

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BMW OF NORTH AMERICA, LLC,

Petitioner,

v.

NORTHSTAR SYSTEMS LLC,

Patent Owner.

Case No. IPR2023-01017

U.S. Patent No. 8,014,943

DECLARATION OF CRAIG ROSENBERG, PH.D.

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I. INTRODUCTION

1. I have been retained by BMW of North America, LLC (“BMW NA” or “Petitioner”) as an independent expert consultant in this proceeding before the United States Patent and Trademark Office.

2. I am over 21 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein.

3. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of any proceeding.

4. I understand that this proceeding involves U.S. Patent No. 8,014,943 (“the ’943 patent,” attached as Ex. 1001). The application for the ’943 patent was filed on November 13, 2008, as U.S. Patent Application No. 12/291,802 (“the ’802 application”). The ’802 application issued as the ’943 patent on July 2, 2013.

5. I have been asked by Petitioner to provide my opinion whether the claims of the ’943 patent would have been obvious to a person of ordinary skill in the art at the time of the earliest claimed priority date of the ’943 patent. In performing my analysis, I have been asked to assume that the priority date is May 8, 2008. My opinions are set forth below.

6. Throughout this declaration, I refer to specific pages, figures, and/or line numbers of various exhibits. These citations are illustrative and are not

intended to suggest that they are the only support for the propositions for which they are cited.

II. QUALIFICATIONS

7. I summarize my educational background, work experience, and other relevant qualifications relevant to the '943 patent below. Additional details can be found in my curriculum vitae, which is attached as Ex. 1004.

8. I believe I am qualified to serve as a technical expert in this proceeding based on my educational and work experience, including my 35 years of experience in designing, developing, and deploying software systems across a wide variety of application areas, including defense and space, healthcare, entertainment, communications, engineering, geolocation utilizing my background in human factors, user interface and user interaction design, human-computer interaction, and software engineering from 1988 through today.

9. This declaration sets forth my opinions, which I formed based on my study of the evidence; my understanding as an expert in the field; and my training, education, research, knowledge, and personal and professional experience. All of my opinions stated in this declaration are based on my review of the materials considered (Section III) combined with my own personal knowledge, expertise, training, education, and professional judgment. In forming my opinions, I have

relied on my knowledge and experience in human factors, user interface design, human-computer interaction, and software engineering.

10. If I am called upon to do so, I would be competent to testify to the matters set forth herein. My qualifications to testify about the '943 patent and the relevant technology are outlined in my curriculum vitae and this section of this report.

11. I understand that a copy of my current curriculum vitae is provided for this proceeding as Ex. 1004.

12. I believe I am qualified to serve as a technical expert in this proceeding based on my educational and work experience, including my 35 years of experience in designing, developing, and deploying software systems across a wide variety of application areas, including defense and space, healthcare, entertainment, communications, engineering, and geolocation utilizing my background in human factors, user interface and user interaction design, human-computer interaction, and software engineering from 1988 through today.

13. I graduated from the University of Washington in 1988 with a Bachelor of Science in Industrial Engineering. After graduation, I continued my studies at the University of Washington College of Engineering. In 1990, I obtained a Master of Science degree in Human Factors. Human Factors is an engineering discipline that studies the design of products, processes, equipment,

and systems to work more efficiently with humans. Human factors are concerned with reducing human error, increasing productivity and efficiency, and enhancing safety and comfort with a specific focus on the interactions and interfaces between humans and the products, processes, or systems with which they interact. In 1994, I graduated with a Doctor of Philosophy in Human Factors, focusing on advanced interface design. My Bachelor of Science, Master of Science, and Doctor of Philosophy degrees were all obtained at the University of Washington College of Engineering.

14. During my doctoral studies, I worked as an Associate Assistant Human Factors Professor at the University of Washington Industrial Engineering Department. My duties included teaching, writing research proposals, designing and conducting funded human factors experiments for the National Science Foundation, and hiring and supervising students. While studying at the University of Washington, I also worked as a human factors researcher. I designed and performed advanced human factors experiments relating to virtual environments and interface design, stereoscopic displays, and advanced visualization research, which the National Science Foundation funded. My duties included user interface design, systems design, software development, graphics programming, experimental design, and hardware and software interfacing.

15. I have published twenty-one research papers in professional journals and proceedings in user interface design, computer graphics, and spatial, stereographic, and auditory display design. I also authored a book chapter on augmented reality displays in the book “Virtual Environments and Advanced Interface Design” (Oxford University Press, 1995). In addition, I created one of the first virtual spatial musical instruments called the MIDIBIRD that utilized the MIDI protocol, two six-dimensional spatial trackers, a music synthesizer, and a computer graphics workstation to create an advanced and novel musical instrument.

16. For the past 29 years, I have been a consultant for Global Technica, Sunny Day Software, Stanley Associates, Tchrizon, CDI Corporation, and the Barr Group. In this capacity, I have provided advanced engineering services for many companies.

17. I consulted for the Boeing Company for 15 years as a senior human factors engineer, user interface designer, and software architect for various advanced commercial and military programs. Many of the projects that I was involved with at Boeing involved advanced software development, user interface design, agent-based software, and modeling and simulations in the areas of missile defense, homeland security, battle command management, computer-aided design, networking and communications, air traffic control, location-based services, and

Unmanned Aerial Vehicle (“UAV”) command and control. Additionally, I was the lead system architect developing advanced air traffic controller workstations and air traffic control analysis applications, toolsets, and trade study simulations for Boeing Air Traffic Management.

18. I was also the architect of the Boeing Human Agent Model. The Boeing Human Agent Model is an advanced model for the simulation of human sensory, cognitive, and motor performance as applied to the roles of air traffic controllers, pilots, and UAV operators. In another project, I was the lead human factors engineer and user interface designer for Boeing’s primary vector and raster computer-aided drafting and editing system that produces the maintenance manuals, shop floor illustrations, and service bulletins for aircraft produced by the Boeing Commercial Aircraft Company. Additional responsibilities in my time as a consultant include system engineering, requirements analysis, functional specification, use case development, user stories, application prototyping, modeling and simulation, object-oriented software architecture, graphical user interface analysis, and design, as well as UML, C++, C#, and Java software development.

19. In 1995 and 1996, I was hired as the lead human factors engineer and user interface designer for the first two-way pager produced by AT&T. Before this technology, individuals could receive pages but could not respond utilizing their

pager. This new technology allowed users to use a small handheld device to receive and send canned or custom text messages, access and update an address book, and access and update a personal calendar. This high-profile project involved designing the entire feature set, user interface/user interaction design and specification, and all graphical design standards.

20. From 1999 to 2001, I was the lead human factors engineer and user interface designer for a company called Eyematic Interfaces, where I was responsible for all user interface design and development activities associated with real-time mobile handheld 3D facial tracking, animation, avatar creation, and editing software for a product for Mattel. My work involved user interface design, human factors analysis, requirements gathering and analysis, and functional specifications.

21. I was the lead user interface designer for a company called ObjectSpeed, which developed a portable handheld telephone for use in homes and businesses with many of the same capabilities we take for granted in mobile cellular phones. This portable multifunction device supports voice, email, chat, video conferencing, Internet radio, streaming media, Microsoft Outlook integration, photo taking, sharing, etc. The ObjectSpeed device was specifically designed and developed as a portable handheld device.

22. I was the lead user interface designer for Ahaza, which was building IPv6 routers. I designed the user interfaces to configure and control these advanced network hardware devices. My responsibilities included requirements analysis, functional specification, user interface design, user experience design, and human factors analysis.

23. I am the founder, inventor, user interface designer, and software architect of WhereWuz. WhereWuz is a company that produces advanced mobile software running on GPS-enabled smartphones and handheld devices. WhereWuz allows users to record exactly where they have been and query this data for subsequent retrieval based on time or location. WhereWuz was specifically designed and developed to run on small handheld devices.

24. I am the co-founder of a medical technology company called Healium. Healium developed advanced wearable and handheld user interface technology to allow physicians to interact more effectively with electronic medical records.

25. I am the co-founder of a medical technology company called StratoScientific. StratoScientific is developing an innovative case for a smartphone that turns a standard handheld smartphone into a full-featured digital stethoscope that incorporates visualization and machine learning for telemedicine and automated diagnosis.

26. I designed and developed a large software project for Disney World called xVR that allowed the operational employees of Disney World to utilize a handheld device to view the current and historical status of all of the guests of Disney World within multiple attractions and one of their restaurants. The application could run in a real-time/live mode where it would display data collected from sensors that showed the location and status of all guests within the attraction; the application could also be run in a fast-time/simulated mode. The application was developed on a laptop computer and designed to run on various devices, including laptops, personal computers, smartphones, and tablets.

27. I have received several awards for my engineering work relating to interface design, computer graphics, and the design of spatial, stereographic, and auditory displays, including a \$10,000 scholarship from the I/ITSEC for advancing the field of interactive computer graphics for flight simulation and a Link Foundation award for furthering the field of flight simulation and virtual interface design. I have also created computer graphic illustrations for several popular book covers and animations for a movie produced by MIRAMAR.

28. More information about my educational and professional background can be found in my curriculum vitae, Ex. 1004.

29. The combination of my education, research, training, and work experience in software development, human factors, user interface design, and

human-computer interaction enables me to provide analysis and opinions on the subject matter of this litigation.

30. Below is a list of my experiencing testifying during the last five years.

- *Foursquare Labs v. Silver State Intellectual Technologies*, IPR2014-00159
- *Silver State Intellectual Technologies v. Garmin*, District of Nevada, 2:11-cv-01578-PMP-PAL
- *Select Retrieval v. Overstock*, District of Delaware, 1:11-cv-00812-RGA
- *Location Labs v. LocationNet*, IPR2014-00199
- *Intellectual Ventures v. Google*, IPR2014-00787
- *FTC v. Amazon*, 2:14-cv-01038-JCC (E.D. Texas)
- *Valmont v. Lindsay*, IPR2015-01039
- *Ford Class Action*, 13-cv-3072-EMC (N.D. California)
- *BeUbiq v. Curtis Consulting Group*, 1-14-cv-270691 (Santa Clara, California)
- *Edulog v. DML*, DV-06-1072 (Montana Fourth Judicial Court, Missoula)
- *GEMSA v. Alibaba*, 6:16-cv-00098 (M.D. Florida)
- *Level One Technologies v. Penske Truck Leasing*, 4:14-cv-1305-RWS (E.D. Missouri)
- *Title Source v. HouseCanary*, 016-CI-06300 (Texas Dist. (state court), Bexar Co.)
- *Sony v. Arris, Pace*, 337-TA-1049 (International Trade Commission case)

- *Tatsoft v. InduSoft*, D-1-GN-14-001853 (Texas state court case)
- *Courthouse News Service v. Yamasaki*, 8:17-cv-00126 AG (KESx) (C.D. Cal.)
- *Princeton Digital Image Corp. v. Konami*, 12-1461-LPS-CJB (D. Del)
- *FCA US LLC Monostable Electronic Gearshift Litigation*, 16-md-02744 (E.D. Michigan)
- *Barbaro Technologies, LLC v. Niantic, Inc.*, 3:18-cv-02955-RS (N.D. California)
- *Blackberry Limited v. Facebook, Inc.*, 2:18-cv-01844 (C.D. California)
- *Blackberry Limited v. Snap, Inc.*, 2:18-cv-02693 (C.D. California)
- *Saracen LLC v. Marginal Unit, Inc.*, 4:18-cv-3714 (S.D. Texas)
- *Fidelity Information Services, LLC v. Groove Digital, Inc.*, IPR2019-00050
- *U.S. Oil & Refining Co. v. City of Tacoma*, 18-2-07232-3 (Superior Court of Washington)
- *X One v. Uber*, 5:16-CV-06050-LHK (N.D. California, San Jose Div.)
- *Kipu Systems, LLC v. ZenCharts, LLC*, 1:17-cv-24733-KMW-EGT (S.D. Florida)
- *Maxell, LTD. v. Apple Inc.*, 5:19-cv-0036-RWS (E.D. Texas)
- *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 3:15-cv-00164-J-IOMCR (M.D. Florida)
- *Universal Electronics Inc. v. Roku, Inc.*, 337-TA-1200 (I.T.C.)
- *Opal Labs, Inc. v. Sprinklr, Inc.*, 3:18-cv-01192-HZ (Dist. of Oregon, Portland Div.)

- *ExactLogix, Inc. d/b/a AccuLynx.com v. JobProgress, LLC*, 3:18-cv-50213 (Northern Dist. of Illinois, Western Div.)
- *Samsung Electronics and Apple, Inc. v. Neonode Smartphone LLC*, IPR2021-00145
- *District of Columbia v. Instacart*, 2020-CA-003777-B
- *Google LLC v. Neonode Smartphone LLC*, IPR2021-00141

III. MATERIALS CONSIDERED

31. In forming my opinions, I have reviewed the following documents, and any other document cited in this declaration:

Exhibit	Description
Ex. 1001	U.S. Patent No. 8,014,943
Ex. 1002	File History of U.S. Patent No. 8,014,943
Ex. 1003	Declaration of Dr. Craig Rosenberg
Ex. 1004	Curriculum Vitae of Dr. Craig Rosenberg
Ex. 1005	U.S. Patent No. 9,607,092 (“Kreitler”)
Ex. 1006	U.S. Patent Pub. No. 2007/0281690 (“Altman690”)
Ex. 1007	U.S. Patent No. 6,697,734 (“Suomela”)
Ex. 1008	U.S. Patent No. 6,480,783 (“Myr”)
Ex. 1009	U.S. Patent No. 7,158,878 (“Rasmussen”)
Ex. 1010	U.S. Patent App. Pub. No. 2007/0050129 (“Salmre”)

Ex. 1011	Garmin nüvi Personal Travel Assistant Quick Reference Guide (September 2005) <i>available at</i> https://pdf.crutchfieldonline.com/ImageBank/v20060207074000/Manuals/150/150NUVI350.PDF
Ex. 1012	Apple Reinvents the Phone with iPhone (January 9, 2007) <i>available at</i> https://www.apple.com/newsroom/2007/01/09Apple-Reinvents-the-Phone-with-iPhone/
Ex. 1013	GPS Goes Mainstream (December 26, 2007) <i>available at</i> https://www.npr.org/templates/story/story.php?storyId=17611103
Ex. 1014	GPS Mobile Phones to Hit the Masses in 2007 (January 25, 2007) <i>available at</i> https://www.esato.com/news/gps-mobile-phones-to-hit-the-masses-in-2007-1429
Ex. 1015	GPS-enabled Mobile Phone Invasion in 2007 (January 25, 2007) <i>available at</i> https://news.softpedia.com/news/GPS-enabled-Mobile-Phone-Invasion-in-2007-45361.shtml
Ex. 1016	U.S. Patent No. 6,252,544 (“ <i>Hoffberg</i> ”)
Ex. 1017	WIPO Publication No. 2009/055501 (“ <i>Holden</i> ”)
Ex. 1018	U.S. Patent No. 6,714,791 (“ <i>Friedman</i> ”)
Ex. 1019	U.S. Patent No. 7,739,139 (“ <i>Robertson</i> ”)
Ex. 1020	U.S. Patent No. 8,103,729 (“ <i>Tornabene</i> ”)

32. I have also relied on my education, experience, research, training, and knowledge in the relevant art, and my understanding of any applicable legal principles described in this declaration.

33. All of the opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions have also been guided by my understanding of how a person of ordinary skill in the art would have understood the claims of the '943 patent at the time of the alleged

invention. For the purposes of this declaration, I have been asked to assume that the date of the alleged invention is the earliest claimed priority date: May 8, 2008.

34. I reserve the right to supplement and amend any of my opinions in this declaration based on documents, testimony, and other information that becomes available to me after the date of this declaration.

IV. LEGAL STANDARDS

35. For the purposes of this declaration, I have been asked to opine only on issues regarding obviousness under 35 U.S.C. §103. I have been informed of the following legal standards, which I have applied in forming my opinions.

36. I have been asked to provide my opinions as to whether the cited prior art teaches or renders obvious the elements of claims 1-26 of the '943 patent from the perspective of a person of ordinary skill in the art at the '943 patent's priority date in 2008, as described in more detail below.

37. For the purposes of this declaration, I have been informed and understand certain aspects of the law as it relates to my opinions.

38. I have been advised and understand that there are two ways in which prior art may render a patent claim unpatentable. First, the prior art can “anticipate” the claim. Second, the prior art can make the claim “obvious” to a person of ordinary skill in the art. I understand that for an invention claimed in a

patent to be patentable, it must not be anticipated and must not be obvious based on what was known before the invention was made.

39. I have been advised and understand that the information used to evaluate whether an invention was new and not obvious when made is generally referred to as “prior art.” I understand that prior art includes patents and printed publications that existed before the earliest filing date of the patent (which I have been informed is called the “effective filing date”). I have been informed and understand that a patent or published patent application is prior art if it was filed before the effective filing date of the claimed invention and that a printed publication is prior art if it was publicly available before the effective filing date.

40. I have been advised and understand that a dependent claim is a patent claim that refers back to another patent claim. I have been informed and understand that a dependent claim includes all of the limitations of the claim to which it refers.

41. I have been advised and understand that a patent claim may be invalid as obvious under 35 U.S.C. §103 if the differences between the subject matter claimed and the prior art are such that the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. I have also been advised that several factual inquiries underlie a determination of obviousness. These inquiries include (1) the scope and content of

the prior art, (2) the level of ordinary skill in the field of the invention, (3) the differences between the claimed invention and the prior art, and (4) any objective evidence of non-obviousness (which I have been informed may also be called “secondary considerations”).

42. I have also been advised and understand that, where a party alleges obviousness based on a combination of references, that party must identify a reason why a person skilled in the art would have been motivated to combine the asserted references in the manner recited in the claims and to explain why one skilled in the art would have had a reasonable expectation of success in making such combinations.

43. I have been advised and understand that the law permits the application of “common sense” in examining whether a claimed invention would have been obvious to a person skilled in the art. For example, I have been advised that combining familiar elements according to known methods and in a predictable way may suggest obviousness when such a combination would yield nothing more than predictable results. I understand, however, that a claim is not obvious merely because every claim element is disclosed in the prior art and that a party asserting obviousness must still provide a specific motivation to combine the references and explain why one would have reasonably expected to succeed in doing so.

44. I have been advised and understand that two references are considered to be in the same field of art when the references are either (1) in the same field of endeavor, regardless of the problems they address, or (2) reasonably pertinent to the particular problem being solved by the inventor in his patent.

45. I am not aware of any evidence of secondary considerations that would support a determination of non-obviousness of the claimed subject matter in the '943 patent.

46. I have been informed that in *inter partes* review proceedings, such as this one, the party challenging the patent bears the burden of proving unpatentability by a preponderance of the evidence. I understand that a preponderance of the evidence means “more likely than not.”

V. PERSON OF ORDINARY SKILL IN THE ART

47. In rendering the opinions set forth in this declaration, I have been asked to consider the '943 patent's claims and the prior art through the eyes of a person of ordinary skill in the art. I considered factors such as the educational level and years of experience of those working in the pertinent art, the types of problems encountered in the art, the teachings of the prior art, patents and publications of other persons or companies, and the sophistication of the technology.

48. I have been instructed to assume a person of ordinary skill in the art is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

49. Taking these factors into consideration, it is my opinion that a person of ordinary skill in the art of the '943 patent as of its filing date would have been someone knowledgeable in computer systems and graphical user interfaces. In my opinion, that person would have at least a Bachelor's Degree in Computer or Electrical Engineering or an equivalent engineering discipline, and approximately three years of experience in telecommunications, navigation, or geolocation systems. Additional education could substitute for professional experience, and significant work experience could substitute for formal education.

50. By May 8, 2008, I was at least a person of ordinary skill in the art, holding a Ph.D. in Human Factors from the University of Washington (obtained in 1994). In addition, I was continuously working in the field of Human Factors and Interface design from 1994-2013, working on a large number of projects for Socha Computing, AT&T, Boeing, Ahaza, Object Speed, PlaceFull, Eyematic, and Disney. My work involved user interface design, human factors analysis, software architecture, software development, requirements gathering and analysis, and functional specification.

51. In this declaration, and for all of my opinions herein, I have applied the knowledge of a person of ordinary skill in the art as of May 8, 2008.

VI. CLAIM CONSTRUCTION

52. I understand that in *inter partes* review, the U.S. Patent and Trademark Office applies the broadest reasonable interpretation of the claims in view of the specification. I have been informed that the broadest reasonable interpretation, however, must be construed in light of the specification. I have also been informed that, in the absence of an intent to use a specific meaning in the specification, the broadest reasonable interpretation is the plain meaning of the term.

53. Based on my review of these materials and my personal knowledge and experience, I have considered the plain and ordinary meaning of each term of the '943 patent as it would have been understood by one skilled in the art as of May 8, 2008.

54. In Sections VII-XI, I apply this plain and ordinary meaning.

VII. BACKGROUND AND TECHNOLOGY OF THE '943 PATENT

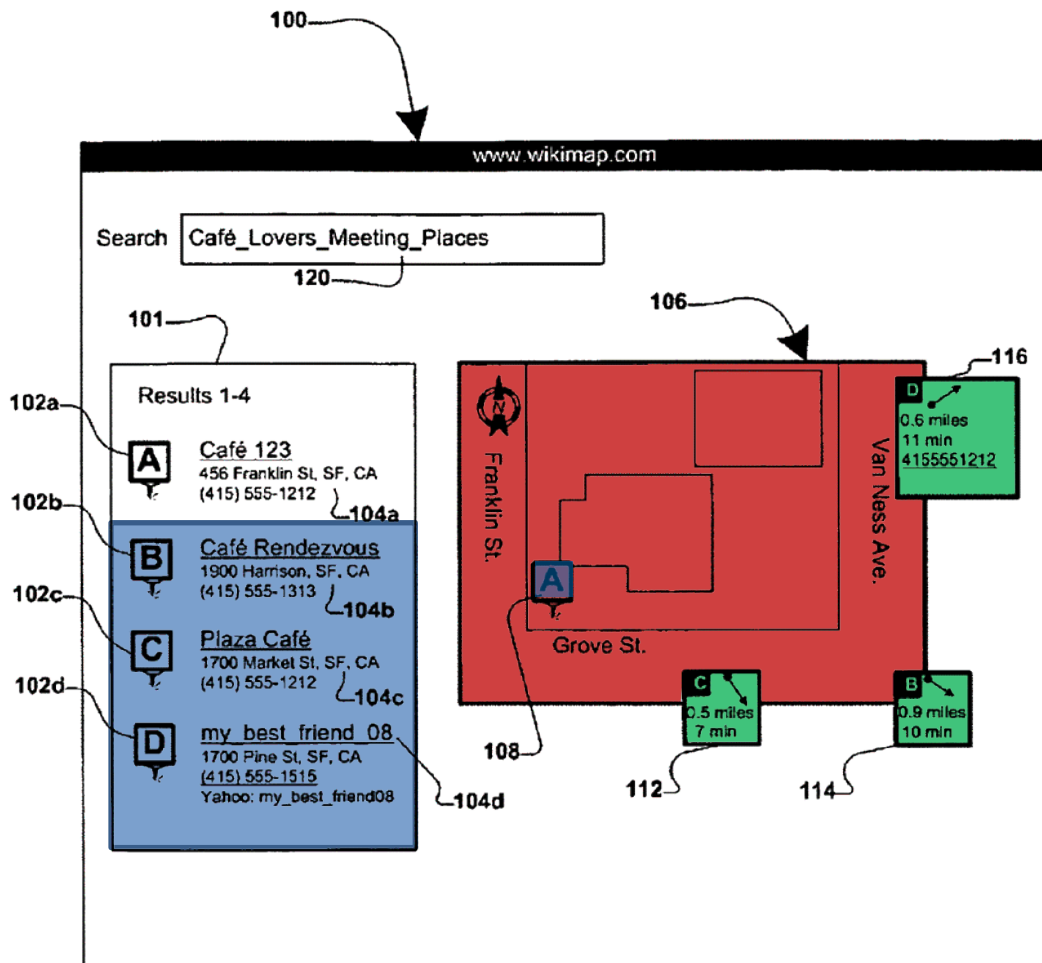
A. Overview of the '943 Patent

55. The '943 was filed November 13, 2008 and claims priority to May 8, 2008.

56. The '943 claims “displaying information associated with social-networking map-objects ... outside the visible area of a map.” *Id.*, 1:16-22. The method has four core steps:

1. Displaying a map on an electronic device;
2. Determining an off-map social-networking POI;
3. Displaying a selectable object indicating the location of the off-map social-networking POI; and
4. When the object is selected, recentering the displayed map around the previously off-map location.

57. In the '943, a device's map-display application displays a map area. *Id.*, 3:18-21. The map-display application identifies MOs such as locations resulting from a user search. *Id.*, 8:33-40, 8:46-49. The map-display application determines whether the MOs are within the visible map area, (*id.*, 8:52-60), and, if not, it creates and displays an OVI referencing the MO. *Id.*, 9:1-7. The OVI is positioned on the visible map area's periphery and includes information like direction, distance, and travel time. *Id.*, 10:8-12, 10:28-30, Figs. 1, 6A, 6B, 8A. When the user selects the OVI, the application zooms and/or pans the map, adjusting the visible area to include the corresponding MO. *Id.*, 11:49-62.

The '943 patent, Fig. 1¹.

58. Issued independent claim 1 recites:

[1pre] A method for displaying object vector indicators (“OVI”) referencing social-network map-objects (“MO”) on an electronic map, comprising:

[1a] providing an electronic device having a map-display application that is coupled to a mapping service, a social-

¹ Annotations throughout added unless noted.

network and a display for displaying a selected area of the electronic map;

[1b] authenticating to the social network;

[1c] obtaining from the social network the MO;

[1d] determining that coordinates of the MO are not within the selected area of the electronic map;

[1e] computing distance and travel-related information from a location within the selected area of the electronic map to the MO;

[1f] computing a placement position of an OVI referencing the MO on the map-display application;

[1g] creating the OVI containing the distance and travel-related information;

[1h] displaying the OVI on the display at the computed placement position;

[1i] receiving user input selecting the OVI;

[1j] displaying a secondary area of the electronic map, wherein the secondary area is a region of the electronic map centered approximately around the MO; and

[1k] displaying the MO approximately at the center of the secondary area.

VIII. GROUND 1: CLAIMS 1-8, 11-18, 23, AND 25-26 ARE OBVIOUS OVER *KREITLER* IN VIEW OF *ALTMAN690* AND *SUOMELA*

A. Overview and Motivation to Combine

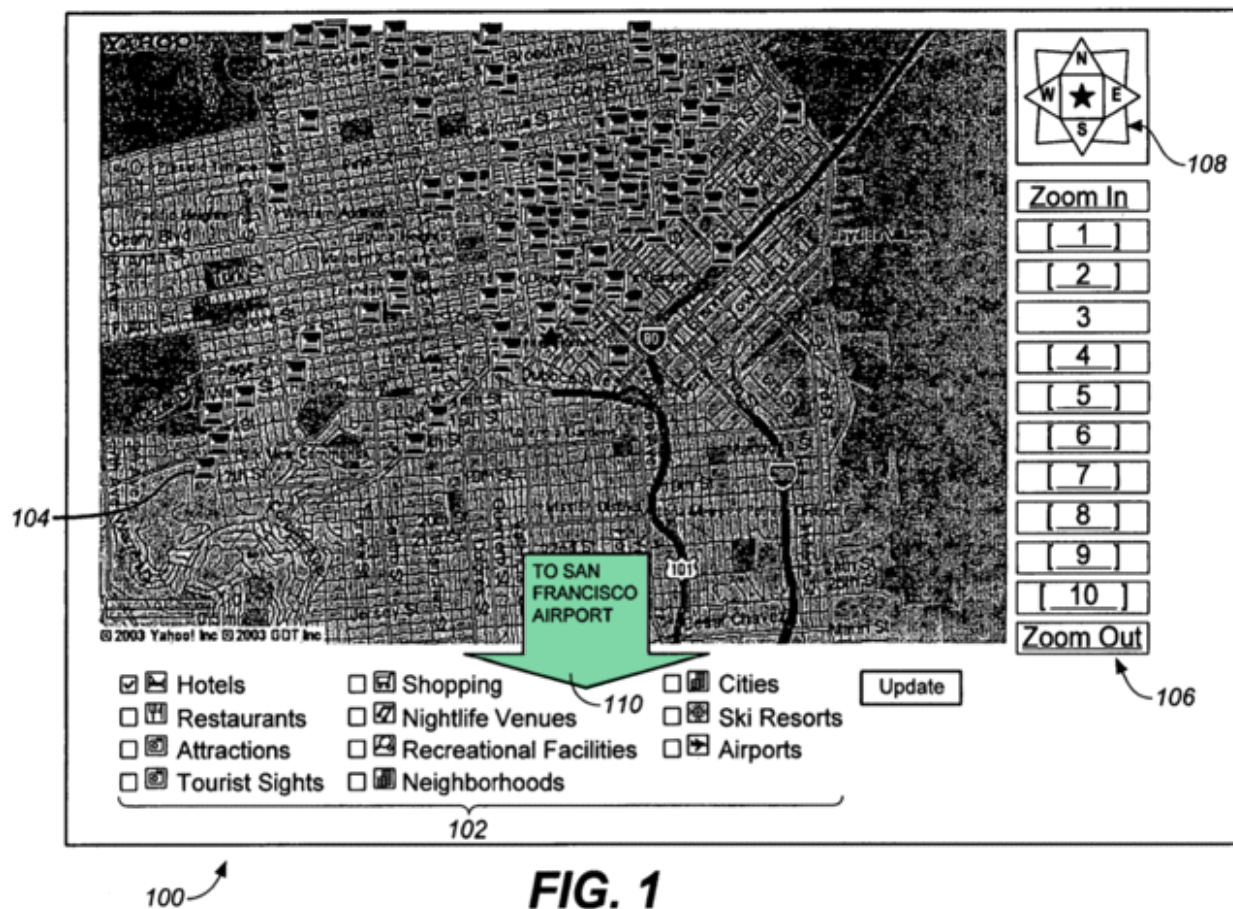
59. As explained above, the claimed methods include four primary steps:

- 1) Displaying a map on an electronic device;
- 2) Determining an off-map social-networking POI;

- 3) Displaying a selectable object indicating the location of the off-map social-networking POI; and
- 4) When the object is selected, recentering the displayed map around the previously off-map location.

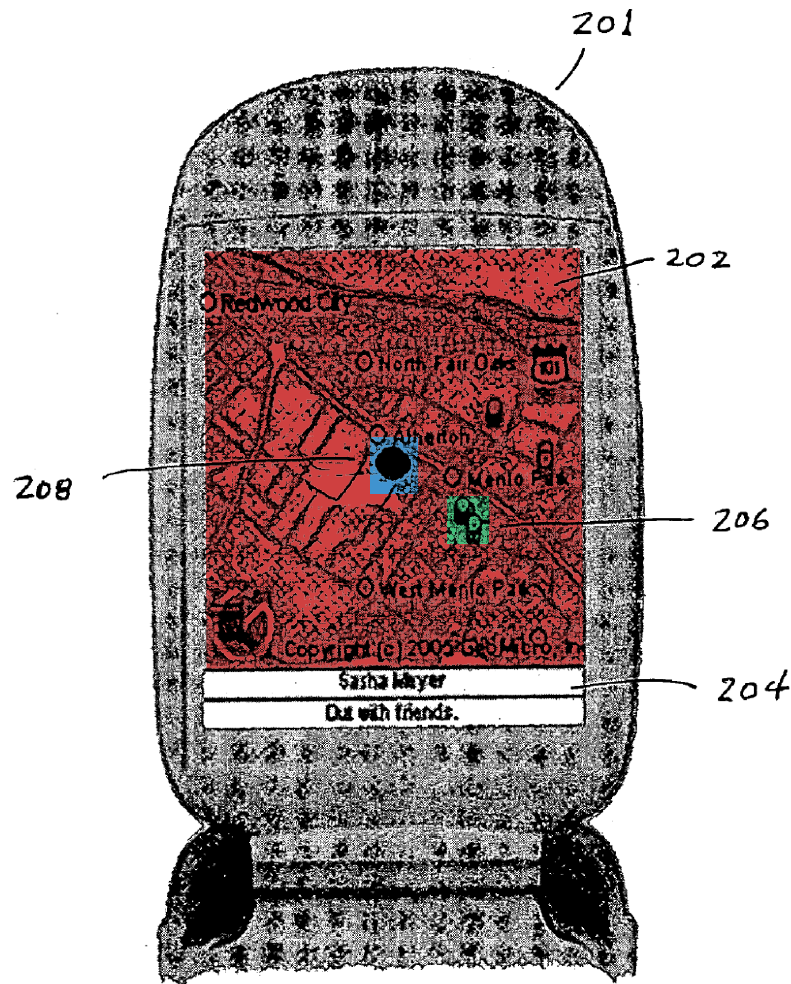
60. *Kreitler* teaches most of the '943's core steps. Like the '943, *Kreitler* discloses presenting POIs on a map and allowing a user to obtain detailed information. *Kreitler*, 3:33-36. *Kreitler* “can display special (distinctive) icons for items that are not positioned on the map² but nonetheless may be of interest” *Id.*, 6:43-49. A user interacts by clicking an icon to “jump to a higher zoom level and re-center the map around the center of the icon.” *Id.*, 6:14-43.

² Throughout this declaration, words in green represent OVIs; blue represent MOs; red represent the map; brown represent the user's or mobile communication device's location.

**FIG. 1***Kreitler*, Fig. 1.

61. While *Kreitler* does not expressly disclose social-networking MOs, *Altman690* does.

62. *Altman690* discloses a social-networking system for displaying electronic maps with icons representing real-time locations of social network users and POIs. *Altman690*, [0008], [0009].



Altman690, Fig. 2A.

63. *Altman690* also discloses location sharing amongst users and displaying shared location information on electronic maps. *Altman690*, [0030]. *Altman690* determines the geographic location of a user's mobile communication device 208, displays a map of the surrounding area, and allows the user to build a database of trusted friends 206 (other users) whose locations are displayed to the user. *Id.*, [0008], [0042].

64. “Because the users of the mobile devices are inherently transitory, a fundamental data object associated with each of the users of the mobile devices is the **location of each user** within a particular region.” *Id.*, [0032]. “As the user moves, the position of **his location** on the displayed map is updated in real-time or near real-time.” *Id.*, [0040]. These features would have been obvious and advantageous modifications to *Kreitler*, which would benefit from using moving objects—like other users—as MOs. *Kreitler* teaches “updates to the dynamic, location-based data,” *Kreitler*, 19:11-17, and one example of such data would be friends’ locations and corresponding MOs, taught by *Altman690*.

65. While *Kreitler* in view of *Altman690* does not expressly disclose (i) its OVI contains distance-related information, (ii) recalculating the placement position of an MO in response to a change in position of the mobile device with GPS hardware, (iii) computing distance and travel-related information from the center of a map to allow a user to automatically have a map-display relevant to their present location, or (iv) multiple OVIs including distance and travel-related information to the OVIs, *Suomela* does disclose these elements.

66. *Suomela* discloses displaying a map on a mobile device including “global positioning system (GPS) hardware 22.” *Suomela*, 2:14-15, 3:3-6. *Suomela*’s displayed map has two areas—a detail area and an object area. *Id.*, 2:1-5. The detail area is “located in a substantially central portion of the map,” and

includes details, like street names and buildings, which allow a user to follow a route. *Id.*, 2:1-13. The object area is “located in a peripheral portion of the map” and includes **objects representing geographic POIs**. *Id.*, Abstract, 2:1-13. **Objects** are “shown in the object area in orientations related to the detail area,” *id.*, 2:5-6, and indicate direction and distance from the center of the map. *Id.*, 4:34-56.

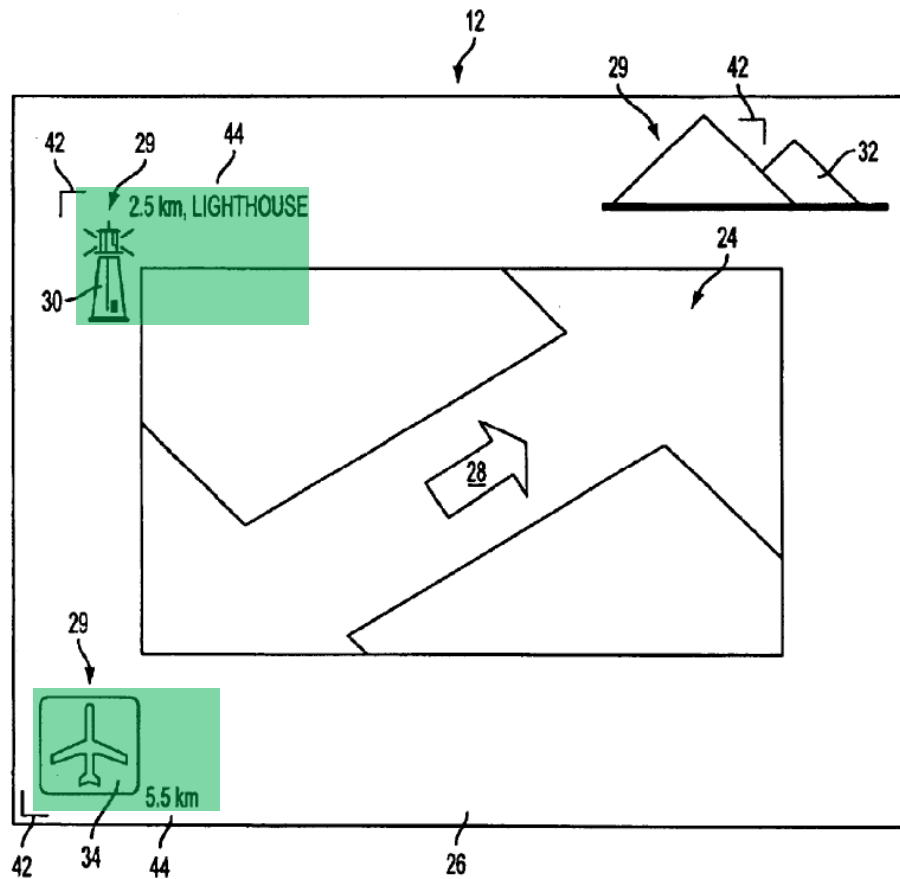


FIG. 5

Suomela, Fig. 5.

67. The '943, *Kreitler*, *Altman*690, and *Suomela* are all in the same field of providing electronic maps on electronic devices, and mapping specific locations

on those digital maps. All four patents address the known problem of displaying information related to map objects (“MOs”) that represent points of interest displayed on a map, with *Kreitler*, *Altman690*, and *Suomela* disclosing known solutions. In my opinion, a person of ordinary skill in the art would understand that the combination of *Kreitler*, *Altman690*, and *Suomela* would yield predictable results. Therefore, it would have been obvious for a person of ordinary skill in the art to combine *Kreitler*, *Altman690*, and *Suomela* for a more effective and efficient navigation system showing POIs on an electronic map.

68. **First**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to include the social-networking process, as taught by *Altman690*, within *Kreitler*’s method of presenting location-based items to enable sharing or accessing places of interest between users.

69. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler*’s method to include a social-networking process, as taught by *Altman690*, to “facilitate social interaction and activity coordination” among users of an electronic mapping system, because it would allow a user to interact with other users for activities and events. *Altman690*, [0005].

70. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler* to include *Altman690*’s social-networking process. Such a modification would have required

only routine skill in the art, as coupling location-aware mobile communication devices over a wireless network to enable sharing of user device locations and information about places and events of interest among a social network was common in the art before the date of the '943 patent. Ex. 1018, 1:47-51; Ex. 1019, 2:58-3:2; Ex. 1020, 1:56-2:62. Moreover, *Kreitler* already discloses “user-defined location-based data” generated and shared by other users over a network. *Kreitler*, 1:47-65, 22:9-23, Fig. 27. Accordingly, modifying *Kreitler*’s method to include a social-networking process of sharing location-based information about users and places of interest would have implemented only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

71. **Second**, it is my opinion that a person of ordinary skill in the art would have found it obvious and been motivated to modify *Kreitler* to incorporate *Altman690*’s social networking authentication and would have had a reasonable expectation of success in doing so.

72. In my opinion, a person of ordinary skill in the art would have found it obvious and been motivated to include the social-networking authentication using a user ID and password, as taught by *Altman690*, with *Kreitler*’s method “to ensure protection of sensitive user information, such as profile data, credit and/or

bank account information, location history, and any other user data objects that may be stored in the system.” *Altman690*, [0077].

73. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler* to include *Altman690*’s social-networking authentication. Such a modification would have required only routine skill in the art, as requiring a unique user ID and password to authenticate to a social network, was common in the art before the date of the ’943 patent. Ex. 1018, 2:54-56 (“Users may register and login to the portal server 110 from a client 140 by specifying a user ID and/or password.”); Ex. 1019, 4:48-54 (“Other important fields in this table include information used by users to login to the system (Username 440-6 and Password 440-8)”); Ex. 1020, 10:3-6 (“The login server 570 typically determines whether the particular subscriber is authorized to access the IM host complex 590 by verifying a subscriber identification and password.”). Accordingly, modifying *Kreitler*’s method to include authenticating to the social network would have implemented only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

74. **Third**, it is my opinion that a person of ordinary skill in the art studying *Kreitler* would have found it obvious and advantageous to accommodate a moving MO—like another user or their vehicle—and update the displayed

distance and travel-related information displayed, taught by *Altman690*, within *Kreitler*'s display. By way of example, *Kreitler* specifically teaches map "items could include dynamic location based information such as ... the position of a vehicle," and "the user of client host 2750 may wish to present his/her location-based data on a map for display by another user (e.g., a friend), such as the user of client host 2740." *Kreitler*, 3:47-51, 22:10-14. Having other users as MOs in *Kreitler/Altman690* would allow for users to track friends' locations in real-time and obtain information on how far away a friend is and how to travel to meet them—a benefit recognized extensively in *Altman690*. *Altman690*, [0040], [0047]. Adding transitory other users as MOs and updating distance and travel-related information for other users as they move would broaden the utility of *Kreitler* and incorporate a valuable feature for users. *Kreitler*, 3:47-51, 22:10-14.

75. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler*'s computation of travel information to include repeated computations based on the change in the position of the MO, taught by *Altman690*, to provide the user with travel information. Such a modification would allow users to effortlessly identify the position, travel, and/or distance information repeatedly in response to a change in the position of the MO in "real-time," a problem *Altman690* solves. *Altman690*, [0040], [0047].

76. In my opinion, a person of ordinary skill in the art would have reasonably expected success in modifying *Kreitler* with *Altman690*'s repeated computations of distance and travel-related information to accommodate transitory other users as MOs. Such a modification would have required only routine skill because *Kreitler* already calculates and displays the travel computations for stationary destinations. *Kreitler*, 6:51-57, 7:5-19. Incorporating a user as an MO of another user would use the same location calculation and display method already taught by *Kreitler*. Displaying the locations of other users and updating the distance and travel-related data for other users "in real-time" would require only routine skill to adjust the display and update frequency—simple software modifications. Such modification would have required merely conventional and routine skill, and a person of ordinary skill in the art would have readily understood and expected to succeed in that endeavor.

77. **Fourth**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to use images specific to the underlying MOs (e.g., users) as icons, as taught by *Altman690* within *Kreitler*, to make the icons more useful by "provid[ing] a visual reference for each user." *Altman690*, [0037].

78. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler*'s OVI to include *Altman690*'s images specific to the

underlying MOs (e.g., users) as icons, because it would allow a user to more quickly and easily identify other users on a map. Such a modification would allow users to effortlessly identify their friends based on their location on the map.

Suomela, 3:48-51, 3:58-66, 3:67-4:7.

79. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler* to include *Altman690*'s images specific to the underlying Mos (e.g., users) as icons, because it would allow a user to more easily identify other users. *Kreitler* itself discloses icons to mark locations, (*Kreitler*, 6:30-34), and adding images to the icons representing users would have required only a modification of the algorithm well within the skill of a person of ordinary skill in the art. Accordingly, including images specific to the underlying MOs as icons, taught by *Altman690*, within *Kreitler*'s icon that already is a location marker would have implemented only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

80. **Fifth**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to include distance indicators, taught by *Suomela*, within *Kreitler/Altman690* with *Kreitler*'s (thus *Kreitler/Altman690*'s) special icons to provide a user the distance from a position within the selected map to off-map POIs referenced by the special icons.

81. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690* to include *Kreitler/Altman690*'s special icons to include distance information, taught by *Suomela*, to provide distance information without requiring the user to specifically request navigation to the off-map POIs, because it would allow users to identify the required travel distance to POIs at a glance. Such a modification would allow users to effortlessly identify the required travel distance to POIs represented by the special icons and to orient themselves while "learning the layout of [a] new city." *Suomela*, 5:16-21.

82. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler/Altman690* to include *Suomela*'s distance indicators. Such a modification would have required only routine skill in the art, because calculating and displaying distances on electronic maps from one location to another was known in the art before the date of the '943 patent. *Kreitler* itself discloses calculating distance information to off-map POIs, (*Kreitler*, 7:5-19), and adding that information to the display would have required only a simple modification of the graphical display well within the skill of a person of ordinary skill in the art. Accordingly, displaying calculated distance information with *Kreitler/Altman690*'s special icons would have been implemented using only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

83. **Sixth**, it is my opinion that it would have been obvious to a person of ordinary skill in the art to improve *Kreitler/Altman690* by using a mobile device with GPS capabilities, taught by *Suomela*, to enable a user to easily and automatically track their location and identify places of interest, because *Altman690* already discloses a GPS circuit, (*Altman690*, [0065]), and *Kreitler* already discloses dynamic, location-based data overlaid on a map, (*Kreitler*, 1:38-2:15). In my opinion, a person of ordinary skill in the art would have found it obvious to include *Suomela*'s use of a user's current location to select the map area for display for the same reasons.

84. *Suomela* recognizes navigational digital maps "typically take advantage of global positioning system (GPS) technology to show a user's current location on the digital map." *Suomela*, 1:28-30. GPS technology "is able to continually update and monitor" the location of the user's device, and therefore, the user can track the steps of a route between the user's current location and desired destination. *Id.*, 5:7-16.

85. Like *Suomela*, *Kreitler* discloses displaying an electronic map on a "mobile device including but not limited to a PDA or cell phone." *Kreitler*, 12:3-12. *Kreitler* discloses "transmitting a map request from a client computer to a server." *Id.*, 1:39-40. *Kreitler* also discloses "transmitting a map request from a first user at a first client computer to a web server, including a request for ... user-

defined location-based data.” *Id.*, 1:48-51. While *Kreitler* discloses transmitting the user-defined location-based data to a remote server position, *Kreitler* does not expressly teach obtaining the GPS position of the electronic device, and *Altman690* discloses a GPS circuit. Therefore, a person of ordinary skill in the art would have been motivated to incorporate GPS capabilities, as taught by *Suomela*, in *Kreitler/Altman690* to take advantage of the benefits of GPS recognized by *Suomela*. The combination of *Kreitler/Altman690* and *Suomela* would allow the user to obtain navigational information between the current location of a user and a POI. *Id.* In addition, the combination would allow users to monitor their current location as they travel along a route between two location-based items. *Id.* Using GPS in a mobile device to track current location was common well before the ’943 patent. For example, the Garmin nüvi Manual discloses a mapping system from September 2005 that mentions that “[t]he Global Positioning System (GPS) is operated by the United States government, which is solely responsible for its accuracy and maintenance.” Ex. 1011, 11. In fact, “2007 was the year when the Global Positioning System finally went mainstream” and was “everywhere: in cars, cell phones and strapped onto the arms of joggers.” Ex. 1013, 1. Moreover, in the mobile industry, “[e]ighty-three million GPS-enabled handsets were shipped” in 2006 (Ex. 1014, 1), and Nokia introduced a GPS-enabled phone, the N95. Ex. 1015, 1. In addition, mobile communications devices were already comprised of

GPS receivers and personal digital assistants with GPS receiver modules prior to the '943 patent. Ex. 1016, 26:35-59, 32:60-33:24. Furthermore, client devices included GPS prior to the '297 patent. Ex. 1017, [0017].

86. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler/Altman*⁶⁹⁰ to include *Suomela*'s GPS capabilities. Such a modification would have required only routine skill, because displaying electronic maps and map items on mobile devices with GPS capabilities was common in the art before the date of the '943 patent. For example, the Garmin nüvi Manual discloses a mapping system from September 2005 that mentions that "[t]he Global Positioning System (GPS) is operated by the United States government, which is solely responsible for its accuracy and maintenance." Ex. 1011, 11. In fact, "2007 was the year when the Global Positioning System finally went mainstream" and was "everywhere: in cars, cell phones and strapped onto the arms of joggers." Ex. 1013, 1. Moreover, in the mobile industry, "[e]ighty-three million GPS-enabled handsets were shipped" in 2006 (Ex. 1014, 1), and Nokia introduced a GPS-enabled phone, the N95. Ex. 1015, 1. In addition, mobile communications devices were already comprised of GPS receivers and personal digital assistants with GPS receiver modules prior to the '943 patent. Ex. 1016, 26:35-59, 32:60-33:24. Furthermore, client devices included GPS prior to the '943 patent. Ex. 1017, [0017]. Using a mobile device

with GPS capabilities, taught by *Suomela*, in *Kreitler/Altman690* would have implemented only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

87. **Seventh**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to include recalculating the placement position of an MO in response to a change in position of the mobile device with GPS hardware, taught by *Suomela*, within *Kreitler/Altman690* with *Kreitler*'s special icons that are positioned relative to the position of the MO to update the icon's positioning relative to the updated position of the item it represents.

88. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690* to include *Suomela*'s recalculating a change in position of the mobile device with GPS hardware within *Kreitler/Altman690*'s special icons that are positioned relative to the position of the MO to provide a user the travel information from a position to POIs referenced by the special icons, because it would allow users to update the icon's positioning relative to the position on the now-recentered map. In addition, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690* to recalculate the placement position of the special icon in response to a change in position of the mobile device with GPS hardware, taught by *Suomela*. Such a

modification would allow users to effortlessly identify POIs based on the change in position of the mobile device, and “the user is able to track his route in detail area 24 while maintaining his orientation with known objects in object area 26.”

Suomela, 5:12-22. By using a “[l]ocation indicator 28 [that] shows the user’s current location and direction of travel” in real-time on a map, the user is able to obtain helpful information on items, including “[o]bjects, such as airport object 34 representing the airport he arrived at, mountain object 32 that represent mountains he can see in the distance, and lighthouse object 30 representing a famous lighthouse that he saw while landing at the airport, [which] may assist him in learning the layout of the new city” based on their current travel location in real-time. *Id.*

89. In my opinion, a person of ordinary skill in the art would have had a reasonable expectation of success in modifying *Kreitler/Altman* 690 to include *Suomela*’s recalculation of a change in position of the mobile device with GPS hardware. Such a modification would have required only routine skill because the hardware components were well known and repeating steps at a regular interval that were already performed would require only minor software/programming modifications. *Kreitler* itself discloses calculating distance information to off-map locations of interest, (*Kreitler*, 7:5-19), and recalculating the placement position information to account for an updated location of the device would have required

only a modification of the algorithm within the skill of a person of ordinary skill in the art. Accordingly, recalculating the placement position of an MO in response to a change in position of the mobile device with GPS hardware, taught by *Suomela*, within *Kreitler/Altman690*'s special icons that are positioned relative to the position of the MO to provide a user the travel information from a position to POIs referenced by the special icons would have been implemented using only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

90. **Eighth**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to compute distance and travel-related information, taught by *Kreitler*, from the center of the map, taught by *Suomela*, to allow a user to automatically have a map display relevant to their present location (as identified by GPS.)

91. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690* to include *Suomela*'s selected area of the map as the center with GPS hardware within *Kreitler*'s selected area of the electronic map. Including *Suomela*'s selected area of the map as the center with GPS hardware within *Kreitler*'s selected area of the electronic map would provide a user to automatically have a map display relevant to their present location, because it would allow users to identify their location as well as the location of

their relative position to POIs on the map. In addition, a person of ordinary skill in the art would have been motivated to modify *Kreitler* to include the selected area of the map as the center with GPS hardware, taught by *Suomela*. Such a modification would allow users to effortlessly identify POIs based on their location on the map. *Suomela*, 3:30-40.

92. In my opinion, a person of ordinary skill in the art would have had a reasonable expectation of success in modifying *Kreitler/Altman690* to include *Suomela*'s selected area of the map as the center with GPS hardware. *Kreitler* itself discloses that each map is defined by its center point, (*Kreitler*, 5:4-6), and when the user clicks the icon, the icon is then centered on the map (*Kreitler*, 6:55-60). Including the selected area of the map as the center would have required only a modification of the algorithm within the skill of a person of ordinary skill in the art. Accordingly, centering the map at the user's current location with GPS hardware, taught by *Suomela*, within *Kreitler*'s map defined by its center point would have been implemented using only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

93. **Ninth**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to include multiple OVIs including

distance and travel-related information to the OVIs, taught by *Suomela*, within *Kreitler*'s OVIs to allow a user to see multiple off-map POIs at once.

94. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690*'s OVI to include *Suomela*'s multiple OVIs including the distance and travel-related information within *Kreitler*'s OVI to provide a user to automatically view multiple POIs within the map-display, because it would allow users to identify further helpful information. In addition, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690* to include additional OVIs with distance and travel-related information, taught by *Suomela*. Such a modification would allow users to effortlessly identify POIs based on their location on the map. *Suomela*, 3:48-51, 3:58-66, 3:67-4:7.

95. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler/Altman690* to include *Suomela*'s OVIs with distance and travel-related information. *Kreitler* itself discloses OVIs containing travel-related information, (*Kreitler*, 1:66-2:8), and adding additional OVIs and distance-related information would have required only a modification of the algorithm that was well within the skill of a person of ordinary skill in the art. Accordingly, including additional OVIs containing distance and travel-related information to the MOs, taught by *Suomela*, within

Kreitler/Altman690's OVI that already contains travel-related information would have implemented only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

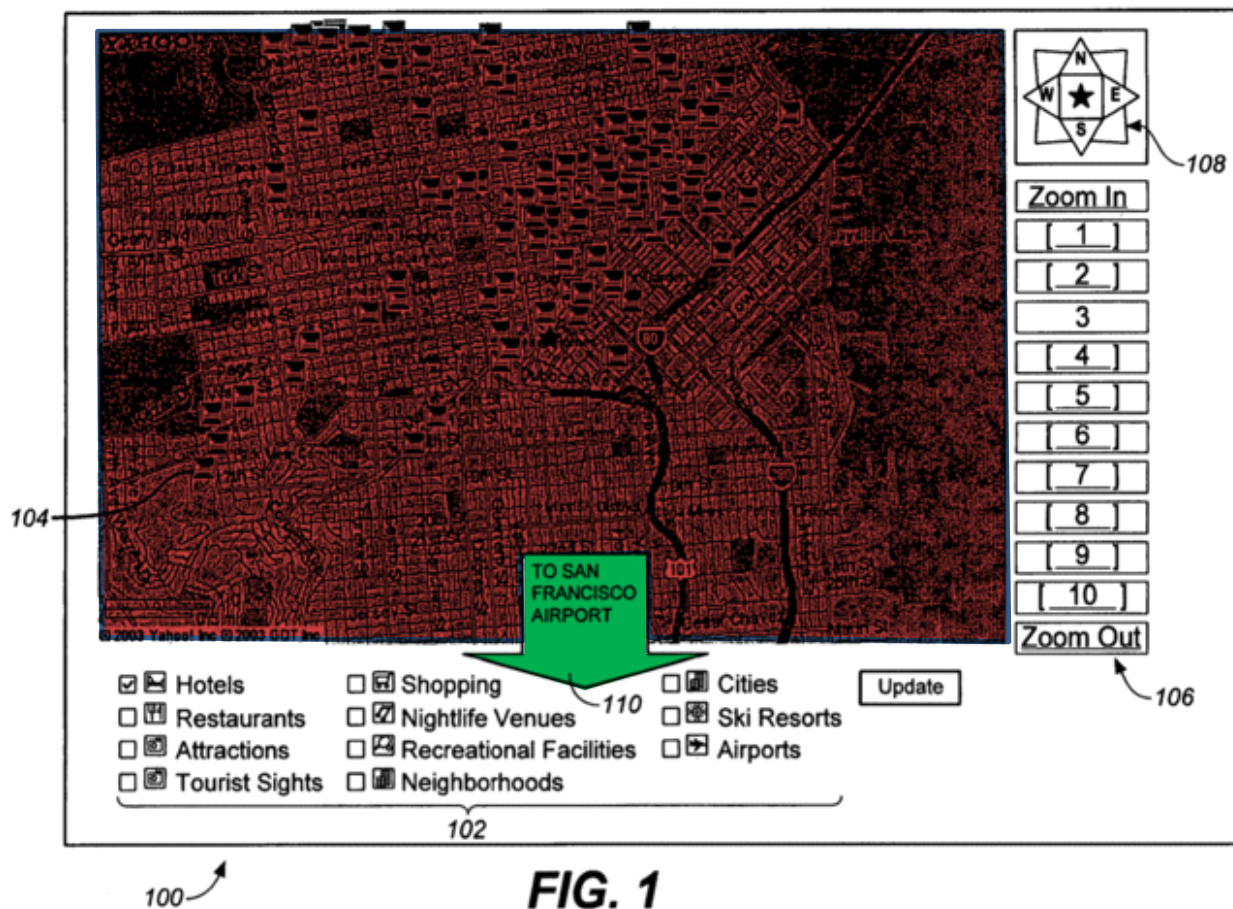
B. Independent Claims

1. Claim 1

- a. **[1pre]: A method for displaying object vector indicators (“OVI”) referencing social-network map-objects (“MO”) on an electronic map, comprising:**

96. In my opinion, *Kreitler/Altman690* renders obvious [1pre] through displaying electronic maps including **special icons (OVIs)** identifying **off-map POIs (MOs)**.

97. *Kreitler* discloses displaying **POIs** on an electronic map. *Kreitler*, 3:33-36, 12:3-12. **POIs** are **objects or locations** “that may be of interest to any **person**.” *Id.*, 3:37-43. Each POI is represented by an **icon**. *Id.*, 5:10-13. **POIs** positioned beyond the **visible map** are displayed using “**special (distinctive) icons**,” as illustrated below. *Id.*, 6:43-62.

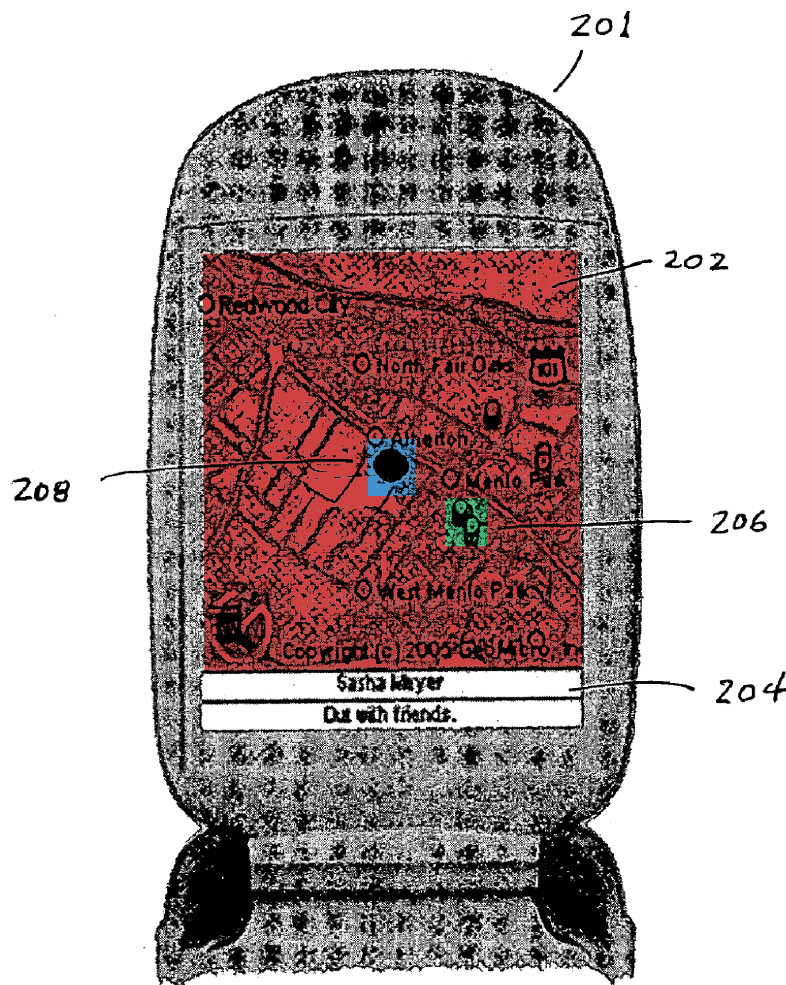


Kreitler, Fig. 1.

98. While *Kreitler* does not expressly disclose social-network [MOs](#), *Altman690* does.

99. *Altman690* discloses a “server-side social networking process” for “sharing information about places of interest among a plurality of users capable of communication with one another over a network.” *Altman690*, [0009]. For example, users may “provide a quantitative or qualitative ranking for places of interest.” *Id.* *Altman690* discloses that users may define their own places or events of interest. *Id.*; see also *id.* Fig. 8B (illustrating an icon on a map at the location of

a user-defined event, “Party.”). *Altman690* discloses a mobile device’s graphical user interface including a **map area** that displays superimposed icons corresponding to the **location of the user’s mobile device** and “the locations of such items of interest or of any **friends** that are within the region displayed on the map, and have mobile devices that are similarly capable of determining their own location.” *Id.*, [0008], [0009], [0041].



Altman690, Fig. 2A (annotated).

100. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have known to combine the social-networking process with POIs, as taught by *Altman690*, with *Kreitler*'s method of presenting location-based items to enable sharing or accessing POIs between users.

b. [1a]: providing an electronic device having a map-display application that is coupled to a mapping service, a social-network and a display for displaying a selected area of the electronic map;

101. *Kreitler/Altman690* renders obvious [1a] through a PDA or cell phone (electronic device) and interface application displaying a map (map-display application and display) communicating with an intelligent mapping application software system (mapping service) and social network.

102. *Kreitler* discloses ***providing an electronic device having a map-display application*** by disclosing a client computer such as “a PDA or cell phone” having “[a]n interface application,” such as a browser or an applet. *Kreitler*, 12:3-9.

103. *Kreitler*'s map-display application is ***coupled to a mapping service*** because it “is used to interact with the intelligent mapping application software system 400,” *Kreitler*, 12:5-10, which communicates with a map server like Yahoo! Maps, which is “responsible for generating a map image given a center

point and a zoom level.” *Id.*, 10:27-29, 12:16-18, Fig. 4; ’943, 8:24-25 (“mapping service such as ... Yahoo!® Maps”).

104. *Altman690* discloses that the map display application is ***coupled to a social network*** as explained for [1pre] (VIII.B.1.a). *Altman690* discloses “sharing information about places of interest among a plurality of users capable of communication with one another over a network.” *Altman690*, [0008], [0009], [0041].

105. *Kreitler*’s map-display application is ***coupled to a display for displaying a selected area of the electronic map*** because *Kreitler* teaches displaying a selected area of the electronic map. *Kreitler*, Figs. 1-2, 1:38-46, 2:20-24 (“FIG. 1 shows a map display FIG. 2 shows a map display”), 5:36-37 (“FIG. 1 shows an exemplary map 100 with a display of San Francisco.”).

106. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have known to combine the social-functionality of *Altman690* with *Kreitler*’s method of presenting location-based items to enable sharing or accessing POIs between users.

c. [1b]: authenticating to the social network;

107. In my opinion, *Altman690* discloses [1b], teaching that “each user account [be] identified by a unique user ID and protected by an associated password known only to the user.” *Altman690*, [0077]. Such “privacy and security

functions ... limit access to user information to only the user and authorized members” and “ensure protection of sensitive user information.” *Id.*

108. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have been motivated to combine *Altman690*’s social network authentication with *Kreitler*.

d. [1c]: obtaining from the social network the MO;

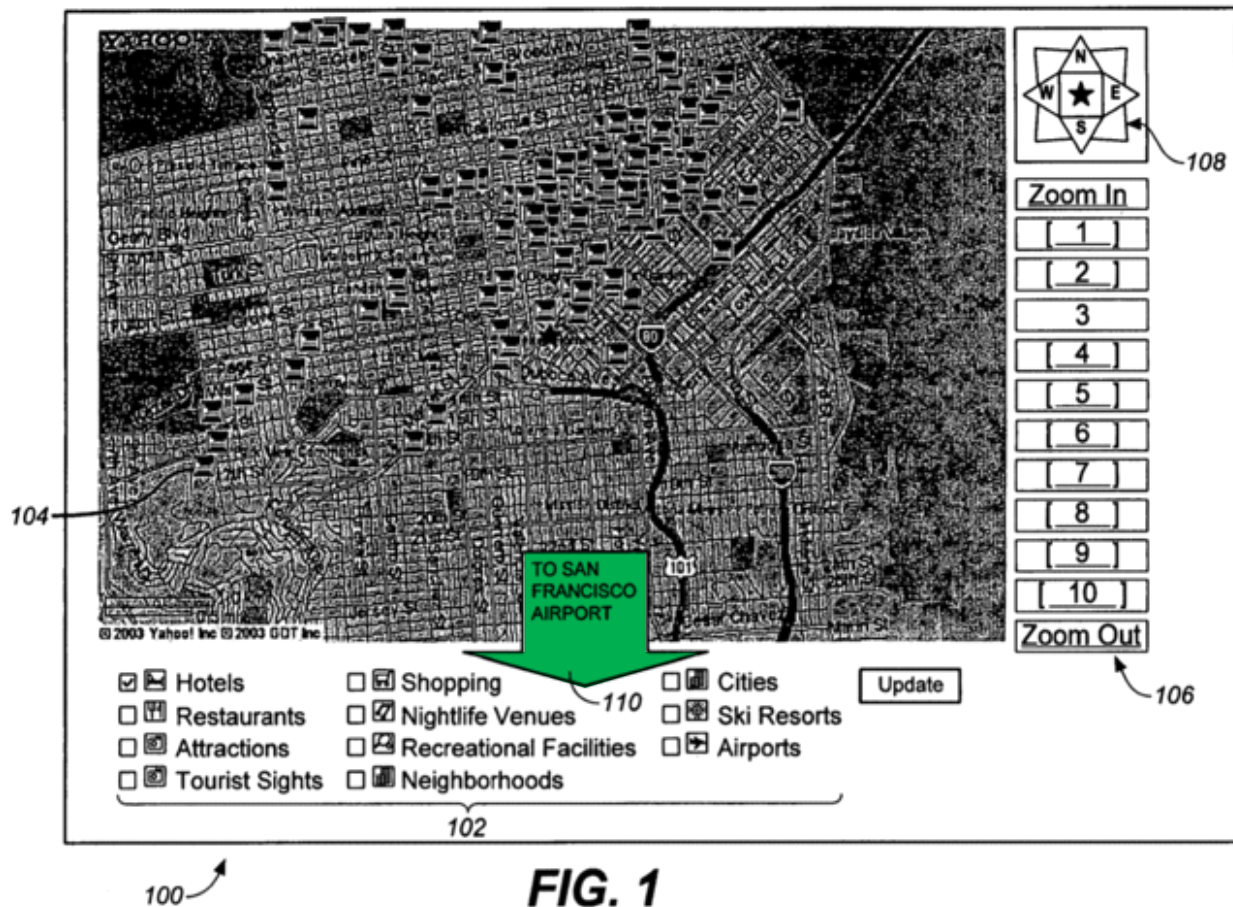
109. In my opinion, *Altman690* teaches [1c] via a “server-side social networking process [that] facilitates the sharing information about places of interest [(MOs)] among a plurality of users capable of communication with one another over a network,” who may define their own places or events of interest. [1pre] (Section VIII.B.1.a). *Altman690*, [0009], [0055] (“This information can be provided to a user in a ‘pull’ model, in which the user searches for the stored places of interest”); Fig. 8B.

110. In my opinion, a person of ordinary skill in the art would have understood that MOs are obtained from a social network, because the data items are generated and shared by users over a network, instead of obtained from a map database. Section VIII.A.

e. [1d]: determining that coordinates of the MO are not within the selected area of the electronic map;

111. In my opinion, *Kreitler* teaches [1d] by determining whether a **POI** is within the **visible map** and, if not, displaying **special icons for the POI**. *Kreitler*, Fig. 15, 15:48-16:17 (“a determination is made whether the item is located within the current radius of the center of the map”).

112. *Kreitler* “display[s] **special (distinctive) icons** for items not positioned on the map but nonetheless may be of interest to the user.” *Kreitler*, 6:43-45. Figure 1 displays **special icon 110** corresponding to “San Francisco Airport”—which has been determined to be “to the south of the city” (outside the selected map-area). *Id.*, Fig. 1, 6:50-55.



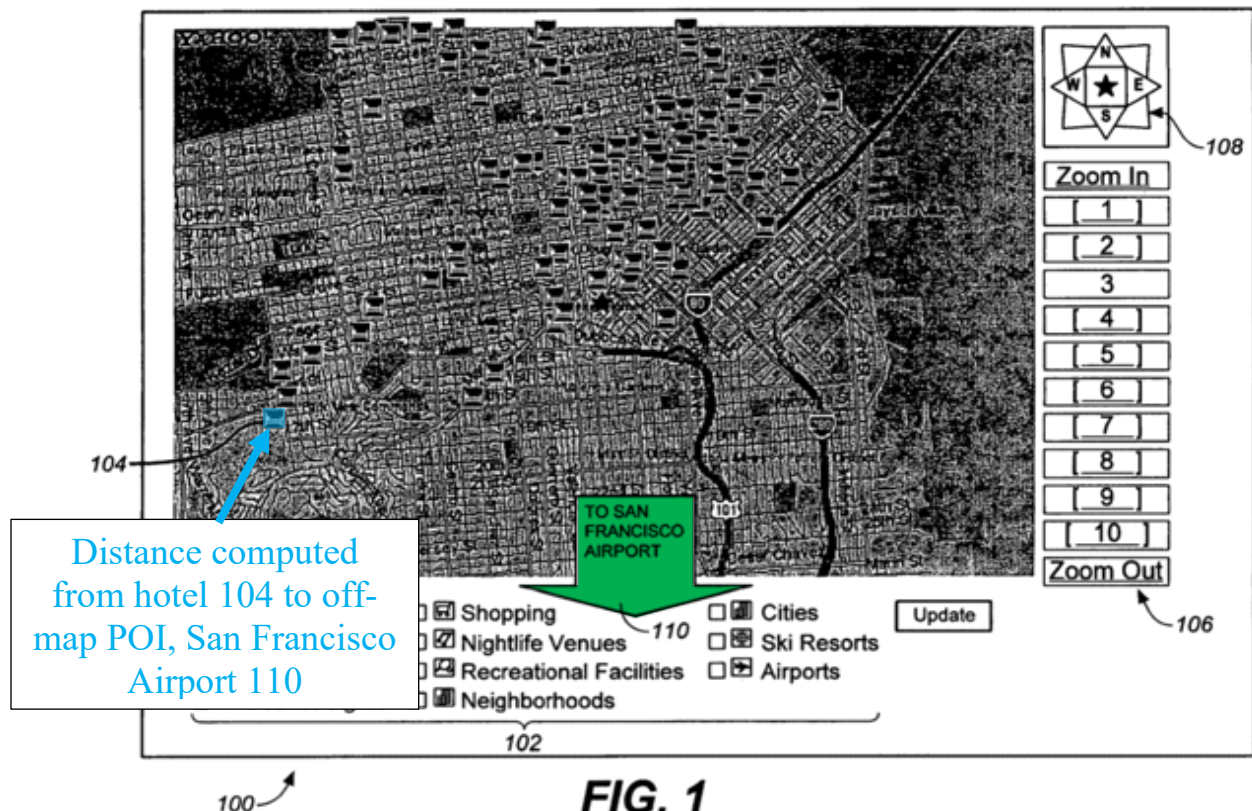
Kreitler, Fig. 1.

113. *Kreitler* “recognize[s] that this airport is close by (e.g., within 100 miles), but it doesn’t fit on the map, so the link or specific icon is displayed.” *Id.*, 6:67-7:4.

f. [1e]: computing distance and travel-related information from a location within the selected area of the electronic map to the MO;

114. In my opinion, *Kreitler* teaches [1e] via determining navigational information including distance and direction (travel-related information) to a [POI \(MO\)](#).

115. *Kreitler* teaches that selecting hotel 104 “would allow the user to obtain the distance of other items [(MOs)] in relation to the selected hotel...” *Kreitler*, Fig. 1, 5:36-41, 6:43-45, 7:5-31; ’943, Fig. 1, 2:16-19 (distance and direction are “information”). *Kreitler* also discloses creating and displaying a **special icon (OVI)** indicating an **off-map MO** including the direction of the MO (travel-related information). *Kreitler*, 6:51-57; ’943, 2:16-19. Figure 1 shows a special icon referencing “San Francisco Airport” configured as “an arrow icon” “that points in the general direction of San Francisco Airport.” *Kreitler*, 6:51-57.



Kreitler, Fig. 1.

**g. [1f]: computing a placement position of an OVI
referencing the MO on the map-display
application;**

116. In my opinion, *Kreitler* teaches [1f] via placing a **special icon (OVI)** in a position corresponding to the **off-map item of interest (MO)**.

117. *Kreitler* discloses that “**an icon** may be displayed on the south border of the image that points in the general direction of San Francisco Airport.”

Kreitler, 6:47-55.

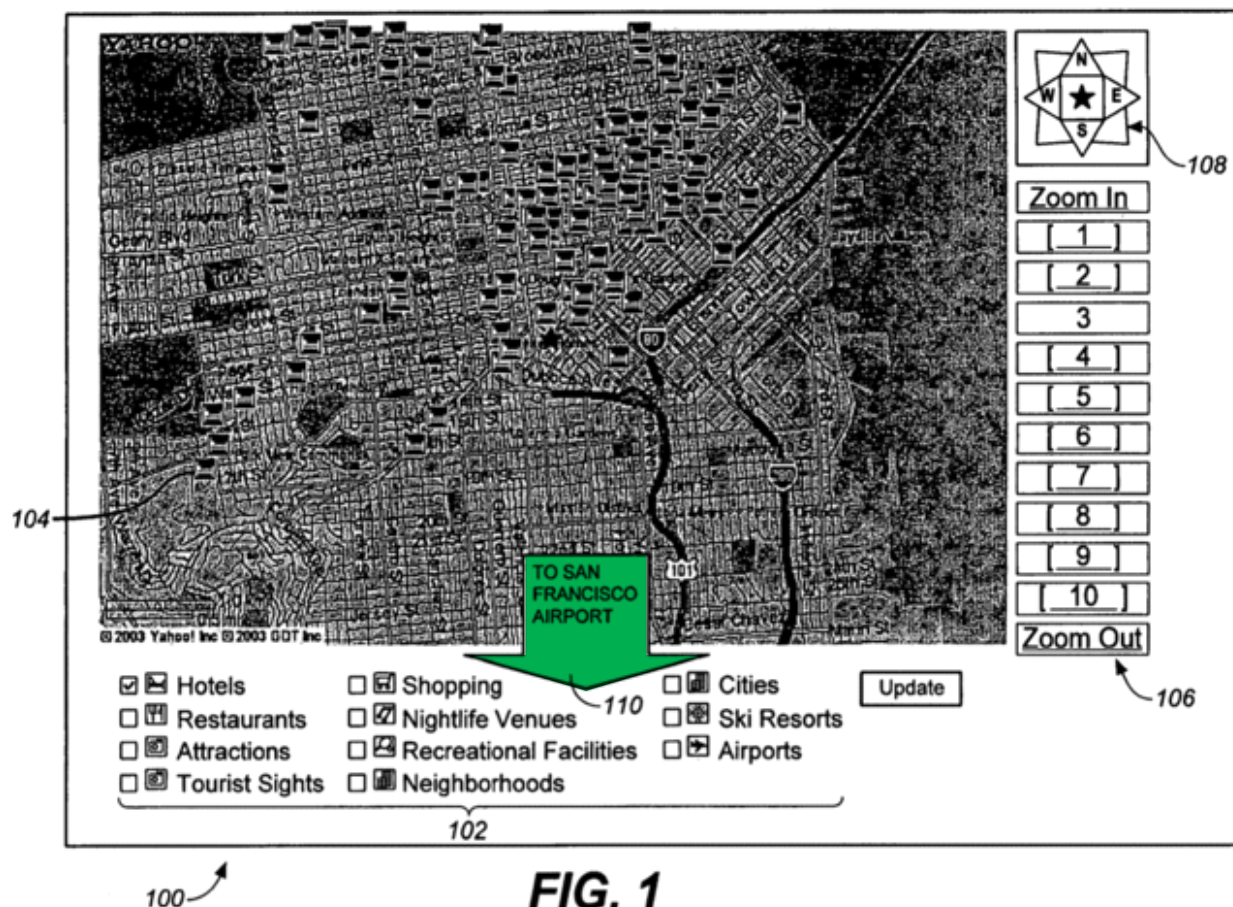


FIG. 1

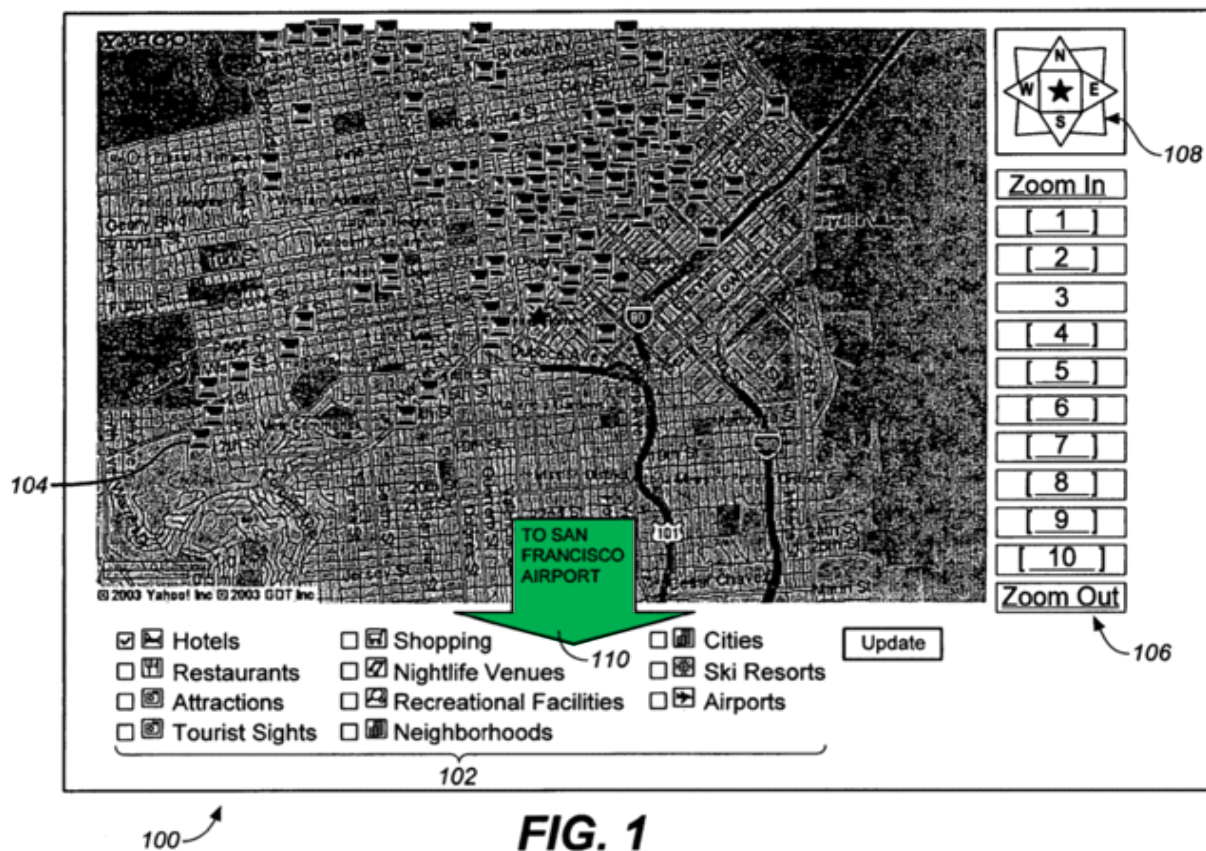
Kreitler, Fig. 1.

118. In my opinion, a person of ordinary skill in the art would have understood that *Kreitler* computes the placement position of the special icon because the position is based on the location of the off-map MO it references. *Kreitler*, 25:1-19.

h. [1g]: creating the OVI containing the distance and travel-related information;

119. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [1g].

120. *Kreitler* teaches a **special icon (OVI)** indicating an **off-map MO** and “**an arrow icon**” “that points in [its] general direction” (travel-related information). *Kreitler*, Fig. 1, 6:51-57; '943, 2:19-25.



Kreitler, Fig. 1.

121. *Kreitler* does not expressly disclose an OVI with ***distance information***, but suggests it by computing distance and driving directions, as explained for [1e] (Section VIII.B.1.f). *Suomela* expressly discloses displaying both distance and travel-related information.

122. Like *Kreitler*, *Suomela* discloses “a digital map” including **objects “in a peripheral portion”** representing off-map locations, placed according to the direction to the off-map locations. *Suomela*, Abstract, Fig. 5, 2:1-15, 4:34-41. *Suomela* also discloses “direction indicators 42 and distance indicators 44 for each of the objects 29... The distance indicators 44 show the distance from the center of the map or location indicator 28 to each of the objects 29.” *Id.*, 4:34-56.

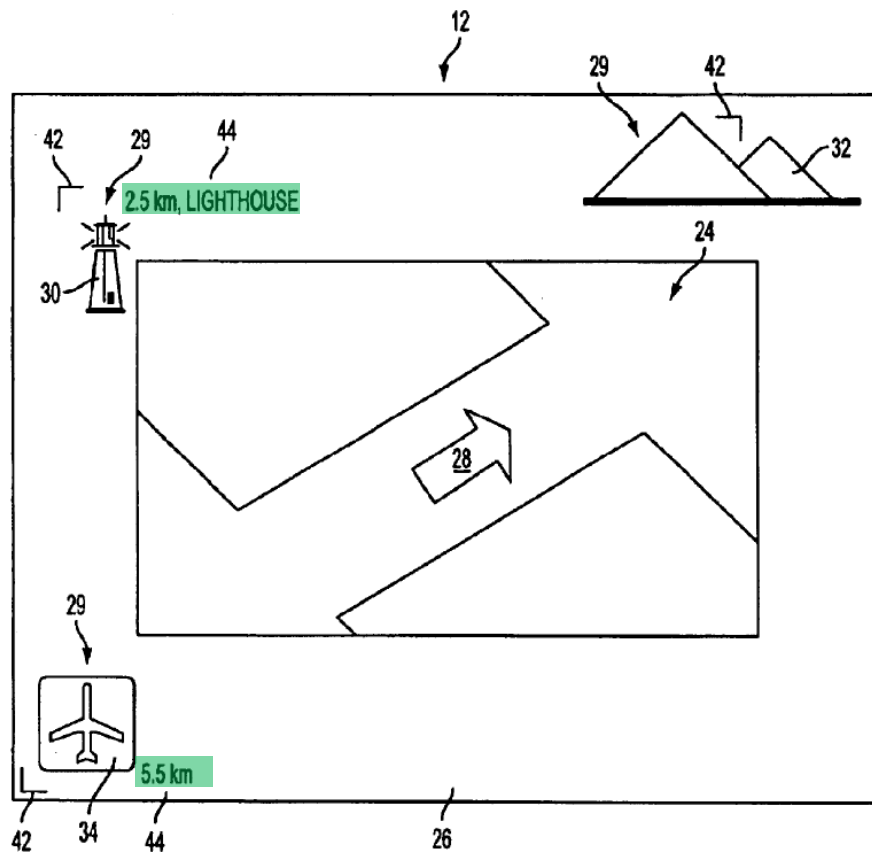


FIG. 5

Suomela, Fig. 5.

123. In my opinion, a person of ordinary skill in the art would have been motivated to add *Suomela*'s distance and travel-related information to *Kreitler/Altman690* to provide further helpful information to a user. Section VIII.A.

- i. [1h]: displaying the OVI on the display at the computed placement position;

124. In my opinion, *Kreitler* teaches [1h] by displaying the **special icon** corresponding to “San Francisco Airport” at the computed location on the “south border” of the map, as shown below. *Kreitler*, Fig. 1, 6:50-55.

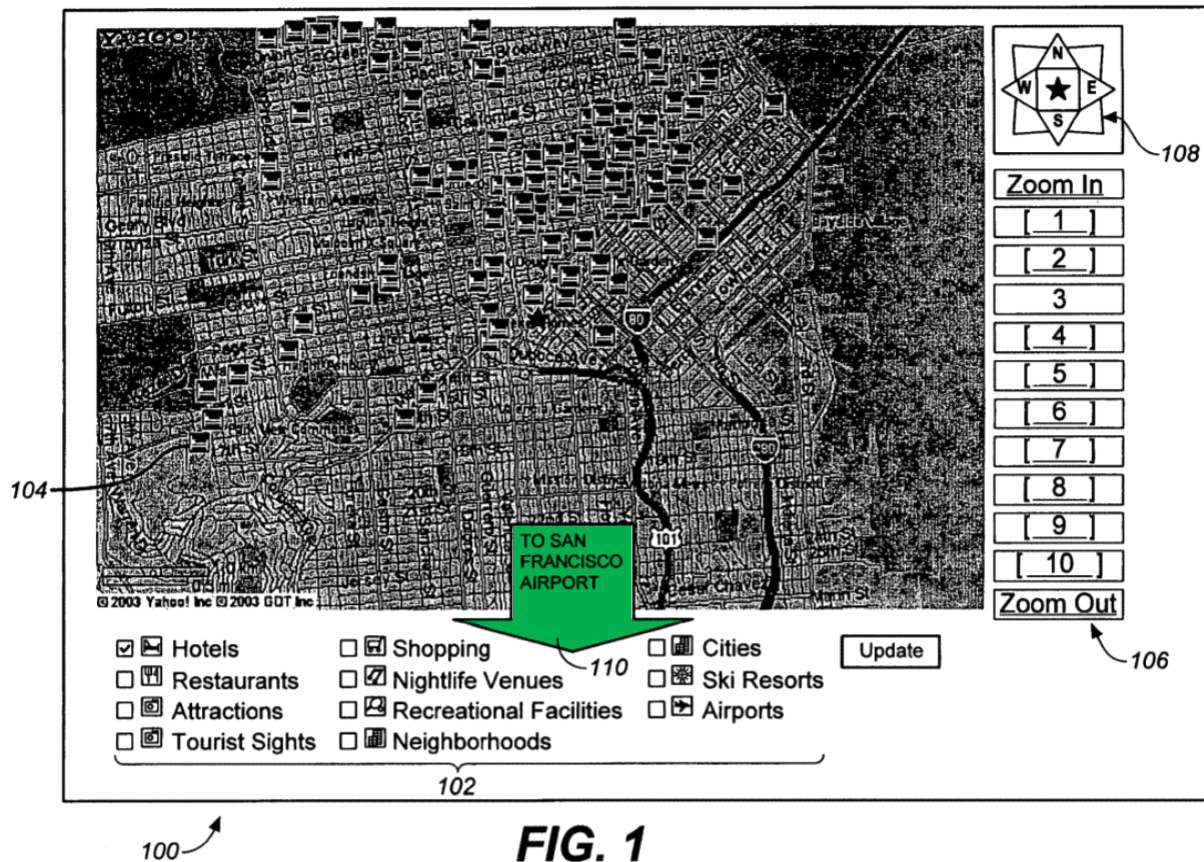


FIG. 1

Kreitler, Fig. 1.

j. [1i]: receiving user input selecting the OVI;

125. In my opinion, *Kreitler* teaches [1i] because *Kreitler* discloses that the user may click on the **special icon (OVI)**. *Kreitler*, 6:58-60 (“When the user clicks on that [special] icon 110, the system re-centers and resizes (re-zooms) the map to show San Francisco Airport in the image.”).

- k. **[1j]: displaying a secondary area of the electronic map, wherein the secondary area is a region of the electronic map centered approximately around the MO; and**
[1k]: displaying the MO approximately at the center of the secondary area.

126. In my opinion, *Kreitler* teaches [1j] and [1k] because *Kreitler* discloses that when clicking the “San Francisco Airport” **special icon**, *Kreitler* “re-centers and resizes (re-zooms) the map to show San Francisco Airport in the image” using the **MO’s** address as the center point. *Kreitler*, 6:58-60, 12:32-36.

2. Claim 18

- a. **[18pre]: A method of panning a social-network-based electronic map, comprising:**

127. In my opinion, *Altman690* renders obvious [18pre] via allowing “the user to navigate around the map by zooming and panning around.” *Kreitler*, 5:23-24.

128. As explained in [1pre] (Section VIII.B.1.a), *Altman690* discloses a graphical user interface of a user’s mobile communication device includes a map area that displays icons corresponding to the location of the user’s mobile device and “the locations of such items of interest or of any friends that are within the region displayed on the map, and have mobile devices that are similarly capable of determining their own location.” *Altman690*, [0008], [0009], [0041]. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would

have been motivated to modify *Kreitler* to incorporate *Altman690*'s social networking process and would have had a reasonable expectation of success in doing so.

b. [18a]: authenticating to a social network;

129. In my opinion, *Altman690* teaches [18a] as explained in [1b] (Section VIII.B.1.c).

c. [18b]: requesting a list of map objects ("MOs") from the social network;

130. In my opinion, *Kreitler/Altman690* renders obvious [18b].

131. *Kreitler* discloses requesting "user-defined location-based data" from a user that may be shared with other users. *Kreitler*, 1:47-2:15; 23:13-19. For example, a second user may send an invitation (e.g., hypertext link) to a first user "that identifies the location of the data content that is to be overlaid on the map," and when the first user accesses the link, *Kreitler*'s mapping application software system "requests the location-based data from the second client computer." *Id.*, 22:43-23:19, Figs. 26, 27.

132. *Altman690* discloses a social-networking system and a "map representation of the area around [a user's] mobile communication device [is displayed] on a graphical user interface of the mobile communication device, and superimposes on the map the respective locations of one or more other users" and

“other location-based items, such as places of interest, events, and the like.”

Altman, [0008], [0009]. The location-based items are maintained in databases in a data store and “can be provided to a user in a ‘pull’ model, in which the user searches for the stored places of interest” *Id.*, [0032], [0047] (“social network manager process includes a list utility that allows the user to pull and display various items of information”), [0055], Fig. 1. A person of ordinary skill in the art would have understood that *Altman690*’s system requests a list of location-based items generated by the plurality of users from the data store, because the system must receive and transmit the location-based items that are within the visible region of the map to the user’s mobile communication device.

133. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have been motivated to modify *Kreitler* to incorporate *Altman690*’s social networking process and would have had a reasonable expectation of success in doing so.

d. [18c]: receiving the list of MOs from the social network;

134. In my opinion, *Altman690* teaches [18c] as explained in [1c] (Section VIII.B.1.d) and [18b] (Section VIII.B.2.c).

e. [18d]: determining the geographic coordinates of the MOs

135. In my opinion, *Kreitler* teaches [18d] via determining latitude and longitude coordinates for POIs (MOs).

136. *Kreitler* discloses that data items in content databases (MOs) “are processed through the geocoder component 408 and their address information is translated to a latitude and longitude” (geographic coordinates). *Kreitler*, 11:45-47; *id.*, 10:42-49 (*Kreitler*’s “map is all based on latitudes and longitudes”).

f. [18e]: determining that the MOs are outside bounds of a first area of the map visible to a user;

137. In my opinion, *Kreitler* teaches [18e] as explained in [1d] (Section VIII.B.1.e).

g. [18f]: creating an object vector indicator (“OVI”) for each of the MOs;

138. In my opinion, *Kreitler/Altman690* renders obvious [18f] as explained in [1g] (Section VIII.B.1.h).

h. [18g]: displaying the OVIs on the electronic map;

139. In my opinion, *Kreitler* teaches [18g] as explained in [1h] (Section VIII.B.1.i).

i. [18h]: receiving user input selecting one of the OVIs;

140. In my opinion, *Kreitler* teaches [18h] as explained in [1i] (Section VIII.B.1.j).

j. [18i]: determining one of the MOs referenced by the selected OVI

141. In my opinion, *Kreitler* teaches [18i] because each special icon (OVI) corresponds to an off-map POI (MO). *Kreitler*, 6:58-60.

142. It is my opinion that a person of ordinary skill in the art would have understood that *Kreitler* determines the item referenced by the selected special icon to recenter and resize the map to display that item, which would require the system to determine the location of the MO corresponding to the OVI.

k. [18j]: panning the electronic map to display a secondary area of the map, wherein the secondary area is a region of the electronic map encompassing the determined one of the MOs;

143. In my opinion, *Kreitler* teaches [18j].

144. As explained regarding [1h] (Section VIII.B.1.i) and [1i] (Section VIII.B.1.j), *Kreitler* discloses that clicking the special icon causes the map to be repositioned and resized to show a second area with the POI centered (encompassed). *Kreitler*, 6:58-60, 12:32-36. *Kreitler* specifically refers to this as “panning.” *Id.*, 5:23-24.

l. [18k]: wherein the determined one of the MOs is approximately at the center of the secondary area.

145. In my opinion, *Kreitler* teaches [18k] as explained in [1k] (Section VIII.B.1.k).

3. Claim 23

- a. [23pre]: A method for creating and displaying an object vector indicator (“OVI”) on an electronic map of a global navigation system (“GPS”) device, connected to a social network, comprising:**

146. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [23pre] as explained for [1pre] (method) (Section VIII.B.1.a), [1g] (creating) (Section VIII.B.1.h), and [1h] (displaying) (Section VIII.B.1.i).

147. *Altman690* discloses a “server-side social networking process” for “sharing information about places of interest among a plurality of users capable of communication with one another over a network.” *Altman690*, [0009]. *Altman690* also discloses that “the location determination module is a GPS (global positioning system) circuit that determines the location of the mobile communication device using GPS methodology.” *Id.*, [0065].

148. *Suomela* expressly discloses GPS: “a digital map displayed on a mobile computing device” including “global positioning system (GPS) hardware 22.” *Suomela*, Fig. 2, 2:14-15, 3:3-6, 3:14-17, 5:7-9.

149. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have been motivated to modify *Kreitler* to incorporate *Altman690*’s social networking process and would have had a reasonable expectation of success in doing so.

150. It is also my opinion that it would also have been obvious to a person of ordinary skill in the art to improve *Kreitler* with GPS capabilities, taught by *Altman690* and *Suomela*, to enable a user to easily and automatically track their location and identify places of interest as explained in Section VIII.A.

b. [23a]: providing the GPS device having a map display application that is coupled to the social network and a display for displaying a portion of the electronic map

151. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [23a], as explained for [1a]. Section VIII.B.1.b.

c. [23b]: receiving coordinates of the GPS device

152. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [23b].

153. *Altman690* discloses “a GPS (global positioning system) circuit that determines the location of the mobile communication device using GPS methodology.” *Altman690*, [0065].

154. *Suomela* discloses “a digital map displayed on a mobile computing device.” *Suomela*, 2:14-15. *Suomela*’s GPS hardware “receives GPS transmissions ... and communicates with processor 14 to enable the processor to determine current location information for mobile device 10.” *Id.*, 3:14-17.

155. It is my opinion that a person of ordinary skill in the art would have understood that the GPS transmissions communicated with the processor used to

determine the current location received by *Suomela*'s GPS hardware include the coordinates of the mobile computing device because GPS hardware provides location information in lat-long coordinate form.

d. [23c]: receiving information on a map-object (“MO”);

156. In my opinion, *Kreitler* teaches [23c] in receiving, via a search engine, “information about different kinds of *items*, for example, *hotels*, *airports*, *restaurants*....” *Kreitler*, 10:65-11:3; *see also id.*, 11:50-52, 12:63-13:7, Fig. 4.

e. [23d]: determining coordinates of the MO from the received information;

157. In my opinion, *Kreitler* teaches [23d] because received *MOs* “are processed through the geocoder component 408 and their address information is translated to a latitude and longitude.” *Kreitler*, 10:65-11:3, 11:45-52, 12:63-13:7, Fig. 4.

f. [23e]: determining a range of coordinates inclusive of the displayed portion of the electronic map;

158. In my opinion, *Kreitler* teaches [23e], explaining “only *items* that fall within the geographical area of the map are displayed by the system” because “a determination is made whether the *item* is located within the current radius of the center of the map....” *Kreitler*, Fig. 15, 5:4-16, 6:43-45, 10:42-46, 13:2-5, 15:48-16:17.

- g. [23f]: calculating that the coordinates of the MO are not within the range of coordinates of the displayed portion of the electronic map;**

159. In my opinion, *Kreitler* teaches [23g] as explained in [1d] (Section VIII.B.1.e).

- h. [23g]: creating the OVI to reference the MO;**

160. In my opinion, *Kreitler* teaches [23g] as explained in [1g] (Section VIII.B.1.h).

- i. [23h]: calculating the placement of the OVI on the display;**

161. In my opinion, *Kreitler* teaches [23h] as explained in [1f] (Section VIII.B.1.g).

- j. [23i]: displaying the OVI on the display;**

162. In my opinion, *Kreitler* teaches [23i] as explained in [1h] (Section VIII.B.1.i).

- k. [23j]: receiving user input selecting the OVI; and**

163. In my opinion, *Kreitler* teaches [23j] as explained in [1i] (Section VIII.B.1.j).

- l. [23k]: panning the electronic map such that the MO is displayed approximately at the center of the electronic map.**

164. In my opinion, *Kreitler* teaches [23k] as explained in [1j-k] and [18j-k] (Sections VIII.B.1.k and VIII.B.2.[k-l]).

C. Dependent Claims

1. Claim 2: wherein the location within the selected area of the electronic map is the center of the selected area of the electronic map.

165. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 2.

166. *Kreitler* discloses that “[e]ach map is defined by its center point.”

(*Kreitler*, 5:4-6). *Kreitler* also discloses that when the user “click[s] on the icon” (the selected area), *Kreitler*’s system “re-center[s] the map around the center of the icon with one click,” *Id.*, 6:30-34, and thus where the “selected area” of element [1a] was obtained by a user clicking on an icon, it is my opinion that person of ordinary skill in the art would understand that the icon will be the center of the selected area.

2. Claim 3: wherein the location within the selected area of the electronic map is a location marker.

167. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 3 through *Kreitler*’s icon selection for example, where “in the case of a ‘city’ icon” (location marker), the system allows the user to “re-center the map around the center of the icon [(location marker)] with one click.” *Kreitler*, 6:30-34.

168. *Altman690* goes further, teaching that “database 128 stores graphic information related to each user, such as the user’s picture, and any other associated images. These images can be displayed on the other user’s mobile

devices to provide a visual reference for each user.” *Altman690*, [0037], Fig.1. In this way, the user’s image is the location marker.

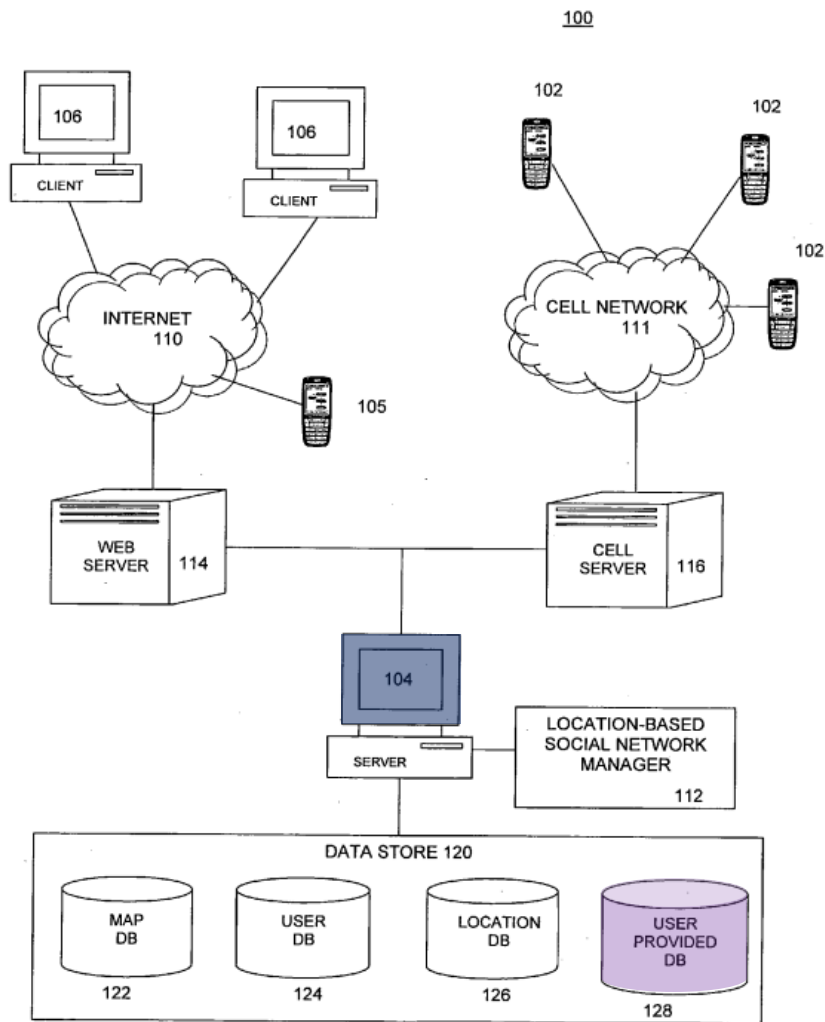
169. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have found it obvious to use images specific to the underlying MOs (e.g., users) as location marker icons in order to make the icons more useful by “provid[ing] a visual reference for each user” as taught by *Altman690*.

3. Claim 4: wherein the location marker is retrieved from the social network.

170. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 4.

171. As explained in claim 3 (Section VIII.C.2), *Kreitler* and *Altman690* disclose location markers.

172. *Altman690*’s locations markers include a “user’s picture,” and are stored in a data store 120 located on server 104 and “mobile network 111 supporting the mobile devices 102 are coupled to the server computer through an intermediate server computer, such as cell server 116.” *Altman690*, [0032]-[0035].

**FIGURE 1***Altman690, Fig. 1*

173. It is my opinion that a person of ordinary skill in the art would have understood that accessing images stored on a server requires retrieving them from the server.

174. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have known to combine retrieving from the social

network, as taught by *Altman690*, with *Kreitler*'s location marker and its system to obtain detailed information on items.

4. Claim 5: further including retrieving from the social network location information associated with a user of the social network, wherein the location marker is related to the retrieved location information.

175. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 5.

176. *Altman690* discloses that “user’s picture” (location marker) and “location information for each user” are both stored within the data store 120, and that “location information relating to each friend can be used to provide a visual reference for the user on a map of the area, such as that illustrated in FIG. 2A.”

Altman690, [0037], [0047], Fig. 2A.

177. It is my opinion that a person of ordinary skill in the art would have understood that “location information ... used to provide a visual reference” (location marker) is necessarily related to the location marker.

178. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have known to combine retrieving from the social network, as taught by *Altman690*, with *Kreitler*'s location marker and its system to obtain detailed information on items.

5. Claim 6: wherein the computing the placement position of the OVI step is repeated in response to a change in the position of the MO.

179. In my opinion, *Kreitler/Altman690* renders obvious claim 6.

180. As explained for [1d] (Section VIII.B.1.e), *Kreitler* discloses ***computing the placement position of the OVI***. *Kreitler* does not expressly disclose repeating computing OVI placement in response to a change in the position of the MO, but *Altman690* does.

181. *Altman690* discloses that “[a]s the user moves, the position of **his location** on the displayed map is updated in real-time or near real-time.” *Altman690*, [0040]. And *Altman690* expressly discloses that **other users’ (MOs)** are displayed to the user and updated in real-time, as the **other user (MO)** moves. *Id.* *Altman690* states, “[e]ach user who desires to interact with other users in the system using this data utilizes the location-based social network manager process 112” that allows users to view other **users’ (MOs) current location** based on updated information generated by a new location of **the user (MO)**. *Id.*, [0032], [0073].

182. As combined with *Kreitler*, if another user (MO) were off-map, a person of ordinary skill in the art would have understood that the system would display a special icon (OVI) representing the off-map user (MO), and adjust that special icon as the off-map user (MO) changes position. As explained in Section VIII.A, it is my opinion that it would have been obvious to a person of ordinary

skill in the art to implement *Altman690*'s real-time updates on the location of other users within *Kreitler*.

6. Claim 7: wherein the computing the placement position of the OVI step is repeated in response to a change in the position of the electronic device.

183. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 7.

184. *Suomela* teaches that the user may “track his route ... while maintaining his orientation with **known objects**....” *Suomela*, 5:12-22.

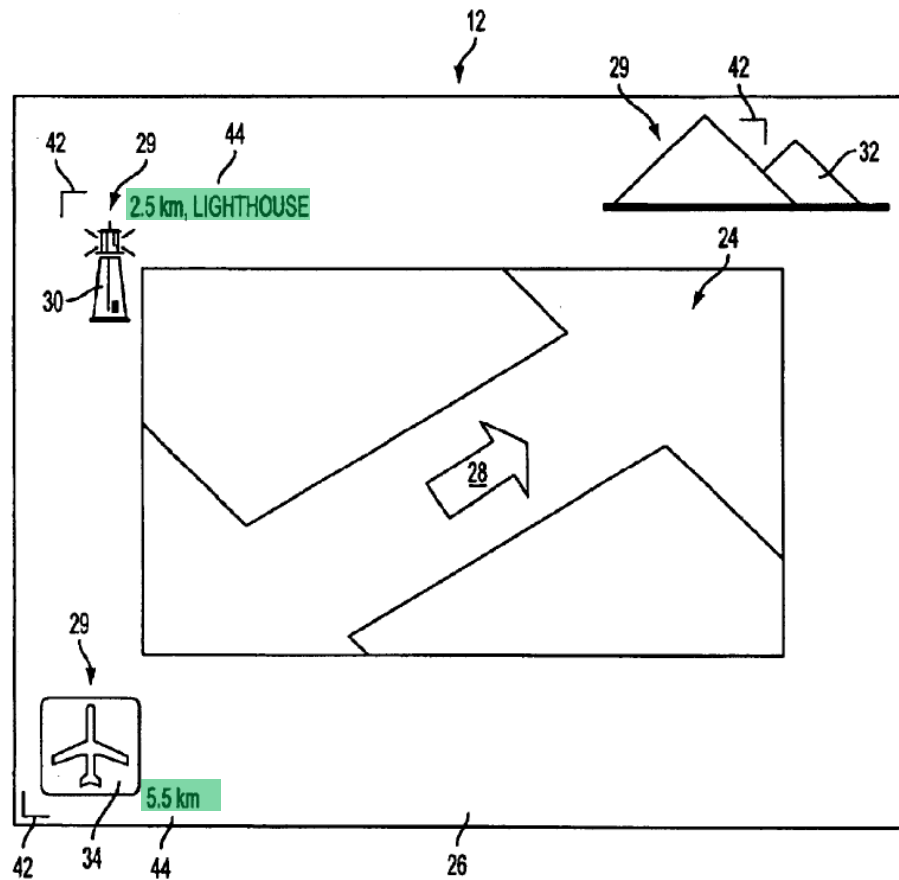


FIG. 5

Suomela, Fig. 5.

185. As Figure 5 shows, as a user moves, with the device, in the direction indicated by **arrow 28** to “maintain[] his orientation with **known objects**” to “assist him in learning the layout of [a] new city,” *Suomela*, 5:12-22, a person of ordinary skill in the art would have understood that distance information shown in the icons would be updated based on his movement, because the “mobile device 10 is able to continually update and monitor its location via **GPS hardware 22**.” *Id.*, 5:7-9. In addition, if the user turns right, the **icons** would shift accordingly to indicate their direction based on the user’s updated current orientation and position.

7. **Claim 8: wherein the computing the distance-and-travel information includes at least one of the following: an aerial distance to the MO, a travel distance to the MO, a visual indicator pointing in the direction of the MO, and an estimated travel-time to the MO.**

186. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 8.

187. *Kreitler* teaches computing an ***aerial distance to the MO*** because it “can calculate the distance between the two points ... using trigonometric functions.” *Kreitler*, 7:22-25. A person of ordinary skill in the art would have understood trigonometric functions ignore travel routes or other information and thus calculate the shortest (aerial) distance between two points.

188. *Kreitler* teaches computing *estimated travel-time* because it provides “information such as the approximate driving time between the points.” *Kreitler*, 7:16-19.

189. *Kreitler* teaches calculating a *visual indicator pointing in the direction of the MO* because its **special icon 110** “points in the general direction of San Francisco Airport.” *Kreitler*, 6:51-60; Fig. 1.

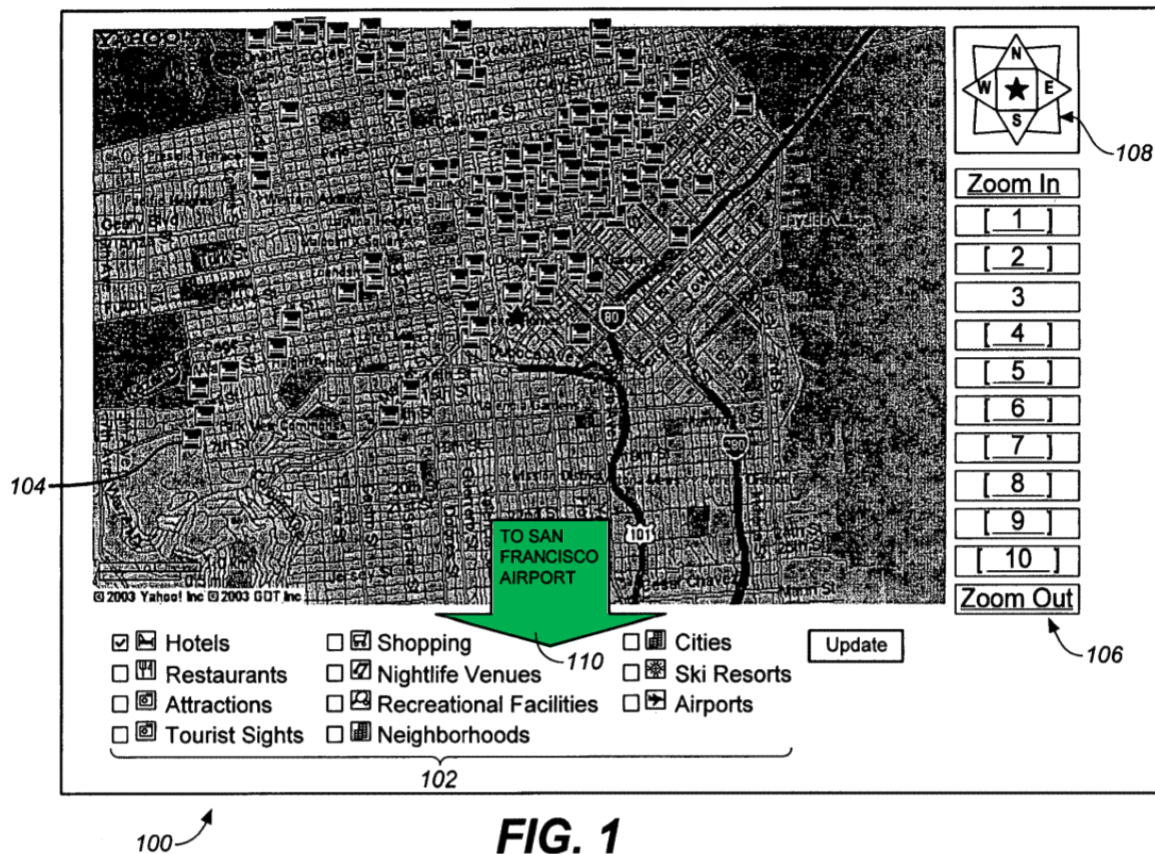


FIG. 1

Kreitler, Fig. 1.

8. **Claim 11:** wherein the received user input is result of the user touching the display at a location of the display approximately corresponding to the OVI displayed.

190. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 11.

191. *Kreitler* discloses a client computer like “a PDA or cell phone” having “[a]n interface application” where the “the user clicks on that [special] icon 110.” *Kreitler*, 6:58-60, 12:3-9.

192. It is my opinion that a person of ordinary skill in the art would have understood *Kreitler*’s “user clicks” teach touching the display because PDAs, cellphones, and mobile navigation units commonly included touchscreens at the relevant time. Ex. 1016, 33:31-39 (“PDA includes ... touch-sensitive display screen”), 34:16-28 (“The user entry system has ... touchscreen keys With a touchscreen, a user enters a request by touching a designated portion overlying a visual display with his finger”); Ex. 1012 (first generation iPhone has “touch controls” and a “large multi-touch display”).

193. Touchscreens were in wide use well before the ’943, both in mobile phones used for navigation and in GPS devices. Ex. 1016, 33:31-39, 34:16-28 (filed 1999); Ex. 1012 (iPhone with a touchscreen was released in 2007); Ex. 1011 (Garmin nüvi GPS system with touchscreen display released 2005). A person of ordinary skill in the art would have understood that the mobile device of *Kreitler* (or *Altman690* or *Suomela*) would have had a touchscreen interface, or it would have been obvious to implement the method of *Kreitler* (or *Altman690* or *Suomela*)

on a device with a touchscreen interface because such devices were commonplace and increasing in popularity. To accommodate the trend and to capture the benefits of touchscreen devices, a person of ordinary skill in the art reading *Kreitler*'s disclosure of a PDA or cell phone would have readily understood that PDAs and cell phones at least suggested touchscreens. Ex. 1016, 33:31-39, 34:16-28.

194. Indeed, the '943 patent does not purport to invent a touchscreen or specialized device. Rather, it claims a method for using generic, commercially-available devices, including those with touchscreens. Like the '943 patent, *Kreitler* and *Suomela* disclose methods using generic, commercially-available devices like "a PDA or cell phone." *Kreitler*, 12:3-9; *Suomela*, 3:18-20.

9. Claim 12: wherein the computing distance-and-travel information step is repeated in response to a change in the position of the electronic device.

195. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 12.

196. As explained for [1e] (Section VIII.B.1.f), *Kreitler* discloses computing navigational information, including distance and driving directions, between two items selected by the user.

197. As explained for claim 7 (Section VIII.C.6), *Suomela* discloses updating (by repeating the computing of) the distance-and-travel-related

information as a user moves around the city (in response to a change in the position of the electronic device). Section VIII.A.

10. Claim 13: wherein the computing distance-and-travel information step is repeated in response to a change in the position of the MO obtained from the social network.

198. In my opinion, *Kreitler/Altman690* renders obvious claim 13.

199. As explained in [1c] (Section VIII.B.1.d), *Kreitler* discloses ***the MO obtained from the social network***. *Altman690*, [0009], [0055], Fig. 8B; Section VIII.A

200. As explained for [1e] (Section VIII.B.1.f), *Kreitler* discloses ***computing distance-and-travel information***. *Kreitler* does not disclose repeated computing ***in response to a change in the position of the MO***.

201. As explained for claim 6 (Section VIII.C.5), *Altman690* discloses a social-networking system and discloses that “[a]s the user moves, the position of **his location** on the displayed map is updated in real-time or near real-time.” *Altman690*, [0040]. For each user or “listed friend,” *Altman690* discloses computing distance and travel information, stating “various **items of associated information** can be displayed, such as the **name, location (address, distance plus direction vector, latitude/longitude, time of last update or other)**, and any associated message or status information.” *Id.*, [0047]. And *Altman690* discloses

“updating a [user] device’s location on a real or near real-time basis” by frequent polling of the user’s location. *Id.*, [0065], Figs. 10-11.

202. As combined with *Kreitler*, if another user (MO) were off-map, it is my opinion that a person of ordinary skill in the art would have understood that the system would repeat computation of the distance and travel-related information for the off-map user (MO) as the off-map user (MO) changes position. In addition, it is also my opinion that a person of ordinary skill in the art would have understood that MOs are obtained from a social network, because the data items are generated and shared by users over a network, instead of obtained from a map database.

Section VIII.A.

203. As explained in Section VIII.A, it is my opinion that it would have been obvious to a person of ordinary skill in the art to implement *Altman690*’s real-time update on the location of other users or social-networking MOs within *Kreitler*.

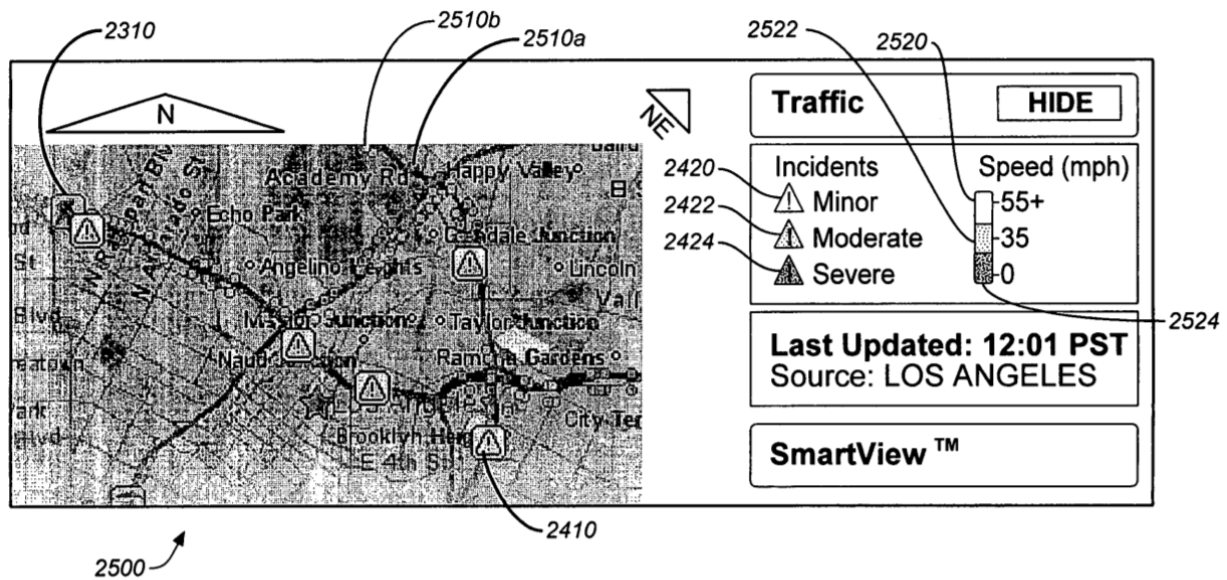
11. **Claim 14: wherein the computing distance-and-travel information step and the computing the placement position of the OVI step are repeated in response to a change in travel conditions.**

204. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 14.

205. As explained for [1e] (Section VIII.B.1.f), *Kreitler* discloses computing navigational information, including distance and driving directions, between two items selected by the user.

206. As explained for [1f] (Section VIII.B.1.g), *Kreitler* discloses computing the location to display “special (distinctive) icons for items that are not positioned on the map but nonetheless may be of interest to the user.” *Kreitler*, 6:43-45.

207. *Kreitler* discloses that the client device may receive dynamic, location-based data from a content provider. *Kreitler*, 18:44-48. The dynamic, location-based data may include “information such as traffic conditions, weather, environmental conditions, or the like.” *Id.*, 18:12-15. *Kreitler* discloses rendering the dynamic, location-based data overlying the displayed map. *Id.*, 18:54-19:3, Figs. 21-25. The rendered traffic data includes “vehicle speed and construction/traffic-incident indicators,” as shown in *Kreitler*’s Figure 25. *Id.*, 18:65-19:7; Fig. 25.

**FIG. 25***Kreitler*, Fig. 25.

208. In my opinion, a person of ordinary skill in the art would have understood that *Kreitler* recalculates the distance-and-travel information and placement position of the special icon in response to a change in traffic conditions because it uses dynamic location-based data, which includes parameters and attributes that are functions of both location and time. *Kreitler*, 18:12-20. By continuously and dynamically calculating location-based data, such as traffic, *Kreitler* would accommodate a change in travel conditions. *Kreitler*, 18:65-19:7 (“[T]he rendering is displayed with icons representing the traffic data on the map at map locations corresponding to the locations represented by the icons.”). It is my opinion that a person of ordinary skill in the art would have understood *Kreitler* discloses recalculating the distance-and-travel information to provide accurate,

real-time navigational information to the user. It is also my opinion that a person of ordinary skill in the art would have understood that a change in distance-and-travel information would trigger a recalculation of the OVI, which includes recalculation of the placement position of the special icon to reflect the most efficient direction of travel considering the updated traffic conditions. *Kreitler*, 18:65-19:7.

12. Claim 15: wherein the computing distance-and-travel information step further comprises:

a. [15a]: obtaining position of the electronic device;

209. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [15a] because *Suomela* teaches locating the device via GPS. *Suomela*, 1:27-34, 3:2-20; Section VIII.A.

b. [15b]: transmitting the position of the electronic device to a remote server;

210. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [15b].

211. *Kreitler* discloses “transmitting a map request from a client computer to a server.” *Kreitler*, 1:39-40. *Kreitler* also discloses “transmitting a map request from a first user at a first client computer to a web server, including a request for ... user-defined location-based data.” *Id.*, 1:47-65. While *Kreitler* discloses transmitting the user-defined location-based data to a remote server, *Kreitler* does not teach that the user-defined data is the position of the electronic device.

212. *Suomela* teaches that the “GPS hardware 22 receives GPS transmissions ... and communicates with processor 14 to enable the processor to determine current location information for [a] mobile device.” *Suomela*, 3:14-17.

213. By using the process of obtaining position with an electronic device taught by *Suomela*, the method of *Kreitler/Altman690* would be improved to provide information relevant to the user’s automatically-determined current location. Section VIII.A.

c. [15c]: receiving from the remote server the distance-and-travel information.

214. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [15c].

215. As explained for [1e] (Section VIII.B.1.f), *Kreitler* discloses computing distance and travel-related information. This information is *receiv[ed] from the remote server* because *Kreitler* teaches “receiving, in the client computer, dynamic, location-based data from a content provider,” and that a “server transmits the map data from the map server to the client, and the client receives the map data.” *Kreitler*, 1:40-46, 18:21-53.

216. *Suomela* discloses receiving distance-and-travel-related information from a remote server, corresponding to the device’s current location as determined by GPS. *Suomela*’s map software “may receive data via a communications network ... to use in generating map 12.” *Suomela*, 3:27-29. *Suomela*’s digital map

generally includes a detail area, including a **location indicator** indicating “direction of travel and current location of the mobile device.” *Id.*, 3:30-43.

13. Claim 16

a. [16a] computing distance and travel-related information from the OVI to the selected area of the electronic map;

217. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [16a].

218. [1e] (Section VIII.B.1.f) requires “computing distance and travel-related information from a location within the selected area of the electronic map to the **MO**” represented by the **OVI**. [16a] is rendered obvious by *Kreitler/Altman690/Suomela* for the reasons explained for [1e] (Section VIII.B.1.f) because it is my opinion that a person of ordinary skill in the art would have understood that calculating distance and travel-related information to the selected area of the map from an MO includes calculating distance and travel-related information from any location within the selected area of the map to an MO represented by a displayed OVI.

b. [16b]: computing a placement position of a second OVI referencing the selected area of the electronic map;

219. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [16b].

220. *Kreitler* teaches computing a placement position of an OVI, as explained in [1f] (Section VIII.B.1.g).

221. *Suomela* teaches ***computing a placement position of a second OVI referencing the selected area*** because *Suomela* discloses a digital map with several off-map POIs and “includ[ing] icons that each represent a geographical location, and which may also represent a landmark located at the respective location.” *Suomela*, 3:48-4:7.

222. In my opinion, a person of ordinary skill in the art would have understood that the second OVI position would be calculated ***referencing the selected area of the electronic map*** because, following computation, the OVI is displayed in the periphery of the displayed area of the map and thus references the selected area. *Kreitler*, 6:43-62; Section VIII.A.

c. [16c]: creating the second OVI including the distance and travel-related information;

223. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [16c].

224. As explained for [1g] (Section VIII.B.1.h), *Kreitler/Altman690/Suomela* teaches “**creating ... [an] OVI including the distance and travel-related information.**”

225. As explained for [16b] (Section VIII.C.13.b), *Kreitler/Altman690/Suomela* teaches calculating and placing a second OVI.

226. It is my opinion that a person of ordinary skill in the art would further have understood that creating an OVI including distance and travel-related

information would apply for the *second OVI* created because the system would use consistent methodology and display for each OVI created, and *Suomela* confirms that multiple OVIs may be displayed showing the same distance and travel-related information. *Suomela*, Fig. 5.

227. It is also my opinion that a person of ordinary skill in the art would have been motivated to add *Suomela*'s multiple OVIs including the distance and travel-related information to *Kreitler/Altman690*'s OVI to provide further helpful information to a user, as explained in Section VIII.A.

d. [16d]: displaying the second OVI on the display at the computed placement position.

228. In my opinion, *Kreitler/Altman690/Suomela* renders obvious [16d].

229. As explained for [1h] (Section VIII.B.1.i), *Kreitler/Altman690/Suomela* teaches “**displaying the ... OVI on the display at the computed placement position.**”

230. As explained for [16b] (Section VIII.C.13.b), *Kreitler/Altman690/Suomela* teaches calculating and placing a second OVI.

231. It is my opinion that a person of ordinary skill in the art would have understood that displaying an OVI including distance and travel-related information would apply for the *second OVI* because the system would use consistent methodology and display for each OVI created, and *Suomela* confirms

that multiple OVIs may be displayed showing the same distance and travel-related information. *Suomela*, Fig. 5.

14. Claim 17: wherein the electronic device is a GPS-enabled navigation unit.

232. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 17.

233. Claim 17 is similar to [23pre]. As explained for [23pre] (Section VIII.B.3.a), *Kreitler/Altman690/Suomela* renders obvious using a GPS-enabled navigation unit.

15. Claim 25: changing at least one of: GPS coordinates of the GPS device; MO information; a zoom-level of the electronic map.

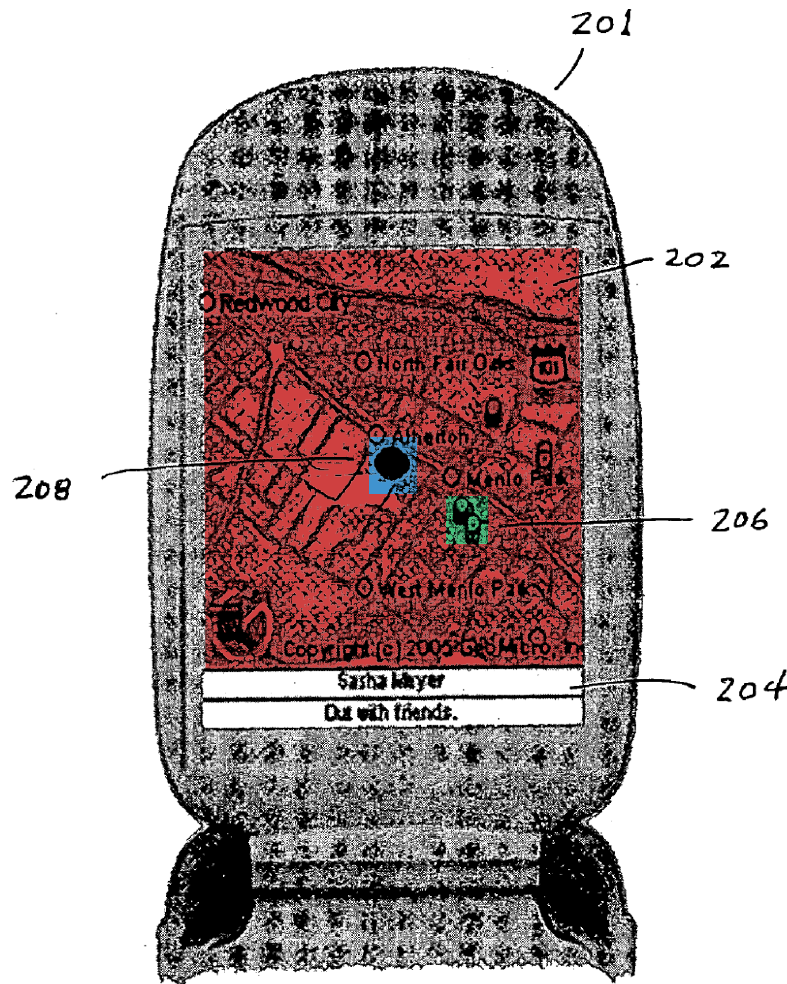
234. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 25.

235. *Kreitler* discloses when the **special icon** is clicked, “the system re-centers and resizes (re-zooms) the map to show” the corresponding **item**. *Kreitler*, 5:23-24, 6:58-60. *Suomela* discloses “mobile device 10 is able to continually update and monitor its location via **GPS hardware 22**.” *Suomela*, 5:7-16; Section VIII.A.

16. Claim 26: wherein the social network is capable of providing mapping information.

236. In my opinion, *Kreitler/Altman690/Suomela* renders obvious claim 25.

237. *Altman690* discloses a social-networking system and method for “sharing information about places of interest among a plurality of users capable of communication with one another over a network.” *Altman690*, [0009]. For example, users may “provide a quantitative or qualitative ranking[s] for places of interest.” *Id.* *Altman690* further discloses that users may define their own places or events of interest. *Id.*; *see also id.*, Fig. 8B (illustrating an icon on a map at the location of a user defined event, “Party.”). *Altman690* also discloses a graphical user interface of a user’s mobile communication device includes a **map area** that displays superimposed icons corresponding to the **location of the user’s mobile device** and “the locations of such items of interest or of any **friends** that are within the region displayed on the map, and have mobile devices that are similarly capable of determining their own location.” *Id.*, [0008], [0009], [0041]; Section VIII.A.



Altman690, Fig. 2A.

IX. GROUND 2: CLAIMS 9-10, 20-21, AND 24 ARE OBVIOUS OVER *KREITLER* IN VIEW OF *ALTMAN690*, *SUOMELA*, AND *MYR*

A. Overview and Motivation to Combine

238. *Kreitler/Altman690/Suomela* renders obvious all independent claims.

Dependent claims 9-10, 20-21, and 24 include additional limitations related to calculating a travel route and associated travel time. While these limitations are arguably not expressly disclosed by *Kreitler/Altman690/Suomela*, they are

expressly disclosed by *Myr*, and it would have been obvious to incorporate *Myr*'s travel routes and times into the *Kreitler/Altman690/Suomela* combination.

239. *Myr* discloses a real-time travel Guidance System capable of handling a driver's request for the shortest route to any destination. *Myr*, 4:49-51. The driver "can enter a request for alternative route and will receive an updated route reflecting the real time traffic situation directly on his display panel," and this information "will also be updated by visual and audio instructions, and driver's vehicle position will be displayed dynamically on the display unit." *Id.*, 4:51-57. A driver may also enter alternate times for future trips, compare travel time estimates for the same destination, and receive "an option to select a trip proposal ideally suited" for the driver's needs. *Id.*, 4:57-65.

240. The '943, *Kreitler*, *Altman690*, *Suomela*, and *Myr* are all in the same field of invention, each providing electronic maps on electronic devices, mapping specific locations, and showing travel-related information on those digital maps. The '943, *Kreitler*, and *Myr* address the known problem of calculating and displaying travel time and travel route information. The '943, *Kreitler/Altman690/Suomela*, and *Myr* are all in the field of mapping on electronic devices to show travel-related information. The '943, *Kreitler*, and *Myr* address the known problem of calculating and displaying travel time and travel route information and disclose known solutions, the combination of which yields

predictable results. Therefore, it would have been obvious for a person of ordinary skill in the art to combine *Myr* with *Kreitler/Altman690/Suomela* for a more effective and efficient navigation system that shows travel routes and travel times based on a MO.

241. **First**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to include a travel route, taught by *Myr*, with the *Kreitler/Altman690/Suomela* combination based on user input, as suggested by *Kreitler*'s disclosure of "calculat[ing], based on the traffic information, how long ... it will take for a vehicle to reach its destination, or allow comparison and selection between one of two routes based on current traffic conditions." *Kreitler*, 21:33-36.

242. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690/Suomela*'s travel information to include travel route information, taught by *Myr*, to provide the user with travel information. Such a modification would allow users to effortlessly identify the required travel route to POIs represented to orient themselves while "learning the layout of [a] new city." *Suomela*, 5:16-21.

243. In my opinion, a person of ordinary skill in the art would have had a reasonable expectation of success in modifying *Kreitler/Altman690/Suomela* to include *Myr*'s travel route. Such a modification would have required only routine

skill in the art, as calculating and displaying the travel route on electronic maps from one location to another was well known before the date of the '943 patent, as evidenced by *Myr*. Ex. 1011, 15. *Kreitler* itself discloses calculating time and distance information to off-map POIs, (*Kreitler*, 7:5-19) and adding route information to the display would have required only a small and predictable modification of the graphical display well within the skill of a person of ordinary skill in the art. A person of ordinary skill in the art would have known to calculate the route information in order to obtain and display the distance information and driving directions. *Kreitler*, 7:6-9. Accordingly, displaying calculated travel route information with *Kreitler/Altman690/Suomela* would have been implemented using only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

244. **Second**, it is my opinion that a person of ordinary skill in the art would have found it obvious and advantageous to display travel time, taught by *Myr*, with indicators, taught by *Suomela*, with *Kreitler*'s (and thus *Kreitler/Altman690/Suomela*'s) special icons to provide a user the time from a position within the selected map to off-map POIs referenced by the special icons.

245. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690/Suomela*'s special icons to include travel information, taught by *Myr*, through indicators taught by *Suomela*, to provide the

user with travel information. Such a modification would allow users to effortlessly identify the required travel time to POIs represented by the special icons and to orient themselves while “learning the layout of [a] new city.” *Suomela*, 5:16-21.

246. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler/Altman690/Suomela*’s indicators with *Myr*’s travel time. Such a modification would have required only routine skill in the art, as calculating and displaying travel time on electronic maps from one location to another was common in the art before the date of the ’943 patent. Ex. 1011, 15. *Kreitler* itself discloses calculating time information to off-map locations of interest, (*Kreitler*, 7:5-19), and adding that information to the display would have required only a small and predicable modification of the graphical display well within the skill of a person of ordinary skill in the art. Accordingly, displaying calculated time information with *Kreitler/Altman690/Suomela*’s special icons would have been implemented using only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

B. Claim 9: wherein the travel-distance to the MO is computed by selecting a travel route according to various user preferences and travel-route selection algorithms.

247. In my opinion, *Kreitler/Altman690/Suomela/Myr* renders obvious claim 9.

248. As explained in [1e] (Section VIII.B.1.f), *Kreitler* discloses that a user may select an item to obtain navigational information. *Kreitler*, 7:5-6. The obtained navigational information includes distance and driving directions to other items relative to the selected item. *Id.*, 7:5-9.

249. *Myr* discloses that “[t]he driver enters the desired destination point” on a travel map displayed on a screen, and the driver “may specify route preferences by selecting the ... shortest Travel Distance.” *Myr*, 7:1-6. In addition to using various user preferences in selecting a travel route, *Myr* discloses “algorithm Z is used to calculate the shortest travel route using current travel times.” *Id.*, 6:18-19. *Myr* also discloses the travel-route selection algorithms. *Id.*, 6:36-53.

250. As explained in Section IX.A, it is my opinion that a person of ordinary skill in the art would have been motivated to add *Myr*’s travel route to the *Kreitler/Altman690/Suomela* combination.

C. Claim 10: wherein the estimated travel-time to the MO is computed by selecting a travel route according to various user preferences and travel-route selection algorithms.

251. In my opinion, *Kreitler/Altman690/Suomela/Myr* renders obvious claim 10.

252. *Kreitler* discloses that a user may select an item to obtain navigational information. *Kreitler*, 7:5-6. The obtained navigational information includes

distance and driving directions to other items relative to the selected item. *Id.*, 7:5-9.

253. *Myr* discloses that “[t]he driver enters the desired destination point” on a travel map displayed on a screen, and the driver “may specify route preferences by selecting the shortest Travel Time.” *Myr*, 7:1-6. In addition to using various user preferences in selecting a travel route, *Myr* discloses that “algorithm Z is used to calculate the shortest travel route using current travel times.” *Id.*, 6:18-19. *Myr* also discloses the travel-route selection algorithms. *Id.*, 6:36-53.

254. As explained in Section IX.A, it is my opinion that a person of ordinary skill in the art would have been motivated to add *Myr*’s travel route to the *Kreitler/Altman690/Suomela* combination.

D. Claim 20: wherein creating an OVI includes calculating a distance, a direction and a travel time from a point in the first area of the map to the location of the MO.

255. In my opinion, *Kreitler/Altman690/Suomela/Myr* renders obvious claim 20.

256. *Kreitler* discloses *creating an OVI includes calculating a ... direction* from a point in the first area of the map to the location of the MO because, in *Kreitler*’s Figure 1, the special icon referencing “San Francisco Airport” is configured as “an arrow icon” “that points in the general direction of San Francisco Airport.” *Kreitler*, 6:51-57.

257. *Kreitler/Altman690/Suomela* renders obvious ***creating an OVI includes calculating a distance ... to the location of the MO*** because, *Kreitler/Altman690/Suomela* render obvious creating an OVI indicating an off-map MO that contains distance as explained in [1g] (Section VIII.B.1.h) and *Kreitler* discloses “obtain[ing] the distance of other items [(MOs)] in relation to the selected [MO]” as explained in [1e] (Section VIII.B.1.f).

258. Moreover, in *Suomela*’s Figure 5, “[t]he distance indicators 44 show the distance from the center of the map or location indicator 28 to each of [the] objects 29.” *Suomela*, 4:39-41. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have found it obvious to include distance indicators, taught by *Suomela*, with *Kreitler/Altman690*’s special icons to provide a user the distance from a position within the selected map to off-map POIs referenced by the special icons.

259. *Myr* discloses ***creating an OVI includes ... a travel time from a point in the first area of the map, to the location of the MO***. *Kreitler* discloses exemplary text boxes that are displayed and that “[a]dditional information such as the approximate driving time between the points ... may optionally be provided.” *Kreitler*, 7:16-19, 20:50-54. *Myr* also discloses travel times and further discloses how travel routes are calculated using travel times from a starting point (a point in the first area of the map) to a destination point (the location of the MO). *Myr*, 5:59-

65, 6:18-19. As explained in Section IX.A, it is my opinion that a person of ordinary skill in the art would have found it obvious to include the travel time calculated by *Myr* in the OVI of *Kreitler/Altman690/Suomela*.

E. Claim 21: wherein the point in the first area of the map corresponds to the location of the electronic device.

260. In my opinion, *Kreitler/Altman690/Suomela/Myr* renders obvious claim 21.

261. *Suomela* discloses “[n]avigational digital maps that indicate a **user’s current location** are additionally known.” *Suomela*, 1:27-30. Specifically, *Suomela* discloses that navigational digital maps that display travel data “generally include an **indicator** showing the **user’s present location** and the direction of travel.” *Id.*, 1:32-34, 3:2-20.

262. It is my opinion that a person of ordinary skill in the art would have understood that the user’s present location, taught by *Suomela*, is the same as the location of the electronic device by the user.

263. As explained in Section VIII.A, it is my opinion that a person of ordinary skill in the art would have been motivated to include *Suomela*’s determination of the current location of the device within *Kreitler/Altman690*.

F. Claim 24: wherein the step of creating the OVI includes: calculating the direction, distance and travel-time from the position of the electronic device to the MO; and including the calculated data in the OVI.

264. In my opinion, *Kreitler/Altman690/Suomela/Myr* renders obvious claim 24.

265. As explained for claim 20 (Section IX.D), *Kreitler/Altman690/Suomela* and *Myr* renders obvious **calculating the direction, distance and travel-time from the position of the electronic device to the MO.**

266. *Kreitler* does not expressly disclose displaying an OVI with travel-time, but it suggests displaying distance and driving directions, as explained for [1h] (Section VIII.B.1.i). *Myr* expressly discloses displaying travel-time.

267. *Myr* discloses calculating travel routes using travel times calculated from a starting point (a point in the first area of the map) to a destination point (the location of the MO), which are displayed on the display. *Myr*, 5:59-65, 6:8-10, 6:18-19.

268. It is also my opinion that a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690* to display travel-time in *Kreitler*'s OVI to provide further helpful information to a user. Section IX.A.

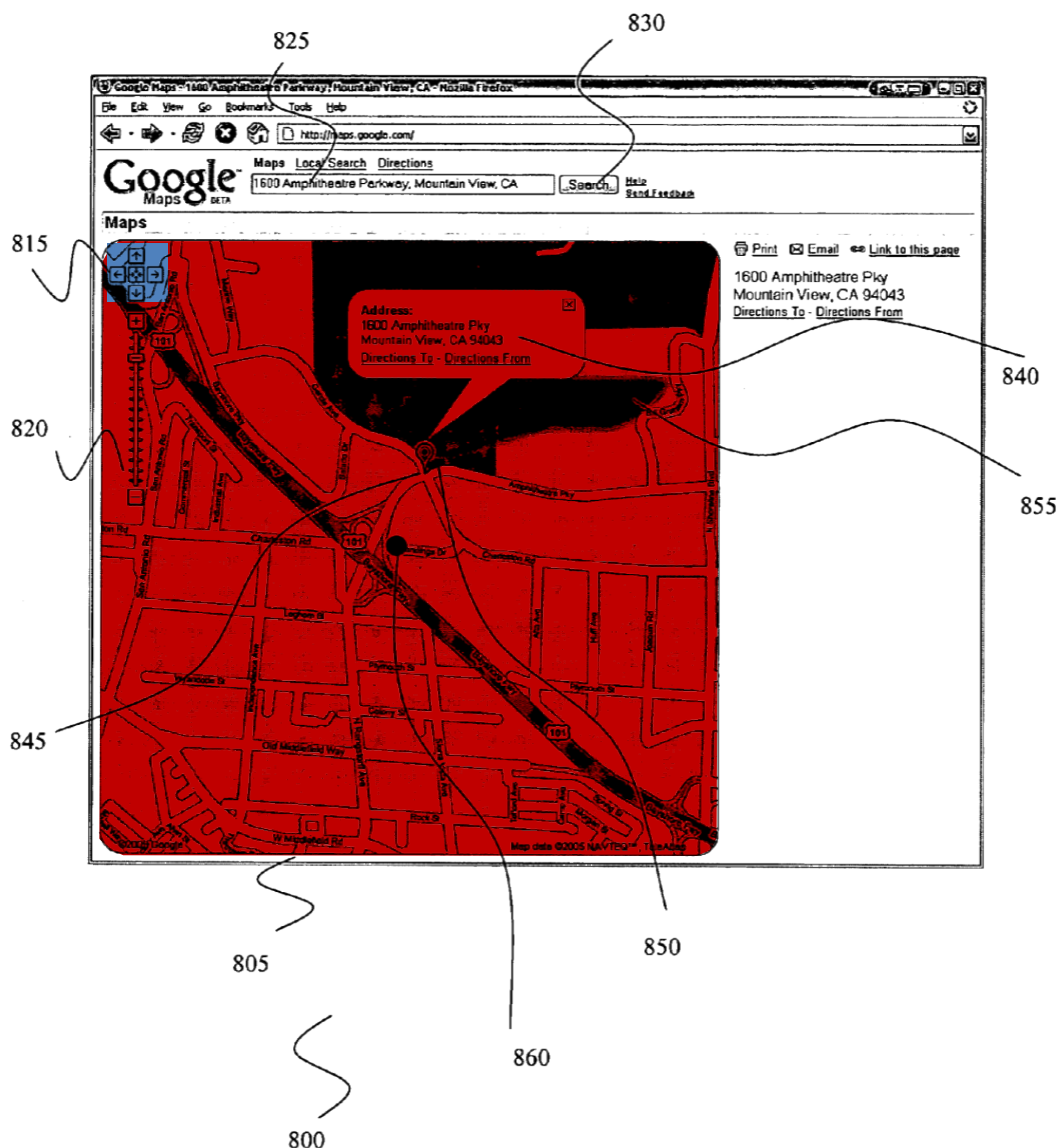
X. GROUND 3: CLAIM 19 IS OBVIOUS OVER *KREITLER* IN VIEW OF *ALTMAN690*, *SUOMELA*, AND *RASMUSSEN*

A. Overview and Motivation to Combine

269. *Kreitler/Altman690/Suomela* renders obvious all independent claims. Dependent claim 19 further recites animating the map's pan/zoom. While not

expressly disclosed by *Kreitler/Altman690/Suomela*, these limitations are taught by *Rasmussen*. *Rasmussen* is in the same field of invention as *Kreitler/Altman690/Suomela*, with each providing electronic maps on electronic devices, mapping specific locations, and showing travel-related information on those digital maps to users. It would have been obvious to incorporate the animation/panning steps of *Rasmussen* within *Kreitler/Altman690/Suomela* because *Kreitler* discloses adjusting the map-display to zoom, pan, or recenter, but stops short of teaching the technical details of how to make such adjustments. *Kreitler*, 5:23-26 (teaching “zooming and panning around”), 5:41-45, 19:20-22. A person of ordinary skill in the art would have looked to other graphical user interface references that disclose technical details for adjusting a map-display, like *Rasmussen*.

270. *Rasmussen* discloses a digital mapping system using a tiling approach for displaying digital maps. *Rasmussen*, 3:13-21, 3:25-42, 6:21-48. *Rasmussen* teaches “map image panning operations” that present a transition from one map view to another “as a smooth[], animated pan.” *Id.*, 20:59-66. A user may initiate panning operations using “[arrow-labeled pan buttons](#)” displayed on the map (*id.*, 8:54-57), or by “‘clicking on’ or otherwise selecting a specific portion of [map image 805](#) [which] causes the selected location to pan to the center of the [map image 805](#).” *Id.*, 8:54-57, 9:3-10.



Rasmussen, Fig. 8.

271. The '943, *Kreitler/Altman690/Suomela*, and *Rasmussen* are all in the field of mapping on electronic devices to show travel-related information. The '943, *Kreitler/Altman690/Suomela*, and *Rasmussen* address the known problem of calculating and displaying panning a map from one map view to another, with *Kreitler/Altman690/Suomela/Rasmussen* disclosing known solutions, the

combination of which yields predictable results. Therefore, it would have been obvious for a person of ordinary skill in the art to combine *Rasmussen* with *Kreitler/Altman690/Suomela* for smooth panning operations from one map view to another.

272. In my opinion, a person of ordinary skill in the art would have found it obvious to include an animated transition from one map view to another map view, taught by *Rasmussen*, with *Kreitler/Altman690/Suomela*'s mapping system to "present a smooth pan along contiguous map imagery." *Rasmussen*, 21:37-39. To present the smooth pan, a person of ordinary skill in the art would have been motivated to implement *Rasmussen*'s method of determining a path by calculating the change in pixel coordinates in both the x and y directions with the linear equation " $(dx, dy) = (x, y) - (x^1, y^1)$ " and iteratively "mov[ing] the tile grid [of the map] by an offset of $(dx, dy)/n$ and display[ing] the resulting frame" to include an animation with "map image panning operations." *Rasmussen*, 20:59-22:5; Figs. 17-21.

273. In my opinion, a person of ordinary skill in the art would have been motivated to modify *Kreitler/Altman690/Suomela* to display an animated transition, taught by *Rasmussen*, to provide "a smoother, animated pan," (*Rasmussen*, 20:60-66), when a user selects a specific portion of the map, (*id.*, 9:3-10) as this merely provides additional implementation details beyond *Kreitler*'s

teaching of “allow[ing] the user to navigate around the map by zooming and panning around.” *Kreitler*, 5:23-24. A person of ordinary skill in the art would also have been motivated to modify *Kreitler/Altman690/Suomela*’s mapping system to include a path between a determined MO and an approximate center of the first area of the map and to display a second portion to include an animation to improve the overall user experience of the *Kreitler/Altman690/Suomela* system and allow for the pans to be “presented smoothly” using the process taught in *Rasmussen*. *Rasmussen*, 21:63-22:5.

274. In my opinion, a person of ordinary skill in the art would have had a reasonable expectation of success in modifying *Kreitler/Altman690/Suomela* to include *Rasmussen*’s animated transition from one map view to another by animating along a path. Such a modification would have required only routine skill in the art, as implementing the steps taught by *Rasmussen* was common in the art before the date of the ’943 patent. *Kreitler* itself discloses panning a map from one map area to another, (*Kreitler*, 6:58-60), and adding the panning operations taught by *Rasmussen* would have required only a routine modification of the instructions executed by *Kreitler*’s processor, which would have been well within the skill of a person of ordinary skill in the art. Accordingly, modifying *Kreitler/Altman690/Suomela* to animate the transition from the first to second portions of the electronic map when a user selects a specific map portion (an off-

map entity information indicator control) or the map movement controls would have required only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed.

B. Claim 19

- 1. [19pre]: animating the panning transition of the electronic map from displaying the first area to displaying the secondary area, wherein the animation includes the steps of**

[19a]: defining a number of animation steps;

275. In my opinion, *Kreitler/Altman690/Suomela/Rasmussen* renders obvious [19pre] and [19a].

276. *Kreitler* discloses panning the electronic map to display a secondary area of the map. *Kreitler*, 5:23-24. However, *Kreitler* and *Suomela* do not expressly disclose animation.

277. *Rasmussen* discloses displaying an animated transition from one map view to another according to map image panning operations. *Rasmussen*, 6:60-62, 7:60-64, 20:59-22:18. *Rasmussen* teaches that “the pan should be animated over n frames (where n=1 indicates that the switch from the old to the new view should take place in a single step, while higher values of n indicate that the switch should be presented as a smoother, animated pan).” *Id.*, 20:60-66.

278. As explained in Section X.A, it is my opinion that a person of ordinary skill in the art would have been motivated to include *Rasmussen*'s panning animation within *Kreitler/Altman690/Suomela* as animation provides the user with additional context regarding the relative positions of the starting/ending point of the animation and also creates a smoother, more compelling transition as well as interface for the user.

2. [19b]: defining a time delay;

279. In my opinion, *Kreitler/Altman690/Suomela/Rasmussen* renders obvious [19b].

280. *Rasmussen* discloses that “[d]epending on the host system’s efficiency, it may be necessary to pause for some time period between frames.” *Rasmussen*, 21:30-31, 22:57-62 (“pause is included if appropriate”), 22:65-23:3.

281. As explained in Section X.A, it is my opinion that a person of ordinary skill in the art would have been motivated to include *Rasmussen*'s panning animation within *Kreitler/Altman690/Suomela*.

3. [19c]: defining a small travel distance;

282. In my opinion, *Kreitler/Altman690/Suomela/Rasmussen* renders obvious [19c].

283. *Rasmussen* discloses that the panning travel distance from one map view to a new map view includes determining the pixel coordinates of the current

map view and the new map view, (*Rasmussen*, 20:60-62), determining the number of frames over which to perform a panning animation, (*id.*, 20:62-66), calculating the change in pixel coordinates in both the x and y coordinates, (*id.*, 21:19-21), and incrementally moving the map grid to the new pixel coordinates based on the determined number of frames (n) over which to perform the panning operation, (*id.*, 21:28-30), to define a small travel distance (offset). *Rasmussen* teaches to, “for each i between 1 and n, move the tile grid by an offset of (dx, dy)/n and display the resulting frame.” *Rasmussen*, 21:28-30. With regard to the above, “i” represents each panning step, from the first step to the nth step. *Rasmussen* discloses that the offset equates to the small travel distance through panning from one map view (x, y) to a new map view (x1, y1), animated over n frames and by “mov[ing] the tile grid [of the map] by an offset of (dx, dy)/n [(small travel distance)] and display[ing] the resulting frame” as disclosed in [19e]. *Rasmussen*, 20:60-66, 21:19-21, 21:28-30, Figs. 17-21.

284. As explained in Section X.A, it is my opinion that a person of ordinary skill in the art would have been motivated to include *Rasmussen*’s panning animation, including defining small travel distances (distance that the map is panned as defined by the number of frames), within *Kreitler/Altman690/Suomela* as this would provide the user with additional context regarding the relative

positions of the starting and ending points of the animation and also creates a smoother, more compelling transition as well as interface for the user.

4. **[19d]: determining a path between the determined one of the MOs and an approximate center of the first area of the map;**

[19e]: panning the map by the small travel distance in the direction of the determined one of the MOs;

[19f]: waiting an amount of time specified by the time delay;

[19g]: wherein the steps e-f are repeated until the determined one of the MOs is approximately at the center of the displayed secondary map.

285. In my opinion, *Kreitler/Altman690/Suomela/Rasmussen* renders obvious [19d]-[19g]. These three limitations are best understood together in context, and collectively require 1) determining a panning path for adjusting the displayed map from a first displayed area to a second displayed area, broken into small segments (small travel distances), and 2) panning the map across the small segments iteratively after the time delay, such that the MO is in the center of the second displayed area at the end of the panning animation.

286. As explained for [19a]-[19c] (Section X.B.1-3), *Rasmussen* discloses defining animation steps, defining a time delay, and defining small travel distances.

287. As explained for [1h] (Section VIII.B.1.i), *Kreitler* discloses displaying the selected MO approximately at the center of the displayed secondary map.

288. *Rasmussen* discloses ***determining a path between the determined one of the MOs and an approximate center of the first area of the map*** because it discloses calculating the change in pixel coordinates in both the x and y directions with the linear equation “ $(dx, dy) = (x, y) - (x^1, y^1)$,” “mov[ing] the tile grid [of the map] by an offset of $(dx, dy)/n$ and display[ing] the resulting frame.” *Rasmussen*, 20:60-66, 21:19-21, 21:28-30, Figs. 17-21. *Rasmussen* also discloses performing a map image panning when “the client receives a command from the user indicating a pan event (e.g., by activation of a directional control object).” *Rasmussen*, 21:41-44. As combined with *Kreitler/Altman690/Suomela*, which disclose panning a map from a first area to a second area, ([1j]-[1k], Section VIII.B.1.k), it is my opinion that a person of ordinary skill in the art would have understood that *Rasmussen*’s calculated change in pixel coordinates (defined path) would be between the determined MO and the center of the map.

289. *Rasmussen* discloses ***panning the map by the small travel distance in the direction of the determined one of the MOs*** by panning from one map view (x, y) to a new map view (x^1, y^1) , animated over n frames and by “mov[ing] the tile grid [of the map] by an offset of $(dx, dy)/n$ [(small travel distance)] and

display[ing] the resulting frame.” *Rasmussen*, 20:60-66, 21:19-21, 21:28-30, Figs. 17-21.

290. *Rasmussen* discloses ***waiting an amount of time specified by the time delay*** as explained for [19b] (Section X.B.2). *Rasmussen* also discloses the panning operations are repeated after the time delay until the map image is on the new map view. *Rasmussen*, 20:59-22:18, Figs. 14-21. As combined with *Kreitler/Altman690/Suomela*, which disclose panning a map from a first area to a second area centered on the selected MO ([1j]-[1k], Section VIII.B.1.k), a person of ordinary skill in the art would have understood that *Rasmussen*’s panning would be repeated until the selected MO is at the center of the map.

291. As explained in Section X.A, it is my opinion that a person of ordinary skill in the art would have been motivated to include *Rasmussen*’s panning animation within *Kreitler/Altman690/Suomela*.

XI. GROUND 4: CLAIM 22 IS OBVIOUS OVER *KREITLER* IN VIEW OF *ALTMAN690*, *SUOMELA*, *RASMUSSEN*, AND *MYR*

A. Overview and Motivation to Combine

292. Claim 22 depends from Claim 18 (Ground 1) and further recites additional technical details on panning the electronic map (disclosed by *Rasmussen*, Ground 3) along a travel route (disclosed by *Myr*, Ground 2). Specifically, *Rasmussen* discloses panning in a straight-line travel path (Ground 3),

and *Myr* discloses calculating the shortest-distance travel routes (Ground 2). While this additional limitation is not fully disclosed by *Kreitler/Altman690/Suomela/Rasmussen* (Ground 3), it is rendered obvious by the addition of *Myr*'s travel routes, because it would have been obvious to incorporate the shortest distance travel routes (e.g., road) within *Kreitler/Altman690/Suomela/Rasmussen*'s straight-line travel path. It is my opinion that a person of ordinary skill in the art would have understood that where the shortest distance is along a straight travel path (e.g., road), the route of travel calculated by *Myr* would be the same as *Rasmussen*'s linear panning path.

293. The '943, *Kreitler/Altman690/Suomela/Rasmussen*, and *Myr* are all in the field of mapping on electronic devices to show travel-related information. All six references address the known problem of calculating and displaying travel information, with *Kreitler/Altman690/Suomela/Rasmussen/Myr* disclosing known solutions, the combination of which yields predictable results. Therefore, it would have been obvious for a person of ordinary skill in the art to further modify *Kreitler/Altman690/Suomela/Rasmussen* to include *Myr*'s calculation of shortest-distance routes when panning along a predetermined route to allow a user to have a more realistic preview of their anticipated travel route.

294. In my opinion, a person of ordinary skill in the art would have been motivated to modify and have had a reasonable expectation of success in

modifying *Kreitler/Altman690/Suomela/Rasmussen* to include *Myr*'s travel route information for the reasons in Section IX.A and because users desire to understand their anticipated travel route, especially "on unfamiliar roads." *Myr*, 2:18-21 ("the optimal route found is communicated to the driver and displayed on the vehicle's computer screen featuring the digital map"), 3:20-25 (after "receiving a request from a driver for a shortest route ... the optimal route is communicated to the driver"); *Rasmussen*, 19:63-66 ("additional information beyond the fundamental map image (e.g., driving routes, specific locations) can be drawn as overlays and placed on top of a map").

295. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in modifying *Kreitler/Altman690/Suomela/Rasmussen* to include *Myr*'s travel route information. Such a modification would have required only routine skill in the art, as travel route calculation was common in the art before the date of the '943 patent. Ex. 1011, 15. *Kreitler* already discloses calculating distance information to off-map social network locations of interest, (*Kreitler*, 7:5-19), and *Rasmussen* discloses panning between two locations, (*Rasmussen*, 20:59-66), and panning along a route to mimic or preview expected travel route would have required only a routine modification within the skill of a person of ordinary skill in the art.

296. Accordingly, modifying *Kreitler/Altman690/Suomela/Rasmussen*'s panning to move along the travel route would have required only conventional systems and methods in ways a person of ordinary skill in the art would have readily understood and expected to succeed. Panning along the travel route would have provided the user with a smoother and more compelling transition that was more applicable to the actual route that the user was traveling.

B. Claim 22

297. In my opinion, *Kreitler/Altman690/Suomela/Rasmussen/Myr* renders obvious claim 22.

1. [22a]: defining a travel route.

298. In my opinion, *Kreitler/Altman690/Suomela/Rasmussen/Myr* renders obvious [22a].

299. *Myr* discloses defining and “calculat[ing] the shortest travel route.” *Myr*, 6:18-19; *see also id.*, 5:59-65, 14:19-22.

300. As explained in Section X.A, it is my opinion that a person of ordinary skill in the art would have been motivated to incorporate *Myr*'s travel route calculation into *Kreitler/Altman690/Suomela/Rasmussen*.

2. [22b]: panning the map along the defined travel route

301. In my opinion, *Kreitler/Altman690/Suomela/Rasmussen/Myr* renders obvious [22b].

302. The system is configured to include “map image panning operations.”
Rasmussen, 3:13-21, 3:25-42, 6:21-48, 20:59-66.

303. *Myr* discloses a real time travel Guidance System capable of handling a driver’s request for the shortest route to any destination. *Myr*, 4:49-51. As explained in Section X.A, it is my opinion that a person of ordinary skill in the art would have understood that panning from one point to the next point as taught by *Rasmussen* includes panning with the shortest distance from one point to the next point. A person of ordinary skill in the art would have understood that *Myr* also uses the shortest distance between two points in determining the shortest route to any destination. Therefore, it is my opinion that a person of ordinary skill in the art would have understood that panning between two points as taught in *Rasmussen* and the travel route between two points as taught in *Myr* involve the same travel route. Therefore, a person of ordinary skill in the art would have understood that panning in *Rasmussen* includes panning along the defined travel route.

XII. CONCLUSION

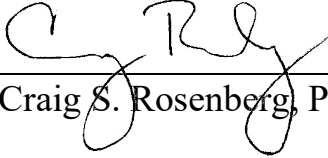
304. For the reasons set forth in Sections VIII-XI, it is my opinion that one skilled in the art would have found claims 1-26 of the ’943 patent obvious.

305. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be

subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination via Zoom during the time allotted for cross-examination.

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

Date: June 8, 2023



Craig S. Rosenberg, Ph.D.