input that is subsequent to the first input*"). EX1005, 30.



EX1005, 30, 78 (annotated).

165. A skilled artisan would understand that the user interface elements identified by A3UM can be selected in various orders, such as by first navigating to Places view and then, from there, navigating to Faces view. Specifically, the sequence of a user's selection of "Places" and "Faces" views is arbitrary and driven by user preferences. A skilled artisan would understand A3UM to disclose user interface elements that can (and would) be selected in various orders, such as selecting a "Faces" view before or after that user selects a "Places" view. To the extent A3UM does not expressly disclose choosing the Places view and then, from there, choosing the Faces view, such a simple order of operations would have been

an obvious user experience decision. As shown above, A3UM discloses that the Places view includes links to the Faces view, and it would have been obvious to do what A3UM suggests: invoke the Faces view functionality from the Places view. EX1005, 30, 78. Doing so would merely use A3UM's capabilities as stated, and is one of a limited number of combinations of transitioning between views in A3UM. A3UM thus teaches and makes obvious displaying the Faces view in response to "*a second input that is subsequent to the first input"* that displays the Places view.

166. Thus, the combination of A3UM and Belitz renders obvious "*responsive to a second input that is subsequent to the first input, causing a people view to be displayed on the interface*."

e. First and Second Person Selectable Thumbnail Images

167. Claim 1 recites "*the people view including (i) a [first/second] person selectable thumbnail image including a representation of a face of a [first/second] person, the [first/second] person being associated with a [third/fourth] set of digital files including digital photographs and videos*." The combination of A3UM and Belitz renders these features obvious.

168. A3UM's Faces view displays each person's snapshot, *i.e.*, the image displayed above a person's name ("*[first/second] person selectable thumbnail image*"). EX1005, 28-29 (A3UM's Faces view "displays the faces of all the people in images in the library who have been assigned names."), 78. As shown

below, each person's snapshot includes a picture or representation of the face of the displayed person ("*including a representation of a face of a [first/second] person*"). A3UM refers to the people snapshots displayed in the Faces view as thumbnails. EX1005, 79 ("*Thumbnail Resize slider:* Drag the slider to change the size of the snapshots.").

EX1005, 28-29, 80, 419-420. This is further confirmed by comparing the snapshots with the "confirmed images of that person," which demonstrates that the snapshots represent confirmed images. EX1005, 28-29, 418-420. For example, the snapshot of "Ivana" on the top of page 419 of EX1005 is from the same picture as the confirmed image of "Ivana" on the bottom of that page. That is also the case with the snapshot of "Elizabeth" on top of page 29, which is from the same picture as the confirmed image of "Elizabeth" at the bottom of that page. This is how a person of ordinary skill would understand this disclosure, which explains the operation of detecting faces in sets of photos and videos, then using those detected faces as visual and selectable user interface elements to view those photos and videos.

169. A3UM further discloses that each of these snapshots will allow a user to access different sets of digital images, *i.e.*, those digital images in the user's collection designated as containing the individual. *E.g.*, EX1005, 28–29, 418-420. As illustrated above, there are a "first," "second" and "third" person in this example of the Faces interface: Alice, Daniel, and Elizabeth. EX1005, 28–29. The digital images associated with each of these people logically will include sets of photos distinct from sets of photos linked to a particular location represented by a pin on the interactive map because different criteria are used to select the different sets of digital images (*i.e.*, a match of the person's face vs. geographic metadata matching the location of the pin). EX1005, 418-420. There could of course be an overlap between sets of digital images (the photos on page 80 of A3UM would appear to include multiple photos that include both Daniel and Elizabeth), but each set would also include unique digital images such as, respectively, photos of Daniel or Elizabeth by themselves.

170. To the extent the claims require the claimed "*person selectable thumbnail images*" be reduced-size versions of the original photo (*i.e.*, uncropped), such a modification would have been obvious to a person of ordinary skill by early 2010. Creating a smaller version of an image that maintains its aspect ratio without cropping the photo was well-known by 2010, EX1005, 48 (resizing thumbnails), 893 (resizing images), and Belitz suggests the benefits of enabling a

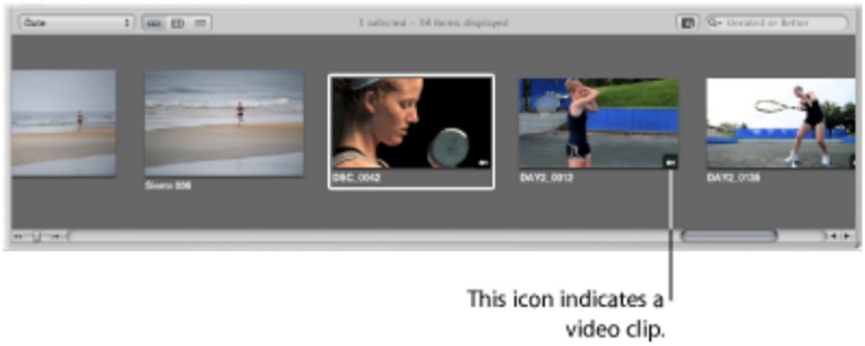
user to "clearly see" picture information, EX1006, ¶4. A3UM itself discloses that the snapshots are used to provide a visual association of a person with a name as presented in the Faces view. EX1005, 28-29, 80, 419-420. A skilled artisan would have understood that as long as the snapshots can provide such a visual association between the identified person and the name in a way that allows a user to select the appropriate snapshot to view pictures of the desired person, whether the snapshot is a cropped or uncropped image of one of the underlying photos is functionally identical.

171. As I discuss above (¶¶151-152), choosing between using a cropped or uncropped "*thumbnail*" was one of the routine design decisions that would have been made by an ordinary artisan in early 2010. *See* EX1005, 614-617 (discussing cropping to "improve the composition" of an image while also showing that the uncropped version displays the entire image). As would have been apparent to a skilled artisan, choosing an uncropped "*thumbnail*" instead of a cropped "*thumbnail*" would provide the benefit of better representing the actual picture represented by the "*thumbnail*," and would have motivated a skilled artisan to consider and select that option. Further, choosing an uncropped image that is a closeup of the person (as is repeatedly shown in A3UM) would be functionally indistinguishable from A3UM's current operation. *E.g.*, EX1005, 80 (several images are closeups), 419 (all images a closeups).

172. There are only a handful of ways of creating a smaller image (*e.g.*, cropping the photo v. not cropping the photo, maintaining its aspect ratio v. not maintaining its aspect ratio), so choosing one would have been a routine design decision and thus obvious to a skilled artisan. Choosing an uncropped "*thumbnail*" instead of a cropped "*thumbnail*" would simply arrange old elements, each performing the same function it had been known to perform, to yield no more than one would expect from such an arrangement: A3UM as modified by Belitz to display uncropped "*thumbnails*" of larger pictures on the Faces view.

173. A3UM describes that the snapshots of individuals in the Faces view can be selected, *e.g.*, double-clicked with a mouse, to display media associated with that person ("*[third/fourth] set of digital files*"). EX1005, 29, 424. A skilled artisan would understand from this disclosure that a user can double click the image of the person's face to display more pictures of that person. A3UM states that "[y]ou can view all of the images in your library in which a person appears by double-clicking the person's snapshot in Faces view," meaning double-clicking the person's face will display all of the images containing that person, not just the single image displayed in the top-level Faces view. EX1005, 29, 424 (after, "double-click[ing] the person's snapshot," "[t]he Faces browser appears, showing all the confirmed images of the person.").

174. A skilled artisan would understand that A3UM's reference to "images" associated with a given person and face can include both images and videos ("*a [third/fourth] set of digital files including digital photographs and videos*"). This is clear from A3UM's disclosure as a whole. For example, A3UM discusses its Library in terms of organizing photos, audio clips and videos. *E.g.*, EX1005, 21 ("Aperture provides a Library inspector for organizing your photos, audio clips, and video clips …."). A3UM then uses the term "images" to refers back to those three categories collectively. *E.g.*, EX1005, 21 ("Aperture provides a Library inspector for organizing your photos, audio clips, and video clips; an Adjustments inspector for applying adjustments; and a Metadata inspector that allows you to review metadata and assign it to your images."). Users ordinarily will have a library containing both photos and videos, as A3UM itself illustrates in its examples, with the thumbnails on the right representing videos and the thumbnails on the left representing still images (without the video clip icon):



EX1005, 271.

175. A skilled artisan also would understand from A3UM's disclosure as a whole that its repeated references to "images" or "digital images" refers to its functionality for both photos and videos. For example, photos and video clips are displayed in A3UM in the same way: via thumbnails that can be selected to view a larger version of the underlying media file. EX1005, 51, 251 ("When you select images in the Browser, the Viewer immediately displays a detailed view of your selection."), 271 ("**To listen to audio clips or view video clips imported into Aperture**[:] 1. In the Library inspector, select an item that contains audio or video clips. The audio and video clips appear in the Browser as thumbnails. 2. In the Browser, select either an audio or video clip. 3. In the Viewer, do one of the following: . . . If you selected a video clip: The video clip appears in the Viewer.").

176. A3UM frequently refers to "images" as encompassing functionality for managing "*digital photographs*" as well as "*videos*." *See, e.g.*, EX1005, 157 (discussing "Importing Images" as encompassing "video files"), 166 (discussing "Importing Image Files" as encompassing "import[ing] image, audio, and video files"), 185 (discussing "Importing Images" as encompassing importing "image, audio, and video files"), 250 (discussing "Displaying Images in the Viewer" as encompassing "video clips"), 412-413 (discussing how "[b]adges can appear on images," with one example meaning "[t]he thumbnail image represents a video clip"), 793 (discussing "Exporting Your Images" as encompassing exporting

"video files"). Thus, a skilled artisan would understand A3UM's suggestion that a user can "view all of the images in your library in which a person appears" as allowing the user to view all of the digital photographs and videos "in which a person appears."

177. A3UM illustrates that a user can associate a video file with a person in the same way a user associates digital photographs with a person. EX1005, 64 (describing a process for assigning names to people in images using the "Faces feature), 421 (depicting the selectable "Name button" in the toolbar where the Browser is displaying a photograph), 23 (depicting the selectable "Name button" in the toolbar where the Browser is displaying a video). A3UM explains that a user can choose a specific moment in a video clip to serve as a thumbnail for the video. EX1005, 274-275 (after choosing a specific moment in a video, "[t]he video frame at the position of the playhead is set as the video clip's poster frame, and the video clip's thumbnail image in the Browser is updated").

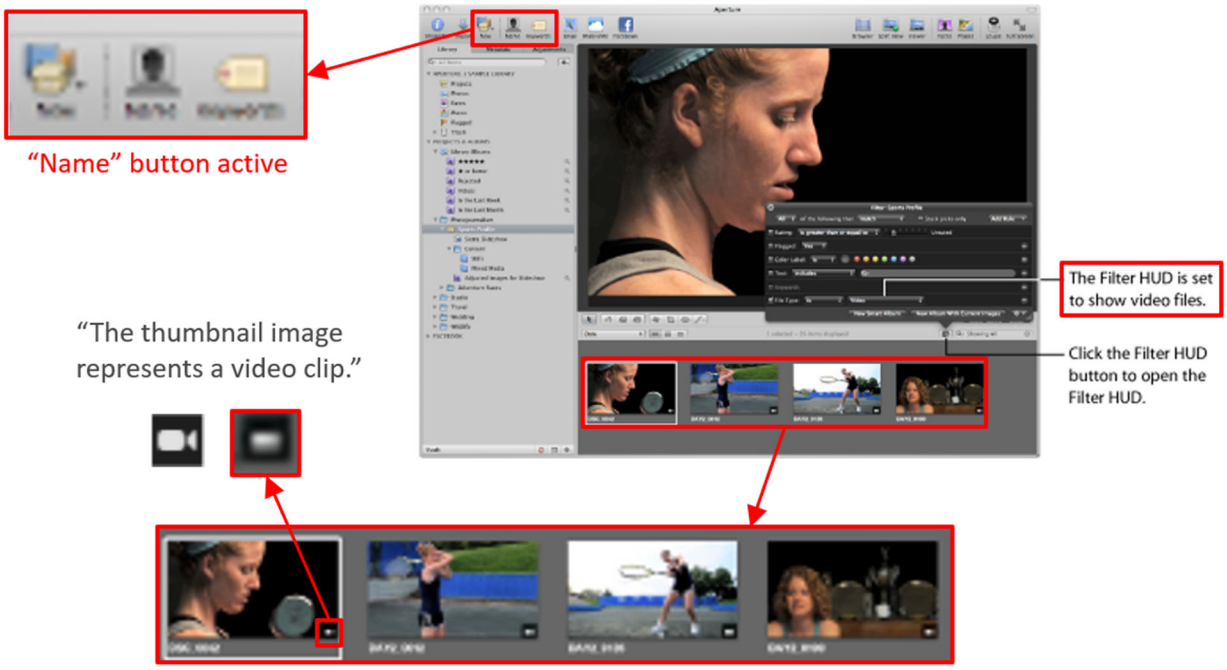
178. A3UM explains that when media files are imported, they are automatically scanned to identify faces. EX1005, 418 ("Rather than painstakingly comb through your entire image library, adding keywords to each image in order to identify all the people in it, you can use the Aperture face detection and face recognition technology, called *Faces*, to help automate the process."). To associate with a person the faces identified by the A3UM's face recognition technology, a

user selects (*e.g.*, clicks) the "Name" button, selects a person whose face was identified in the image (such as shown below), provides that person a name, and then later can "see the people you named in your images in Faces view." EX1005, 64 ("*Name Button*: Click this button to assign names to people in your images using the Faces feature. The Name Faces HUD appears, and a face label appears below the faces in the selected image. Enter a name in the face label to name each person in the image. You can see the people you named in your images in Faces view."). This "Name" button is enabled when, as in the following example, the system has identified faces in the picture:

EX1005, 421.

179. As shown in the following example, A3UM describes a process through which a video file can be associated with a person. As shown in the following screenshot, the Filter HUD is set so the system only "show[s] video

files" and DSC_0042 is the only item selected. EX1005, 23 (picture showing "1 selected"). That DSC_0042 represents a video file is further confirmed by its badge overlay of a motion picture camera icon, EX1005, 23, which A3UM explains means that "[t]he thumbnail image represents a video clip," EX1005, 413, 271 ("This icon indicates a video clip.").

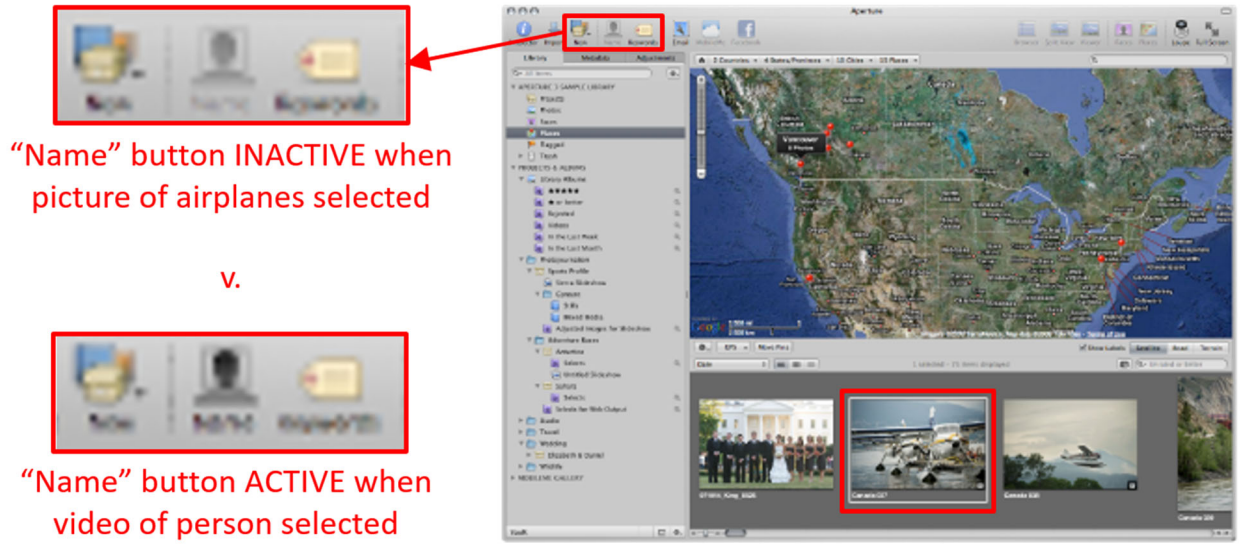


EX1005, 23 (annotated).

180. A3UM depicts the "Name" button being active and not greyed out when the Viewer displays a video clip, which a skilled artisan would understand to mean that it can be selected to associate a detected face (*e.g.*, the face of the woman shown in the video frame) with a person's name, such that it can be viewed via the described functionality for A3UM's Faces view. EX1005, 23. A skilled

artisan would understand that the "Name" button being active and not greyed out means that A3UM's system has detected a face in the selected media file, and A3UM's functionality for that "Name" button is available to associate the media file with a given person. EX1005, 64. A3UM explains that the Name button allows a user to associate a name with a identified face, such that the Name button being active means that the system has detected in a face in the selected item. In the context of the above example, that item is a video file.

181. A3UM illustrates its functionality when a user has selected a picture without any detected faces. EX1005, 440. As shown below, when a user selects a picture that does not have any faces, *e.g.*, a picture of seaplanes, the "Name" button is greyed out and the user cannot associate that picture with a person by clicking the "Name" button:



EX1005, 440. As shown above, the user has selected a photograph that does not have any person's face (at least not visible through the airplane window) and A3UM does not disclose the "Name" button being active. That the "Name" button is greyed out would convey to a skilled artisan that no faces were detected.

182. Thus, A3UM therefore discloses to a skilled artisan that its references to "images" or "digital images" encompasses videos, that digital photos and videos are treated the same way by A3UM's library, filtering, and other functionality, and that the "Name" button allows a user to associate a video with a person in the same way as a digital photo. A skilled artisan would therefore understand that A3UM's Faces view would allow a user to access associated photos and videos of a given person. For all of these reasons, a skilled artisan would understand A3UM as a whole to teach that each person can individually be associated with a set of media files comprising both digital photographs and videos ("*the [first/second] person being associated with a [third/fourth] set of digital files including digital photographs and videos*").

183. To the extent one could argue that A3UM does not expressly disclose that "*the [first/second] person*" is "*associated with a [third/fourth] set of digital files including digital photographs and videos*," it would have been obvious to further modify the A3UM-Belitz combination to allow users to associate both photos and videos with a given person so that both types of associated media can

be displayed in A3UM's Faces view. As I explain above, A3UM already discloses extensive support for videos and displays them in-line with photos in the Browser, EX1005, 157, 166, 185, 250, 413, 793, and allows users to interact with them as if they were images (until the user presses play), EX1005, 51, 251, 271;

184. By early 2011, it was common for users to take both still photos and videos of the same person (*e.g.*, a parent taking pictures and videos of their child). At the same time, A3UM and other photo organizers allowed users to import and organize both still images and videos. *E.g.*, EX1031, 1; EX1005, 157. A3UM discloses representing video files with representative images and already detects faces in still images, EX1005, 274-275, and it was known to detect faces in video keyframes as well as in videos themselves. For example, it was known to detect faces in keyframes of videos, EX1050, 1:6-15, 2:17-27, Fig. 1A, which would involve utilizing essentially the same functionality that already exists in A3UM. It was further known to automatically extract keyframes in videos and then identify faces in those keyframes. EX1049, ¶¶14-19, 51-53, Fig. 3. A user would have been motivated to detect faces in either the video still frame or the video itself (assuming, for the sake of argument, that A3UM does not already disclose precisely that) and associate them with people in Faces view to expand the set of media made easily accessible through Faces view. It would have thus been obvious to extend, to the extent necessary, A3UM's facial recognition functionality to

detect faces in videos and display them along with images so that a user could access photos and videos of the same person together. Such a modification would also simply arrange old elements, each performing the same function it had been known to perform, to yield no more than one would expect from such an arrangement: A3UM as modified by Belitz allowing access to both still images and videos via the Faces view functionality.

185. Thus, the combination of A3UM and Belitz renders obvious "*the people view including (i) a [first/second] person selectable thumbnail image including a representation of a face of a [first/second] person, the [first/second] person being associated with a [third/fourth] set of digital files including digital photographs and videos*."

f. First and Second Names

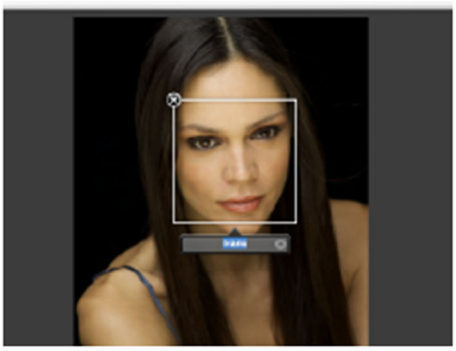
186. Claim 1 recites "*the people view including ... a [first/second] name associated with the [first/second] person, the [first/second] name being displayed adjacent to the first person selectable thumbnail image*." The combination of A3UM and Belitz renders these features obvious.

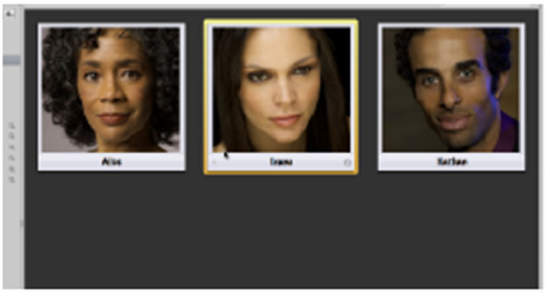
187. A3UM's Faces view displays each person's snapshot next to their name, *e.g.*, "Alice," "Daniel," or "Elizabeth." EX1005, 28-29, 78-80. A3UM's facial recognition functionality allows users to "associate … identified faces with people" by clicking the "Name" button and naming the face, which then allows the

users to "see the [named] people … in Faces view.". EX1005, 64, 70, 417-420. As I discuss above, this "Name" button is enabled when, such as in the following example, the system has identified faces in the picture:

EX1005, 79. In the above case, one of the people identified in the picture has already been provided a name, while the other two identified people show prompts to add a name to be used by the system.

188. A3UM describes using facial recognition to identify faces and allow a user to assign an identified face a name. EX1005, 418-420. For example, A3UM discloses identifying a person's face, the user naming that face "Ivana," and then displaying "Ivana" as the text string underneath the snapshot for that person. EX1005, 418-419:





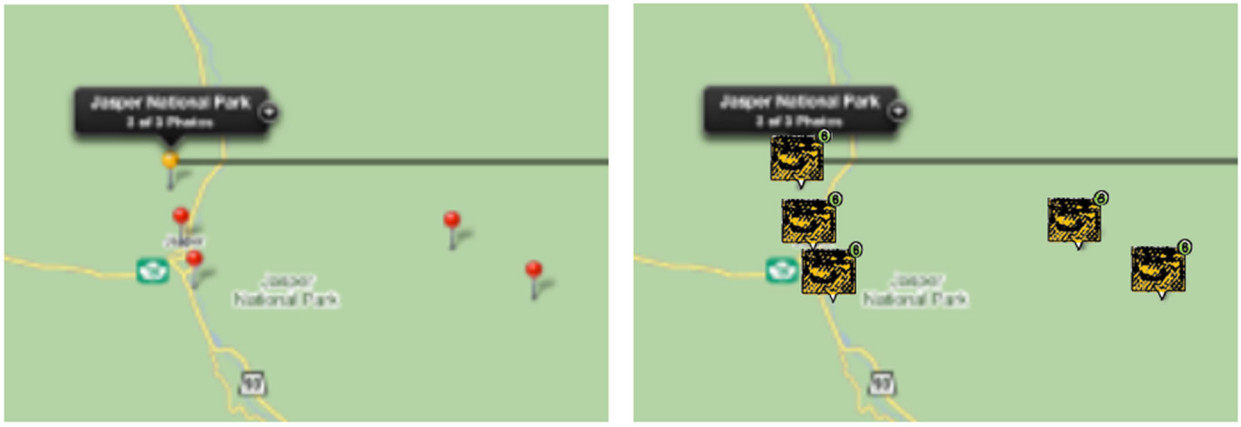
189. A3UM thus describes an interface where users can input names for a plurality of identified people (including "*a [first/second] name associated with the [first/second] person*"), and those names are displayed directly underneath the snapshots of those people in the Faces view ("*the [first/second] name being displayed adjacent to the first person selectable thumbnail image*").

190. Thus, the combination of A3UM and Belitz renders obvious "*the people view including … a [first/second] name associated with the [first/second] person, the [first/second] name being displayed adjacent to the first person selectable thumbnail image*."

3. Claims 2 and 5

191. Claims 2 and 5 recite "*[t]he method of claim [1 or 2], wherein the map view further includes a [first/second] indication feature associated with the [first/second] location selectable thumbnail image, the [first/second[indication feature being based on a number of digital files in the [first/second] set of digital files*." The combination of A3UM and Belitz renders these features obvious.

192. As combined above (¶¶117-135), A3UM-Belitz would use Belitz's thumbnails with counts, as shown below:



A3UM A3UM-Belitz

EX1005, 437 (annotated).

193. A3UM discloses displaying the number of digital files at a geographical location where the pin has been placed, EX1005, 436-437 (picture showing "1 of 3 photos"), which involves determining the number of digital images at a specific geographical location marked by a user-selectable pin. As combined above, A3UM's system would display Belitz's graphical objects including counts of digital images at locations marked on the map (*e.g.*, "*[first/second] indication feature*," shown in green), and would allow a user to access photos with that location.

194. Belitz explains that counts (*e.g.*, "*[first/second] indication feature*," shown in green) are overlaid on the thumbnails and represent the number of pictures accessible from that location ("*[first/second] set of digital files*"). EX1006,

¶¶52 ("Examples of associations are photographs that have been taken at those coordinates. Pictures that have been explicitly associated with the location, for example pictures of an apartment are associated with the location of the apartment or perhaps pictures of a person are associated with the address of that person."), 54 ("The number indicates how many graphical objects 410 are associated with that location …."), 59, 62 ("In one embodiment all graphical objects are photographs that are associated with the location where they were taken."), Figs. 4a-4b. As would have been clear from this disclosure to an ordinary artisan, Belitz encompasses the situation described in A3UM where multiple "*digital file[s]*" are accessible via a map marker that represents a single location where each of those files were captured or otherwise linked to via their location information. EX1005, 436-438 (showing both types of examples).

195. Although the numbers in Belitz's figures do not exactly correspond to the numbers discussed in Belitz's text, *compare* EX1006, Fig. 4a (displaying a "6" for object 410) *with* ¶55 (referring to object 410 as representing "13" graphical objects), Belitz's operation would have been clear to a skilled artisan. Belitz states, for example, that its count indicates the number of graphical objects stacked into one graphical object, which in one embodiment is 13. EX1006, ¶54 ("The number indicates how many graphical objects 410 are associated with that location and are stacked into one graphical object 410. In this embodiment 13 graphical

objects are stacked into one graphical object."). Belitz explains that when a user zooms in on the stacked object, the stacked object is broken up into smaller stacks of graphical objects, which in one embodiment consist of 1, 6, 4, and 2 graphical objects, respectively. EX1006, ¶55 ("[T]he graphical object 410 displayed in Fig. 4a which comprised 13 other graphical objects has now been split up into 4 graphical objects 410a, 410b, 410c and 410d each consisting of 1, 6, 4 and 2 graphical objects respectively."). I note that the sum of graphical objects in each smaller stack is equal to the 13 graphical objects in the larger stack, *i.e.*, 1 + 6 + 4 + 2 = 13. Therefore, Belitz is clear as a whole that the numbers represent the number of graphical objects (*i.e.*, photographs) that are represented by and accessible through a given thumbnail image.

196. Belitz's counts indicate the number of photographs represented by that marker, and as combined with A3UM, would be based on the number of "*digital file[s]*" with the location that is used to display the map marker. EX1005, 436-438 (showing such an example); EX1006, ¶52 ("Examples of associations are photographs that have been taken at those coordinates. Pictures that have been explicitly associated with the location, for example pictures of an apartment are associated with the location of the apartment or perhaps pictures of a person are associated with the address of that person."). Both A3UM and Belitz report digital image counts at marked locations on an interactive map, differing only in style and

manner of presenting that information. Therefore, adapting the display of location-linked counts to take the form in Belitz (a number overlaid on a thumbnail) rather than in A3UM (a tab with text disclosing the number) would be a trivial change that could be readily and predictably implemented by a skilled artisan. As adapted, the A3UM interface would include a thumbnail marked with an "*indication feature being based on a number of digital files in the [first/second] set of digital files*."

197. Thus, the combination of A3UM and Belitz renders claims 2 and 5 obvious.

4. Claims 3 and 6

198. Claims 3 and 6 recite "*[t]he method of claim [2 or 5], wherein the [first/second] indication feature is connected to the [first/second] location selectable thumbnail image*." The combination of A3UM and Belitz renders these features obvious.

199. Belitz's displays counts that are overlaid on ("*connected to*") the thumbnails, as shown in Figures 4a-4b:

EX1006, Figs. 4a-4b, ¶54, 59, 62.

200. Because the counts of digital images ("*the indication feature*") thumbnails are overlaid on the thumbnails, a skilled artisan would consider them to be "*connected to the [first/second] location selectable thumbnail image*" because they are visually connected to the thumbnails. As is shown above, Belitz visually links the number to the thumbnail to convey to a user the relationship between that number and that thumbnail.

201. Thus, the combination of A3UM and Belitz renders claims 3 and 6 obvious.

5. Claims 4 and 7

202. Claims 4 and 7 recites "*[t]he method of claim [2 or 5], wherein the [first/second] indication feature includes a [first/second] number indicative of the number of digital files in the [first/second] set of digital files*." The combination of A3UM and Belitz renders these features obvious.

203. Belitz describes counts ("*[first/second] indication feature*," shown in green) that represent the number of pictures at that location ("*number of digital files in the [first/second] set of digital files*"). EX1006, ¶54 ("The number indicates how many graphical objects 410 are associated with that location …."), 59, 62 ("In one embodiment all graphical objects are photographs that are associated with the location where they were taken."), Figs. 4a-4b.

EX1006, Figs. 4a, 4b.

204. Thus, the combination of A3UM and Belitz renders claims 4 and 7 obvious.

6. Claims 8 and 9

205. Claims 8 and 9 recite "*[t]he method of claim 2, further comprising, subsequent to the map view being displayed on the interface, responsive to an input that is indicative of zooming [in/out] on the interactive map, modifying the*

first indication feature." The combination of A3UM and Belitz renders these features obvious.

206. A3UM explains that the number of pins used to represent photographs with a given location depends on the zoom and the corresponding granularity with which that location is defined. EX1005, 437 ("Depending on the zoom setting in Places view, Aperture might use a single pin to represent a group of images shot in close proximity," such that a "single pin represent[s] multiple locations"). For example, if multiple pictures are taken in close proximity, these pictures may be represented by only a single pin if the interactive map is zoomed out far enough. When the user zooms in, these same photographs could then be represented by multiple pins that more precisely indicate the locations with which the photographs are associated. EX1005, 437-438. Therefore, the grouping of pins (and the number of images they represent) changes as a user zooms in and out. EX1005, 438 ("Places view zooms in to the location of the image group, marking the location of each image with a pin. Some images may remain grouped together in a single location pin if show in close proximity. … As you zoom in to the map, locations grouped together in a single pin begin to be marked by their own pins.").

207. Additionally, as I explained above, it would have been obvious to incorporate Belitz's graphical object functionality, which handles zooming's interaction with the grouping of markers in the same manner as A3UM's Places

view. Belitz explains that Figure 4a discloses a single graphical object 410 that is split up into four graphical objects when the user zooms in. EX1006, ¶¶51, 55 ("[I]n this embodiment the graphical object 410 of FIG. 4a which comprised 13 other graphical objects has now been split up into 4 graphical objects 410a, 410b, 410c and 410d. . . ."). The 4 graphical objects would be combined again if the user zoomed back out to the same level. EX1006, ¶56 ("Should a user zoom out from FIG. 4b the display would return to the screenshot shown in FIG. 4a and the graphical objects 410a, 410b, 410c, and 410d would again be determined to overlap and be stacked in a group graphical object 410.").

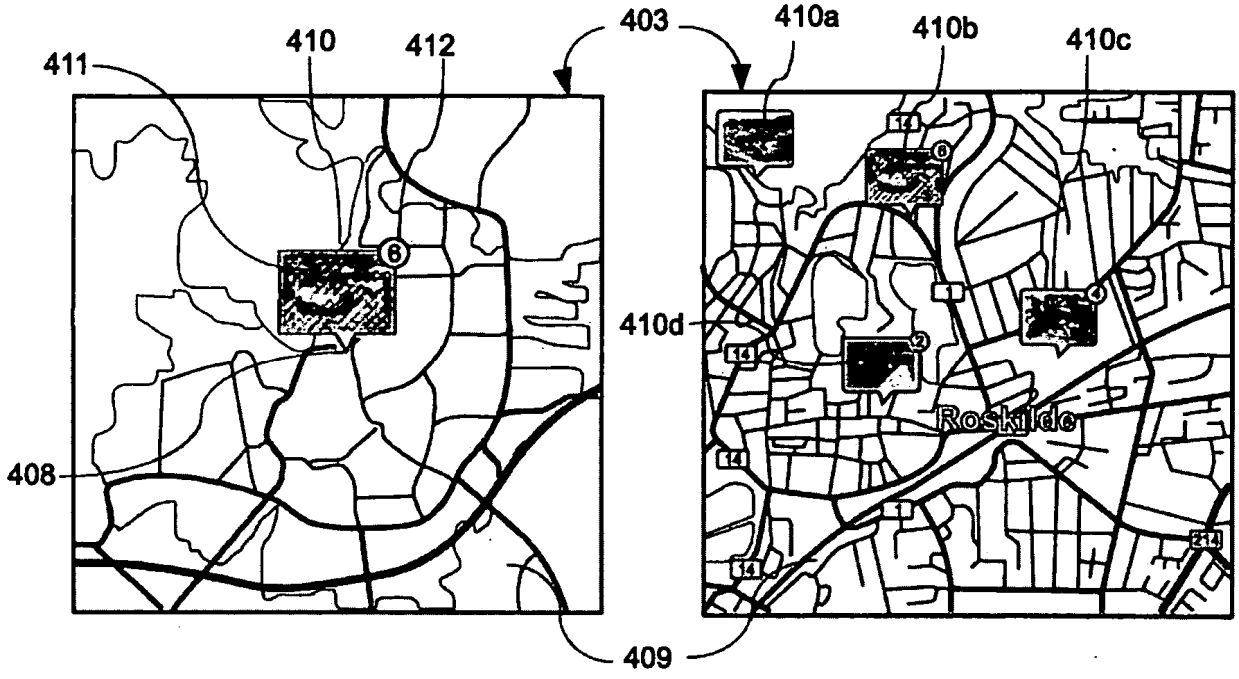


Fig. 4a Fig. 4b

208. As combined above (¶¶117-135), A3UM would use Belitz's graphical objects functionality to display markers comprising thumbnails and counts on the Places view map. Zooming in or out could change the number of photographs represented by the marker, and would thus change the count displayed for that marker ("*modifying the first indication feature*"). EX1005, 437-438; EX1006, ¶¶51, 55-56, Figs. 4a-4b.

209. Thus, the combination of A3UM and Belitz renders claims 8 and 9 obvious.

7. Claim 10

210. Claim 10 recites "*[t]he method of claim 2, further comprising, subsequent to the map view being displayed on the interface, responsive to an input that is indicative of a filter selection, modifying the first indication feature*." The combination of A3UM and Belitz renders these features obvious.

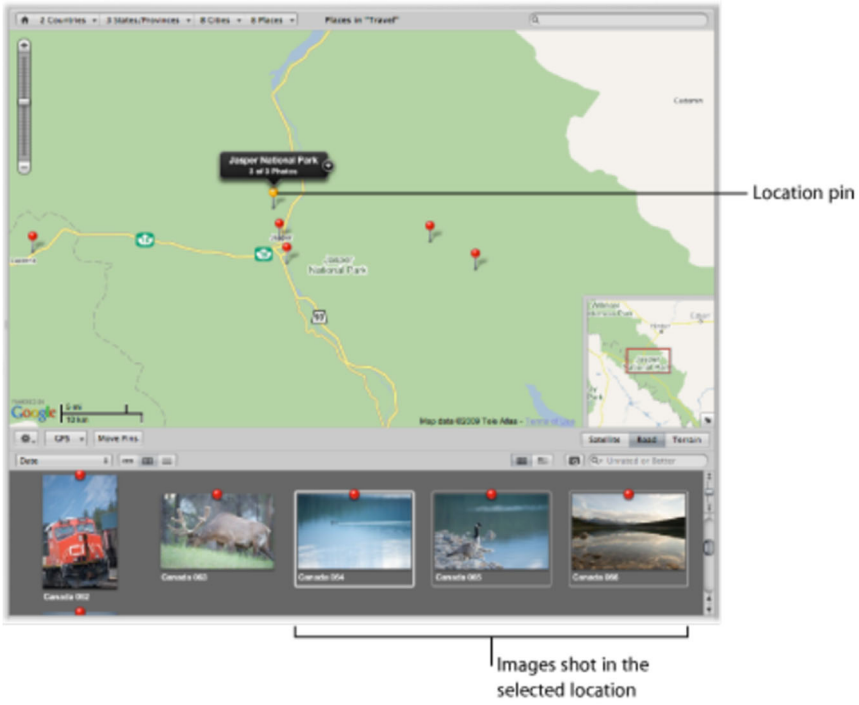
211. A3UM discloses filtering functionality available through the Filter HUD, EX1005, 23, and also discloses that filtering functionality being available in the Places view, EX1005, 30, which a skilled artisan would understand that this would allow a user to filter the images displayed on the map and thus the number of images accessible from and linked to a given marker. A3UM explains that the Filter HUD allows a user to "select checkboxes for search categories and specify what you want to search for, such as ratings, color labels, keywords, and dates."

EX1005, 109, 468 (discussing searching for "image name, subject, keyword, photographer, caption or text, date, location, EXIF and IPTC information, applied adjustments, color labels, flagged images, image usage statistics, and more"). This could, for example, be accomplished by filtering displayed images so that only images with certain metadata are displayed such as rating, flag status, or color label. *E.g.*, EX1005, 472-473. Applying that filter ("*responsive to an input that is indicative of a filter selection*") and then viewing the same set of locations on a map would involve re-determining the number of images linked from each thumbnail ("*modifying the first indication feature*").

212. Additionally, A3UM explains that the Places functionality can be invoked in two ways. First, "[t]o view the image locations for images throughout the library," *i.e.*, ***all*** photos in the user's library with location information, a user can select "Places" in the Library inspector. EX1005, 435. Second, "[t]o view the image locations for images in an item selected in the Library inspector," *i.e.*, ***only photos in the selected library item*** (*e.g.*, a project or album) with location information, a user can "[s]elect an item in the Library inspector containing images that already have location information assigned to them, then click the Places button in the toolbar." EX1005, 435. This latter way of invoking Places view effectively filters the images displayed from ***all*** photos in a user's library with

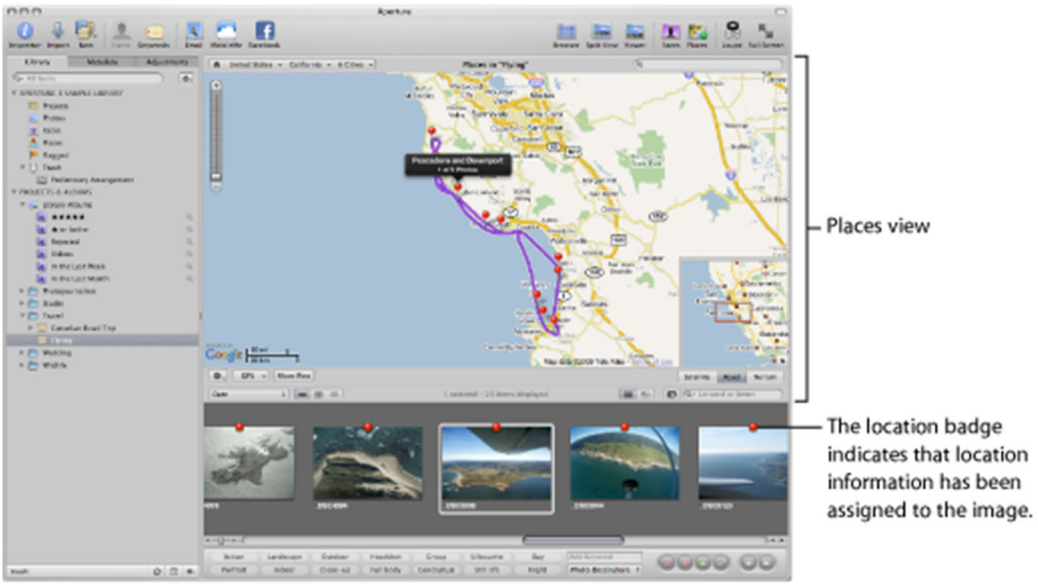
location down to only ***photos in the selected library item*** with location information.

213. For example, A3UM explains that a user's library can include various Smart Albums, such as "Smart Albums that gather all your select images, all images taken in the last week, and all images taken in the last month," as well as images with a specified star rating. EX1005, 31. Selecting one of these albums and then selecting the Places button in the toolbar ("*responsive to an input that is indicative of a filter selection, modifying the first indication feature*") will cause the Places interface to only display, for examples, images with a specified star rating on the map. *See* EX1005, 31, 435. In the example shown below, if only two of the three "[i]mages shot in the selected location" were rated five stars, then selecting the five start smart album and then pressing Places again would change the Places view from indicating that there are three images linked from that marker to indicating that there are two images linked from that marker:



EX1005, 436-437. A skilled artisan would understand A3UM to disclose the ordinary usage of its system, including the above operations.

214. The ability to select a library item and then the "Places" button in the toolbar is available after Places has already been displayed on the Aperture user interface by clicking the "Places" library item to display all photos ("*subsequent to the map view being displayed on the interface*"), as shown below:



EX1005, 30.

215. A3UM further discloses how a user can select Smart Albums that specify star ratings and a location, EX1005, 31, which could be selected after having previously selected that same specified location in the "Places Path Navigator" pop-up menus, EX1005, 82. For example, selecting the Places view from the Library (to display all pictures) and then selecting "Yosemite" would display photos taken in Yosemite via markers with specified image counts. EX1005, 81-82. From that view ("*subsequent to the map view being displayed on the interface*"), further selecting the smart album that limits images to a specified star rating and the location Yosemite and clicking the Places toolbar button ("*responsive to an input that is indicative of a filter selection*") would re-display the Places view with any images with the wrong star rating excluded from the map and image counts ("*modifying the first indication feature*"). Again, a skilled artisan

would understand A3UM to disclose the ordinary usage of its system, including the above operations, which would be simply using the functionality disclosed by A3UM in the manner suggested by A3UM.

216. Thus, the combination of A3UM and Belitz renders claim 10 obvious.

8. Claim 11

217. Claim 11 recites "*[t]he method of claim 1, wherein the first location selectable thumbnail image is a first collection cover image and wherein the second location selectable thumbnail image is a second collection cover image that is different than the first collection cover image*." The combination of A3UM and Belitz renders these features obvious.

218. The '228 patent uses the term "*collection*" consistent with its ordinary meaning, *e.g.*, a grouping or set of objects, in this context specifically photographs. *E.g.*, EX1001, 14:67-15:2, 18:4-7, 18:43-47, 21:19-28. The '228 patent further explains that, for a "collection" of images, a user can "set the cover photo for a collection, EX1001, 24:1-15, and that the map view's "pinned locations include a thumbnail of the Digital File (or Collection cover)," EX1001, 29:48-57. As would have been apparent to a skilled artisan in 2010-2011, there are two general approaches possible for setting a "*collection cover image*"—either you permit the user to select the image that will be used as the image, or you have the system select the image. That is consistent with how this feature is described in the '228

patent, which says that a user can (but is not required to) select the "*collection cover image*." EX1001, 24:7-10 ("The user can . . . set the cover photo for a collection.").

219. As combined above (¶¶117-135), A3UM's Places view would incorporate Belitz's thumbnails to show a preview of the photos linked from a given marker's location ("*[first/second] collection*").

220. Belitz explains that each graphical object can be represented by a thumbnail of a photograph with the location. EX1006, ¶62. These thumbnails act as a "*collection cover image*" because they represent a set of images linked from that graphical object's geographical location. EX1006, ¶¶51-53, 62. As shown in Figure 4b, the thumbnail for each graphical object is different—this matches the claim language specifying that the thumbnails for the first and second locations are different. EX1006, Fig. 4b. This makes sense in the context of Belitz: the graphical objects can represent photographs at specific locations, so collections of photographs at different locations would likewise have different photographs (and thumbnails).

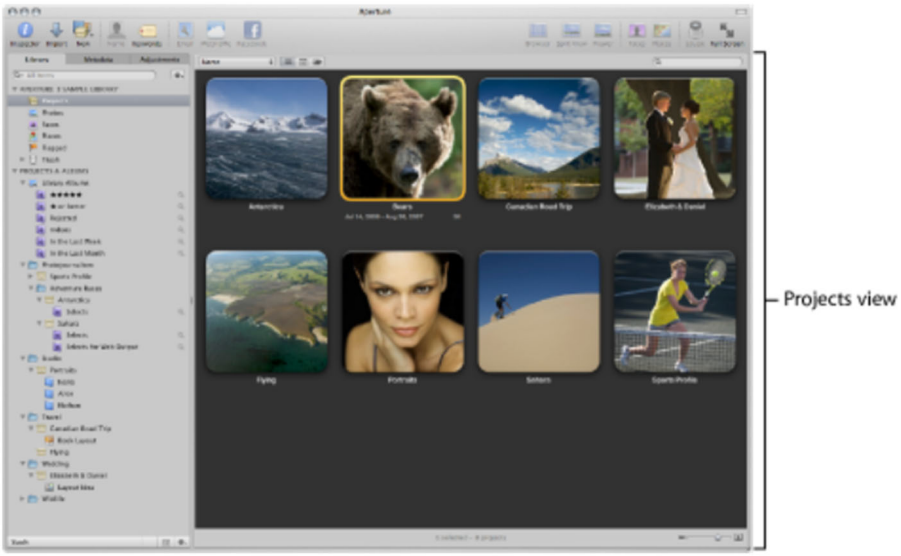
221. A skilled artisan would understand that Belitz's system selects the photograph to use as the thumbnail when, for example, a user zooms in or out and the photographs linked from a given graphical object change. EX1006, ¶¶54-56, 62, FIG 4a, 4b. Thus, one photo out of a collection of photos is selected as the

basis for the thumbnail. Modifying A3UM to use Belitz's graphical objects ("*thumbnails*") on the A3UM map instead of pins would result in graphical objects displaying the thumbnail image of one photo (a "*collection cover image*") out of a set of photos associated with the location represented by that graphical object (a "*collection*"). EX1006, ¶56. Also, A3UM and Belitz both describe interfaces with multiple locations being marked on the map, each representing a different set of photos at different locations, and both teach and suggest in combination a "*first"* and *"second" "collection cover image*."

222. To the extent the claims require that the user to select the collection cover image, this would have been an obvious modification based on the teachings of A3UM. For example, A3UM describes allowing users to create a Project, which is a "*collection*" of digital images. It also shows that a user can enter location data for the project. EX1005, 30 ("you can manually enter location information for … entire projects"), 455.

223. A3UM also describes allowing users to designate a "key photo" for a project. EX1005, 10 ("You can choose one image per project to appear as the "key photo" when reviewing your projects in Projects view."), 149 (after a desired image is selected to represent the project, "[t]he selected image is set as the key photo to represent the project.") A3UM allows a user to set the key photo either (1) using a "heads up display" (HUD) for a project (below). EX1005, 156 ("When

you locate the image you're looking for, click the "Click to set key photo" button at the bottom of the thumbnail. The selected image is set as the key photo to represent the project."), or (2) by skimming through photos, selecting the desired photo and pressing the space key, EX1005, 149. A3UM shows the digital image that is the key photo being used to generate a small cover image used for that project in the Projects view:



EX1005, 10, 125 ("Each project is represented by a single thumbnail.").

224. A skilled artisan would have recognized the benefits of the "key photo" technique being described in A3UM, most significantly that it creates for the user a conceptual association between the selected key photo and the collection of photos in the project. A skilled artisan would have been motivated to use this key photo technique to create a similar association between the thumbnails on A3UM's Places map and the collection of photos linked from those locations. It

would have been straightforward to a skilled artisan to implement this user-selected thumbnail in the interface suggested by the combination of A3UM and Belitz, in which thumbnails instead of pins are used to identify locations with photos. For example, a skilled artisan could have generated Belitz's thumbnails from key photos for Projects. Alternatively, the skilled person could have displayed projects using their key photo as a thumbnail on the Places view map, using the location data associated with the project. Both techniques are suggested by the disclosure of A3UM and Belitz and would have created an analogous conceptual association between the key photo-based thumbnail at a particular location on the Places map and a set of photos linked from that location. For example, a user that assigned all of their beach photos to a single location at the beach (via a "Beach Trip" project) would benefit from seeing that set of photos represented consistently on the Places view with the image they had chosen as a key photo.

225. When setting a cover image for a set of photographs, a skilled artisan would understand that there are two options: either the computer or the user can select the cover image. It would have been obvious for a skilled artisan to try either one of these discrete options. Either way, a photograph from a set of photographs is selected to serve as a thumbnail on an interactive map. A3UM already discloses representing a set of photos with the same location on the map, so

extending that functionality to the projects—which would be represented on the map by the user-selected key image ("*cover image*")—would have provided the benefits of Places view to projects ("*collection*") in addition to single images.

226. Thus, the combination of A3UM and Belitz renders claim 11 obvious.

9. Claim 12

227. Claim 12 recites "*[t]he method of claim 1, wherein the first location selectable thumbnail image includes a representation of at least one of the digital files in the first set of digital files, and wherein the second location selectable thumbnail image includes a representation of at least one of the digital files in the second set of digital files*." The combination of A3UM and Belitz renders these features obvious.

228. As combined above (¶¶117-135), A3UM's Places view would incorporate Belitz's thumbnails to show a preview of the photos with a given marker's location. Belitz depicts an embodiment in which each graphical object can be represented on a map by a thumbnail of a photograph. EX1006, ¶62. These graphical objects are selectable by a click or tap from the user. EX1006, ¶60.

229. A3UM allows a user to click or tap on Places map markers to cause the Places view to focus on that specific location ("*[first/second] location view[s]*"): "To view the images associated with a location … Select a red pin." EX1005, 436-438. Once selected, "the images or images associated with the

location … are selected in the Browser" and displayed ("*a representation of at least one of the digital files in the [first/second] set of digital files*"). EX1005, 436-438. As combined with Belitz, this would include the photograph used to generate the thumbnail. EX1006, ¶62.

230. Thus, the combination of A3UM and Belitz renders claim 12 obvious.

10. Claim 13

231. Claim 13 recites "*[t]he method of claim 12 wherein the representation of the at least a portion of the one digital file in the first set of digital files is not overlaid on the interactive map, and wherein the representation of the at least a portion of the one digital file in the second set of digital files is not overlaid on the interactive map*." The combination of A3UM and Belitz renders these features obvious.

232. I note that the phrasing "*the representation of the at least a portion of the one digital file in the [first/second] set of digital files*" refers not to the language of claim 12 ("*a representation of at least one of the digital files in the [first/second] set of digital files*") but instead to the language of claim 1 ("*the first location view including … (ii) a representation of at least a portion of one digital file in a [first/second] set of digital files*").

233. A3UM discloses an interface containing an interactive Google Map with multiple pins on it, each of which is at a different location and is linked to

different sets of digital images (*i.e.*, those at the different locations represented by the pins). EX1005, 434-438. A3UM explains that, once a marker has been selected, thumbnails of the images with that marker's location are highlighted and displayed in the Browser. EX1005, 436-438. A3UM illustrates an example of this location selection functionality as follows, which displays representations of the images "shot in the selected location" in the image browser underneath the map ("*not overlaid on the interactive map*"):

EX1005, 437.

234. A3UM explains that the photographs displayed in the Browser of the Places view are organized according to the location where they were shot or with which they are otherwise associated. *E.g.*, EX1005, 433 ("Places view uses

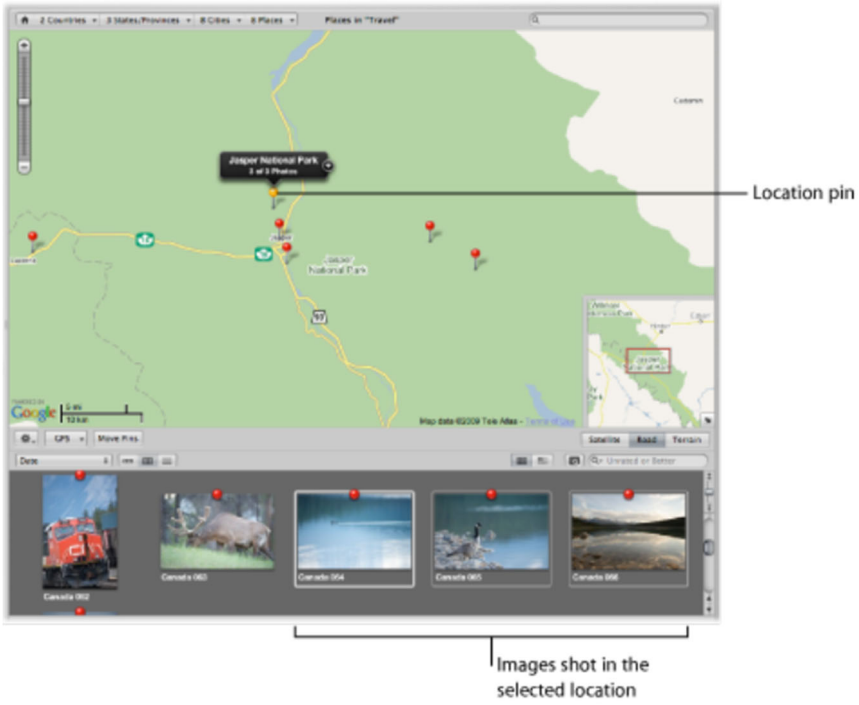
Google Maps to plot the locations where your images were shot."). A skilled artisan therefore, would understand that selecting a different pin on A3UM's interactive map, including "*first*" and "*second*" pins, would highlight and display thumbnails of different sets of images in the Browser because the photographs in Places View are organized by location.

235. Thus, the combination of A3UM and Belitz renders claim 13 obvious.

11. Claim 14

236. Claim 14 recites "*[t]he method of claim 1, wherein the first location view includes a representation of at least a portion of all of the digital files in the first set of digital files and the second location view includes a representation of at least a portion of all of the digital files in the second set of digital files*." The combination of A3UM and Belitz renders these features obvious.

237. As discussed with respect to claim 13, A3UM explains that selecting a marker displays in the Browser representations of the images with that location. EX1005, 436-438. A3UM illustrates an example of this location selection functionality as follows, which displays both ("*all*") of the images "shot in the selected location" in the image browser:



EX1005, 437.

238. A skilled artisan would understand that the functionality disclosed for the pin selected in the exemplary image above represents the functionality that would be provided for the other pins displayed in A3UM's interface. Selecting one of the other displayed pins, for example, would display a different set of images "shot in the selected location," EX1005, 436-437, such as the other two images displayed in the browser or other images that are not currently displayed in the browser.

239. Thus, the combination of A3UM and Belitz renders claim 14 obvious.

12. Claim 15

240. Claim 15 recites "*[t]he method of claim 1, further comprising: responsive to an input that is indicative of a selection, in the [first/second] location view, of the representation of the at least a portion of the one digital file in the [first/second] set of digital file[s], causing a [first/second] digital file to be displayed on the interface*."[7] The combination of A3UM and Belitz renders these features obvious.

241. A3UM discloses that selecting a pin on the Places interactive map causes the display of a thumbnail representation of all the photos matching the location represented by the pin in the Browser. EX1005, 436-437 ("The selected pin turns orange, and the image or images associated with the location marked by the orange pin are selected in the Browser.") Selecting a thumbnail in the Browser then prompts the display of the original digital image in the Viewer, which replaces the Places map view. EX1005, 251 ("When you select images in the Browser, the Viewer immediately displays a detailed view of your selection."). This display in the Viewer will be of the digital image (*e.g.*, a full-size photo) represented by the thumbnail in the browser. EX1005, 51 ("When you select one

[7] I note that claim 15 refers to "*digital filed*," which I assume is intended to refer to "*digital files*." For the purposes of my analysis, I have applied that interpretation.

or more thumbnail images in the Browser, those images are displayed in the Viewer. You can use the Viewer to examine an image at its full size or compare multiple images side by side.").

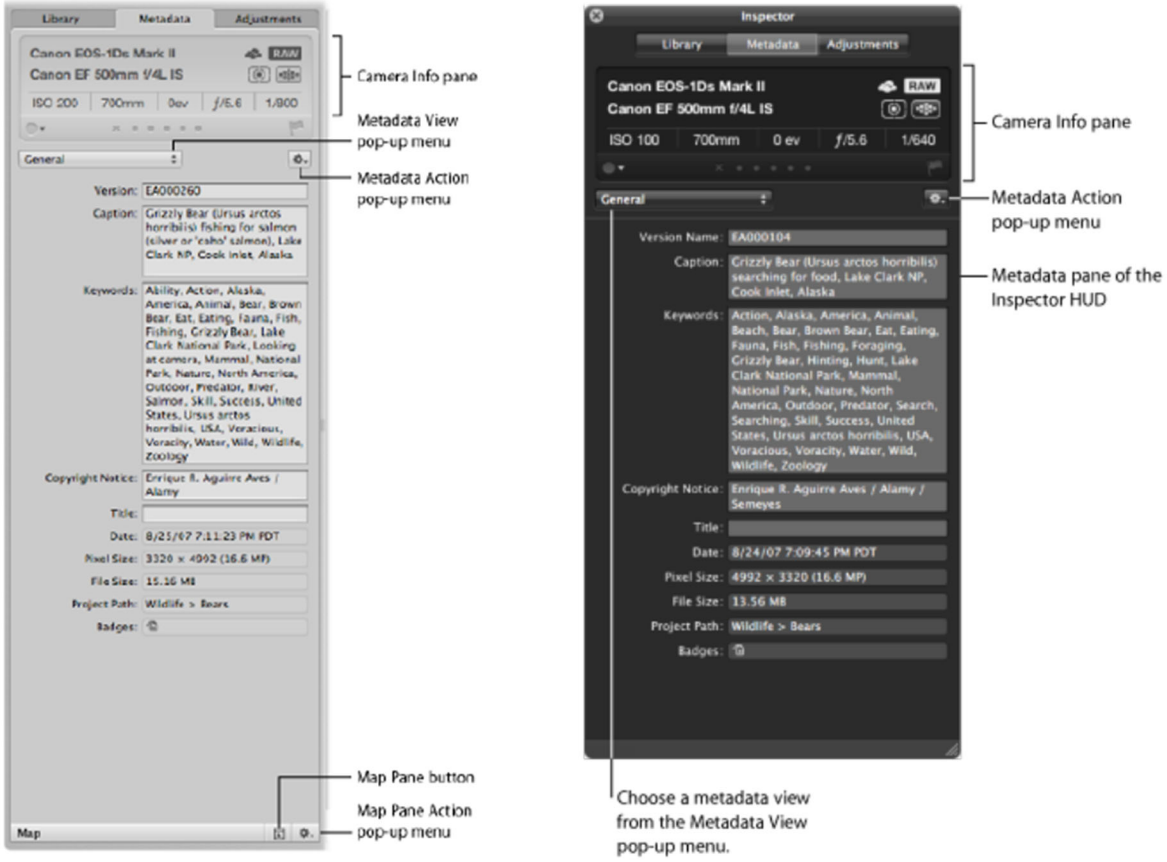
242. This functionality would be maintained by the suggested combination of A3UM with Belitz. Belitz's thumbnail functionality would replace A3UM's pin, but the A3UM technique of selecting the thumbnail in the Browser to prompt display of the full image would be retained. This is of course analogous to the functionality disclosed by Belitz for what happens when a user selects an image: "In one embodiment the image can be opened in full size by clicking or double clicking or tapping on it which launces an image browsing or editing application." EX1006, ¶59. In A3UM's case, that image browsing application simply replaces the Places view in the Viewer pane.

243. Thus, the combination of A3UM and Belitz renders claim 15 obvious.

13. Claim 16

244. Claim 16 recites "*[t]he method of claim 1, further comprising: receiving alphanumeric text as a tag; associating the tag with a first digital file in the first set of digital files; receiving a request to export the first digital file; and responsive to receiving the request to export, exporting the first digital file by causing the first digital file to be communicated along with the tag*." The combination of A3UM and Belitz renders these features obvious.

245. A3UM describes a variety of examples of receiving "*alphanumeric text as a tag*" and "*associat[ed] … with a first digital file in the first set of digital files*." A3UM discloses allowing a user to input or edit metadata such as alphanumeric information that will be associated with individual digital images including values in pre-existing EXIF and IPTC fields. For example, A3UM teaches the use of a variety of interface elements to do this, including the Metadata Inspector and the Inspector Heads up display ("HUD"):



EX1005, 59, 103-104, 392-395. A3UM explains that its "Metadata Inspector" can be used to edit the metadata associated with digital photographs. EX1005, 58-59.

By selecting the Metadata tab in the Inspector pane, a user is presented with a window in which it can enter information into any of the metadata fields to modify. EX1005, 59.

246. A3UM similarly explains that a user can enter the name of a location as metadata for the photo, independent of geographical coordinate data captured and embedded in the file by an EXIF-compliant device. EX1005, 443-446 (disclosing the assignment of location metadata, including custom tags such as "Our backyard"); EX1005, 445 ("3. In the Browser select the images to which you want to assign a location. 4. Choose Metadata > Assign Location. 5. In the dialog that appears, enter the location you want to search for in the search field . . . . 6. Select the appropriate locations in the search results list. . . . 7. If you wish, enter a custom name for the location, such as "Our backyard," in the Place Name field.").

247. Similarly, in the Faces view, A3UM discloses allowing a user to enter in a person's name as metadata associated with photos of that person, again by typing alphanumeric information into an appropriate field. EX1005, 418-422. A3UM discloses a text field that allows a user to type in the person's name and then associating that name with each photo containing that person's detected face. EX1005, 418-419.

248. A3UM further discloses allowing a user to create user-defined keywords and associate them to digital images. EX1005, 110. This could include novel keywords that are typed in by the user and then associated with digital images. EX1005, 357-358.

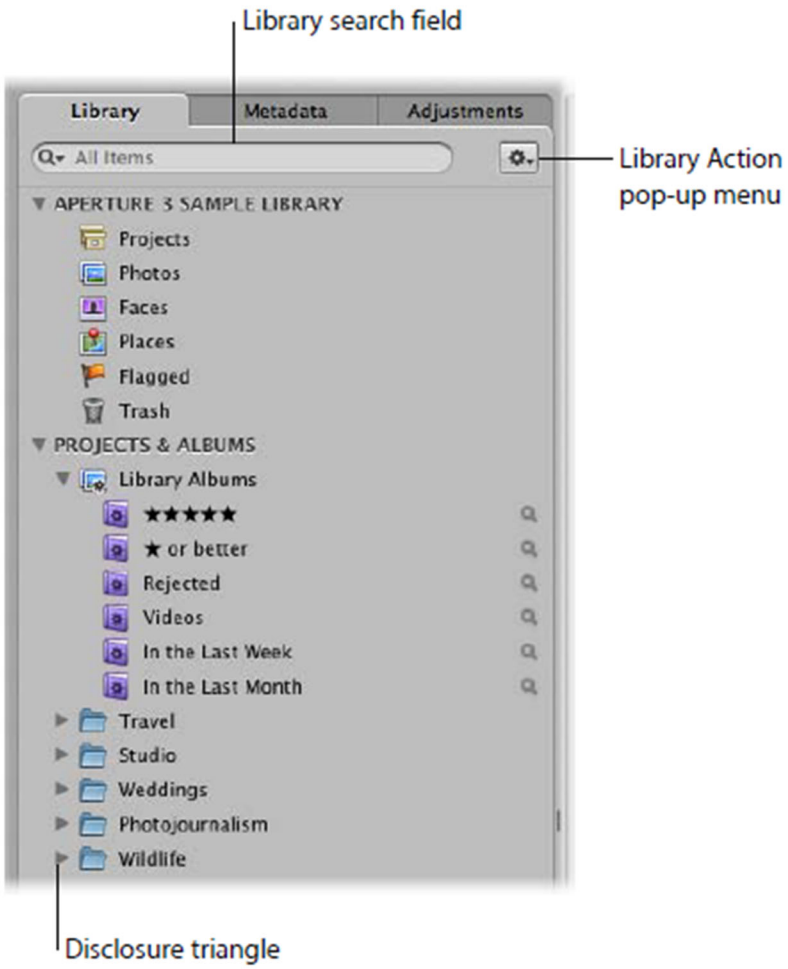
249. A3UM describes "*receiving a request to export the first digital file*" and "*responsive to receiving the request to export, exporting the first digital file by causing the first digital file to be communicated along with the tag*." A3UM describes exporting photos that "include metadata such as EXIF information, IPTC information, and keywords." EX1005, 794 ("At export you can rename, resize, and adjust images and include metadata such as EXIF information, IPTC information, and keywords."), 1060 (discussing expert preferences). A3UM shows that a user can select an image or images they wish to export, then choose "File > Export > Masters" to export copies of the master photos or "File > Export > Versions" to export versions of the image. EX1005, 796-798. A3UM also explains that you can "include location information and names assigned to faces when exporting your photos." EX1005, 796-798, 1060 (showing how to "include location metadata in exported photos" and to "include Faces metadata (names you have assigned to people in your images using Faces) in exported photos").

250. Thus, the combination of A3UM and Belitz renders claim 16 obvious.

14. Claim 17

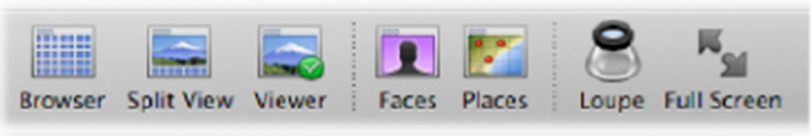
251. Claim 17 recites "*[t]he method of claim 1, further comprising, prior to receiving the first input, causing the interface to display a plurality of selectable elements, the plurality of selectable elements including a location selectable element and a people selectable element, wherein the first input is indicative of a selection of the location selectable element, and wherein the second input is indicative of a selection of the people selectable element*." The combination of A3UM and Belitz renders these features obvious.

252. A3UM describes that its Library inspector includes a number of items that a user can select to modify the interface (a "*plurality of selectable elements*") including (i) a "Places" item for viewing images arranged by location ("*location selectable element*") and (ii) a "Faces" item for reviewing images arranged by person ("*people selectable element*"). EX1005, 125-126, 424, 436.



EX1005, 125. Each of these Library items are selectable to view the linked functionality, so for example clicking "Faces" will invoke A3UM's Faces view.

253. A3UM provides a Toolbar with several buttons that a user can select to modify the interface display (*e.g.*, "*plurality of selectable elements*") including (i) a "Places" button to view the locations of images in a selected item in the Library inspector ("*location selectable element*") and (ii) a "Faces" button to view faces identified in a selected item in the Library inspector ("*people selectable element*"). EX1005, 6, 424, 436.



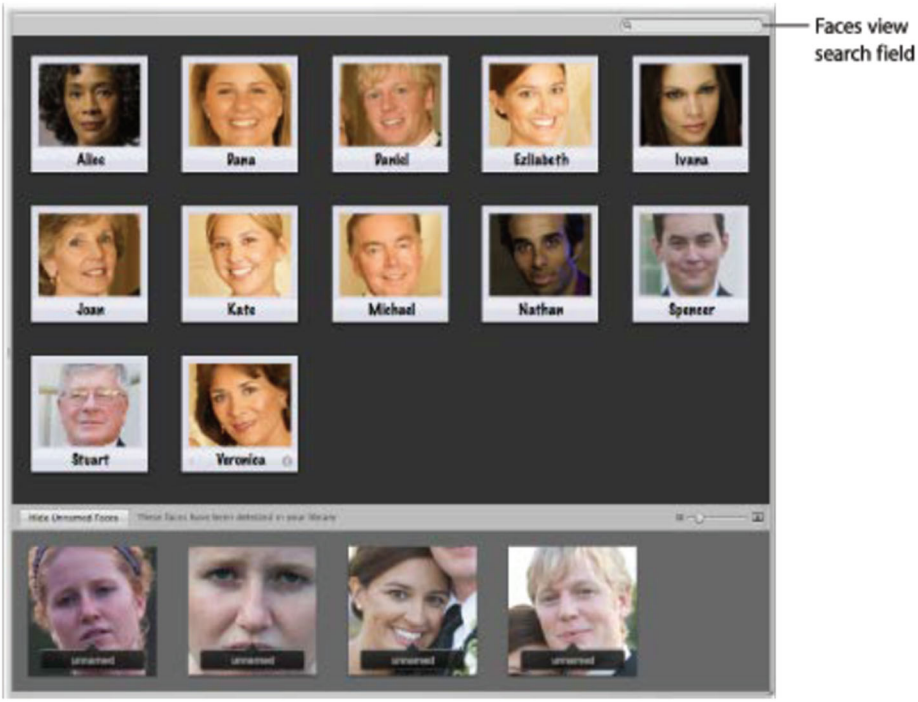
EX1005, 6, 46, 65, 424, 436. Each of these Toolbar items are selectable to view the linked functionality, so for example, clicking the "Faces" button will invoke A3UM's Faces view.

254. Thus, the combination of A3UM and Belitz renders claim 17 obvious.

15. Claims 18 and 19

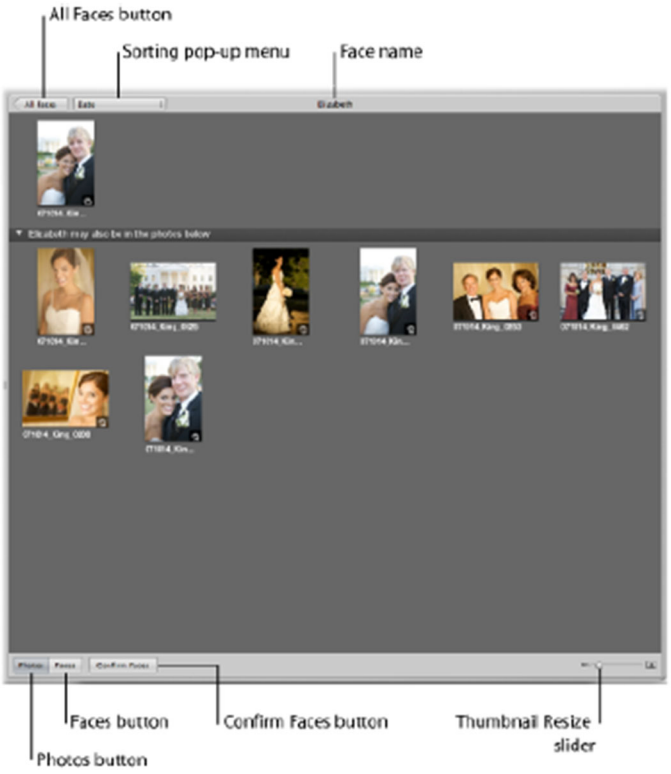
255. Claims 18 and 19 recites "*[t]he method of claim [1 or 18], further comprising responsive to an input that is indicative of a selection of the [first/second] person selectable thumbnail image, causing a [first/second] person view to be displayed on the interface, the [first/second] person view including (i) the [first/second] name and (ii) a representation of each digital file in the [third/fourth] set of digital files*." The combination of A3UM and Belitz renders these features obvious.

256. As discussed above with respect to claim 1, A3UM's "Faces" view displays user-selectable thumbnails showing faces of individuals (*"[first/second] person selectable thumbnail image*") in digital images in the user's library:



EX1005, 427.

257. A3UM explains that a representation of each picture associated with a given person can be displayed be clicking on a person's thumbnail in Faces view ("*a representation of each digital file in the [third/fourth] set of digital files*"). EX1005, 79 ("When you double-click a person's snapshot in Faces view, all the confirmed images of that person appear at the top of the Faces browser, and all the suggested images of the person appear in a separate section below the confirmed images."). This view also displays "the name of the person in the images" in the title bar, also called the "Face name":



EX1005, 79-80.

258. Thus, the combination of A3UM and Belitz renders claims 18 and 19 obvious.