

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.

U.S. Patent No. 8,032,297

Filing Date: May 8, 2008

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Case No. IPR2023-00890

PETITION FOR *INTER PARTES* REVIEW

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LIST OF EXHIBITS

Exhibit	Description
Ex. 1001	U.S. Patent No. 8,032,297
Ex. 1002	File History of U.S. Patent No. 8,032,297
Ex. 1003	Declaration of Dr. Craig Rosenberg
Ex. 1004	Curriculum Vitae of Dr. Craig Rosenberg
Ex. 1005	U.S. Patent No. 9,607,092 (<i>Kreitler</i>)
Ex. 1006	U.S. Patent No. 6,697,734 (<i>Suomela</i>)
Ex. 1007	U.S. Patent No. 8,099,109 (<i>Altman</i>)
Ex. 1008	U.S. Patent No. 6,480,783 (<i>Myr</i>)
Ex. 1009	U.S. Patent No. 7,158,878 (<i>Rasmussen</i>)
Ex. 1010	U.S. Patent App. Pub. No. 2007/0050129 (<i>Salmre</i>)
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 (October 13, 2005) <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>)

I. INTRODUCTION

Petitioner, BMW of North America, LLC, requests *Inter Partes* Review of U.S. Patent No. 8,032,297 (Ex. 1001, “’297”).

The ’297 was filed May 8, 2008, well after graphical mobile mapping products were commonplace. Despite the late priority date, it claims generic methods for displaying map and navigation information—albeit using non-conventional terminology (like object vector indicator), which does not impart novelty.

The ’297 claims methods for displaying a map area referencing points-of-interest (“POI”) and way-points (“WP”), collectively referred to as map-objects (“MO”), located beyond the displayed map area. ’297, 1:8-11, 1:49-54. When an MO is beyond the visible map, the method creates an object vector indicator (“OVI”) comprising a graphic indicating the off-map MO’s direction and distance which “may be calculated from the current geographic position of the user [or] ... from an MO on the area of the map visible to the user....” *Id.*, 2:2-8, 8:43-49.

But, long before 2008, mapping methods including graphical indicators for off-map POIs were well-known, as evidenced by the prior art.

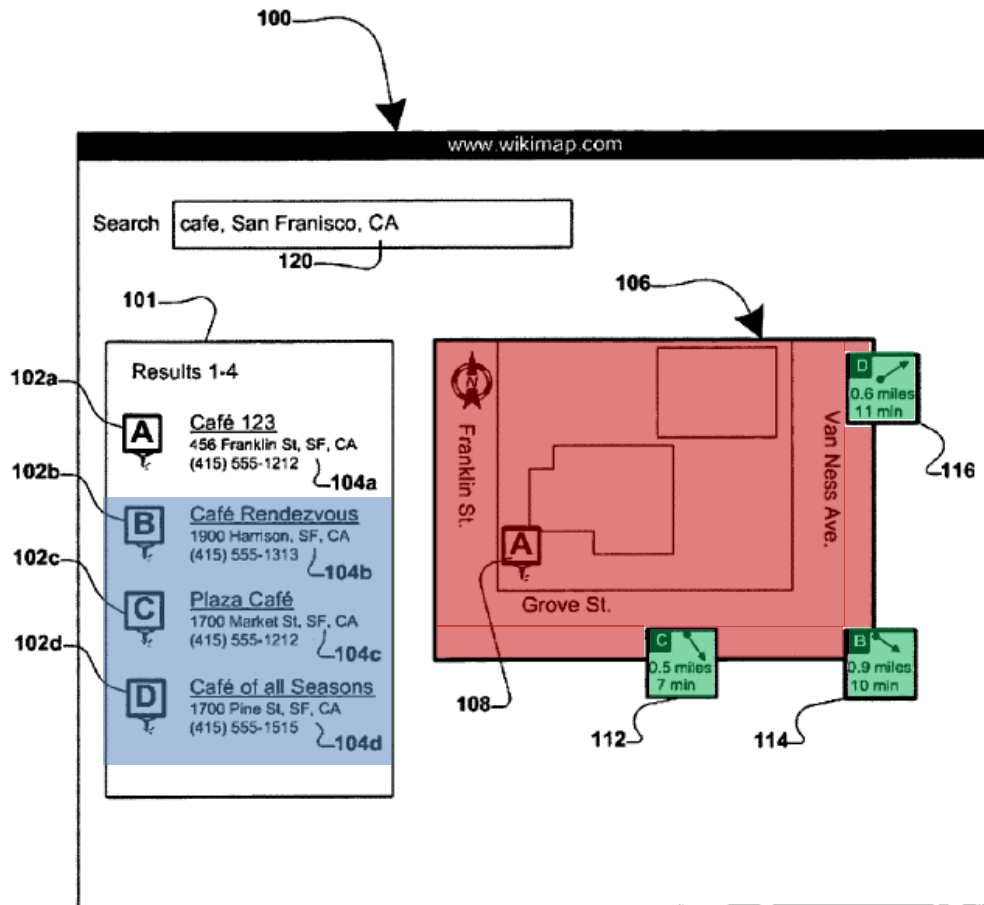
II. THE ’297 PATENT

The ’297 was filed May 8, 2008; it claims no priority.

The '297 claims “displaying information pertaining to map-objects ... outside the visible area of a map.” *Id.*, 1:8-11. The method has four core steps:

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

In the '297, a device's map-display application displays a map area. *Id.*, 2:63-66. The map-display application identifies MOs such as locations resulting from a user search. *Id.*, 8:22-26. The map-display application determines whether the MOs are within the visible map area (*id.*, 8:27-35), and, if not, it creates and displays an OVI referencing the MO. *Id.*, 8:43-49. The OVI is positioned on the visible map area's periphery and includes information like direction, distance, and travel time. *Id.*, 4:29-38, Figs. 1, 2B, 2C. When the user selects the OVI, the application zooms and/or pans the map, adjusting the visible area to include the corresponding MO. *Id.*, 11:20-33.



'297, Fig. 1.¹

III. LEVEL OF ORDINARY SKILL

A person of ordinary skill in the art ("POSITA") at the time of the purported invention would have had at least a bachelor's degree in Computer or Electrical Engineering or equivalent engineering discipline, and approximately three years' experience in telecommunications, navigation, or geolocation systems. Additional

¹ Annotations throughout added unless noted.

education could substitute for professional experience, and significant work experience could substitute for formal education.

IV. CLAIM CONSTRUCTION

The Board construes claims per *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). For the purposes of this IPR, the plain meaning of each claim term can be applied. *Rosenberg*, 52.²

V. STATEMENT OF PRECISE RELIEF REQUESTED

Petitioners request review of '297 claims 1-30 under pre-AIA §103, in view of the following prior art and grounds.

² While not salient here, BMW notes the outer boundaries of claim limitations such as “various user preferences and travel-route selection algorithms” (cl. 9, 10), “approximate[ly]” (cl. 18, 19, 24, 26, 28), “small travel distance” (cl. 19), and “small intervals” (cl. 26) are indefinite.

Prior art:

Reference	Filing Date	Issue/Publication Date	Relevant Statute
U.S. Patent No. 9,607,092 (Ex. 1005, <i>Kreitler</i>)	May 25, 2005	March 28, 2017	§102(e)
U.S. Patent No. 6,697,734 (Ex. 1006, <i>Suomela</i>)	April 17, 2002	February 24, 2004	§102(b)
U.S. Patent No. 8,099,109 (Ex. 1007, <i>Altman</i>)	October 31, 2007	January 17, 2012	§102(e)
U.S. Patent No. 6,480,783 (Ex. 1008, <i>Myr</i>)	March 17, 2000	November 12, 2002	§102(b)
U.S. Patent No. 7,158,878 (Ex. 1009, <i>Rasmussen</i>)	February 5, 2005	January 2, 2007	§102(b)

Grounds:

Ground	Prior Art Combination
1	<i>Kreitler</i> in view of <i>Suomela</i> renders obvious claims 1-5, 7-8, 11-12, 14-18, 23-24, 28, and 30.

2	<i>Kreitler</i> in view of <i>Suomela</i> and <i>Altman</i> renders obvious claims 6 and 13.
3	<i>Kreitler</i> in view of <i>Suomela</i> and <i>Myr</i> renders obvious claims 9-10, 20-21, and 29.
4	<i>Kreitler</i> in view of <i>Suomela</i> and <i>Rasmussen</i> renders obvious claims 19 and 25.
5	<i>Kreitler</i> in view of <i>Suomela</i> , <i>Rasmussen</i> , and <i>Myr</i> renders obvious claims 22 and 26-27.

VI. GROUND 1: CLAIMS 1-5, 7-8, 11-12, 14-18, 23-24, 28, AND 30 ARE OBVIOUS OVER *KREITLER* IN VIEW OF *SUOMELA*

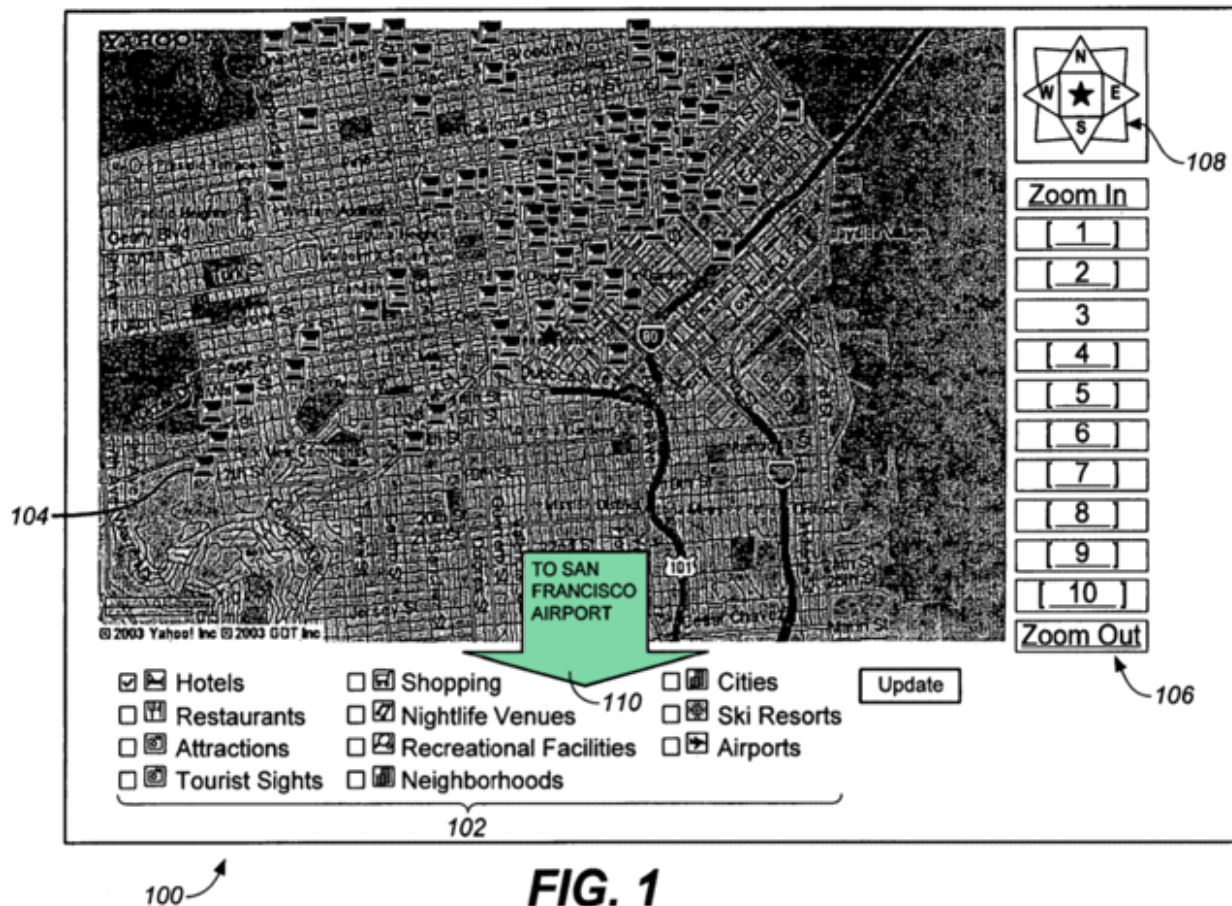
A. Overview and Motivation-to-Combine

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

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

Kreitler teaches the heart of the '297's independent claims, including all four primary steps. Like the '297, *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 map 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; Rosenberg, 60.



Kreitler, Fig. 1.

While *Kreitler* does not expressly disclose (i) its OVI contains distance-related information, (ii) its electronic device is GPS-enabled, (iii) recalculating the placement position of an MO in response to a change in position of the mobile device with GPS hardware, (iv) 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 (v) multiple OVIs including distance and travel-related information to the OVIs, *Suomela* does. Rosenberg, 61.

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; Rosenberg, 62.

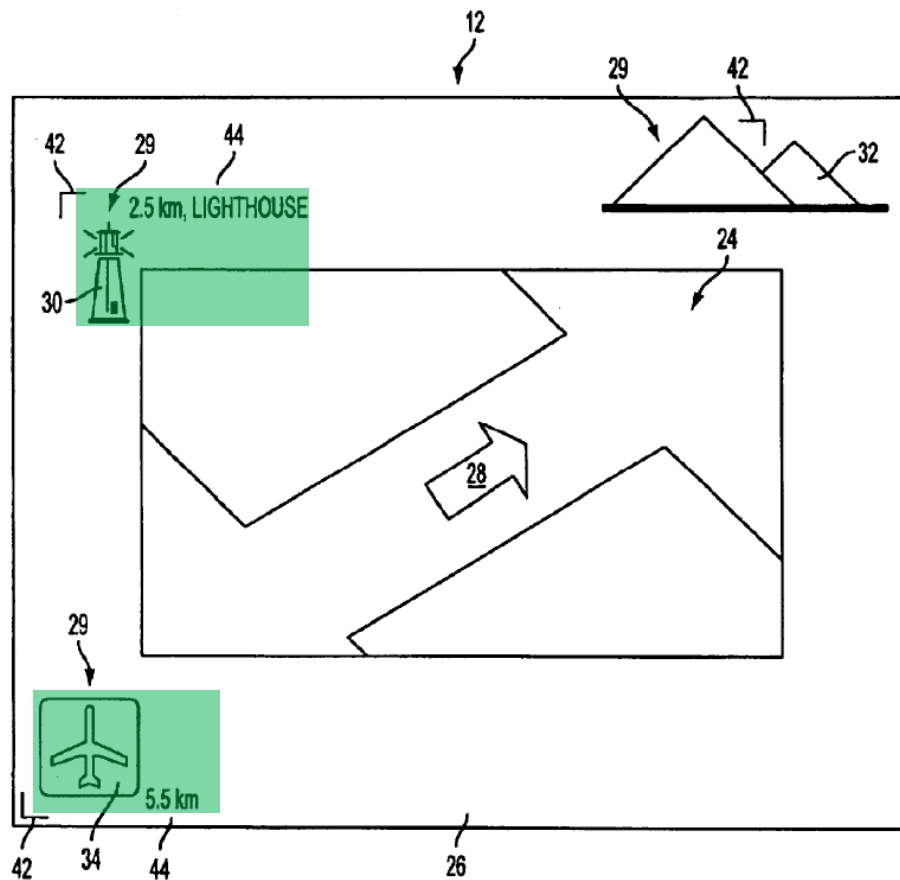


FIG. 5

Suomela, Fig. 5.

The '297, *Kreitler*, and *Suomela* are all in the field of mapping on electronic devices. All three address the known problem of displaying information about MOs outside the visible area, with *Kreitler* and *Suomela* 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 *Kreitler* and *Suomela* for a more effective and efficient navigation system showing POIs located outside the visible map-area. Rosenberg, 63.

First, a POSITA would have found it obvious and advantageous to include distance indicators, taught by *Suomela*, within *Kreitler*'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. Rosenberg, 64.

A POSITA would have been motivated to modify *Kreitler*'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. *Id.*, 65. 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; Rosenberg, 65.

A POSITA would have also had a reasonable expectation of success in modifying *Kreitler* 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 '297 patent. *Id.* *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 modification of the graphical display within the skill of a POSITA. Accordingly, displaying calculated distance information with *Kreitler*'s special icons would have been implemented

using only conventional systems and methods in ways a POSITA would have readily understood and expected to succeed. Rosenberg, 66.

Second, it would have been obvious to a POSITA to improve *Kreitler* 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. *Id.*, 67. A POSITA 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. *Id.*

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; Rosenberg, 68.

Like *Suomela*, *Kreitler* discloses displaying an electronic map on a "mobile device including but not limited to a PDA or cellphone." *Kreitler*, 12:3-12. *Kreitler* discloses "transmitting a map request from a client computer to a server." *Id.*, 1:39-40. *Kreitler* also teaches 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. A POSITA would have been motivated to incorporate GPS capabilities, taught by *Suomela*, in *Kreitler* to take advantage of the benefits of GPS recognized by *Suomela*. The combination of *Kreitler* 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 '297 patent. Ex. 1011; Exs. 1013-1015; Ex. 1016, 26:35-59, 32:60-33:24 (PDA including GPS); Ex. 1017, 11 (client devices including GPS). Rosenberg, 69.

A POSITA would have also had a reasonable expectation of success in modifying *Kreitler* 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 '297 patent. Ex. 1011; Exs. 1013-1015; Ex. 1016, 26:35-59, 32:60-33:24; Ex. 1017, 11. Using a mobile device with GPS capabilities, taught by *Suomela*, in *Kreitler* would have implemented only conventional systems and methods in ways a POSITA would have readily understood and expected to succeed. Rosenberg, 70.

Third, a POSITA 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*'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. *Id.*, 71.

A POSITA would have been motivated to modify *Kreitler* to include *Suomela*'s recalculating a change in position of the mobile device with GPS hardware within *Kreitler*'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. *Id.*, 72. In addition, a POSITA would have been motivated to modify *Kreitler* 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*, 5:13-22. 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. *Suomela*, 5:13-22. Rosenberg, 72.

A POSITA would have had a reasonable expectation of success in modifying *Kreitler* 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 would require only minor software/programming modifications. *Id.*, 73. *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 POSITA. 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*’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 POSITA would have readily understood and expected to succeed.

Rosenberg, 73.

Fourth, a POSITA 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). *Id.*, 74.

A POSITA would have been motivated to modify *Kreitler* to include *Suomela*'s selected area of the map as the center with GPS hardware within *Kreitler*'s selected area of the electronic map to 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. *Id.*, 75. In addition, a POSITA 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; Rosenberg, 75.

A POSITA would have had a reasonable expectation of success in modifying *Kreitler* 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 including the selected area of the map as the center would have required only a modification of the algorithm within the skill of a POSITA.

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 POSITA would have readily understood and expected to succeed. Rosenberg, 76.

Fifth, a POSITA 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. *Id.*, 77.

A POSITA would have been motivated to modify *Kreitler*'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. *Id.*, 78. In addition, a POSITA would have been motivated to modify *Kreitler* 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; Rosenberg, 78.

A POSITA would have also had a reasonable expectation of success in modifying *Kreitler* 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 well within the skill of a POSITA. Accordingly, including additional OVIs containing distance and travel-related information to the MOs, taught by *Suomela*, within *Kreitler*'s OVI that already contains travel-related information would have implemented only conventional systems and methods in ways a POSITA would have readily understood and expected to succeed. *Rosenberg*, 79.

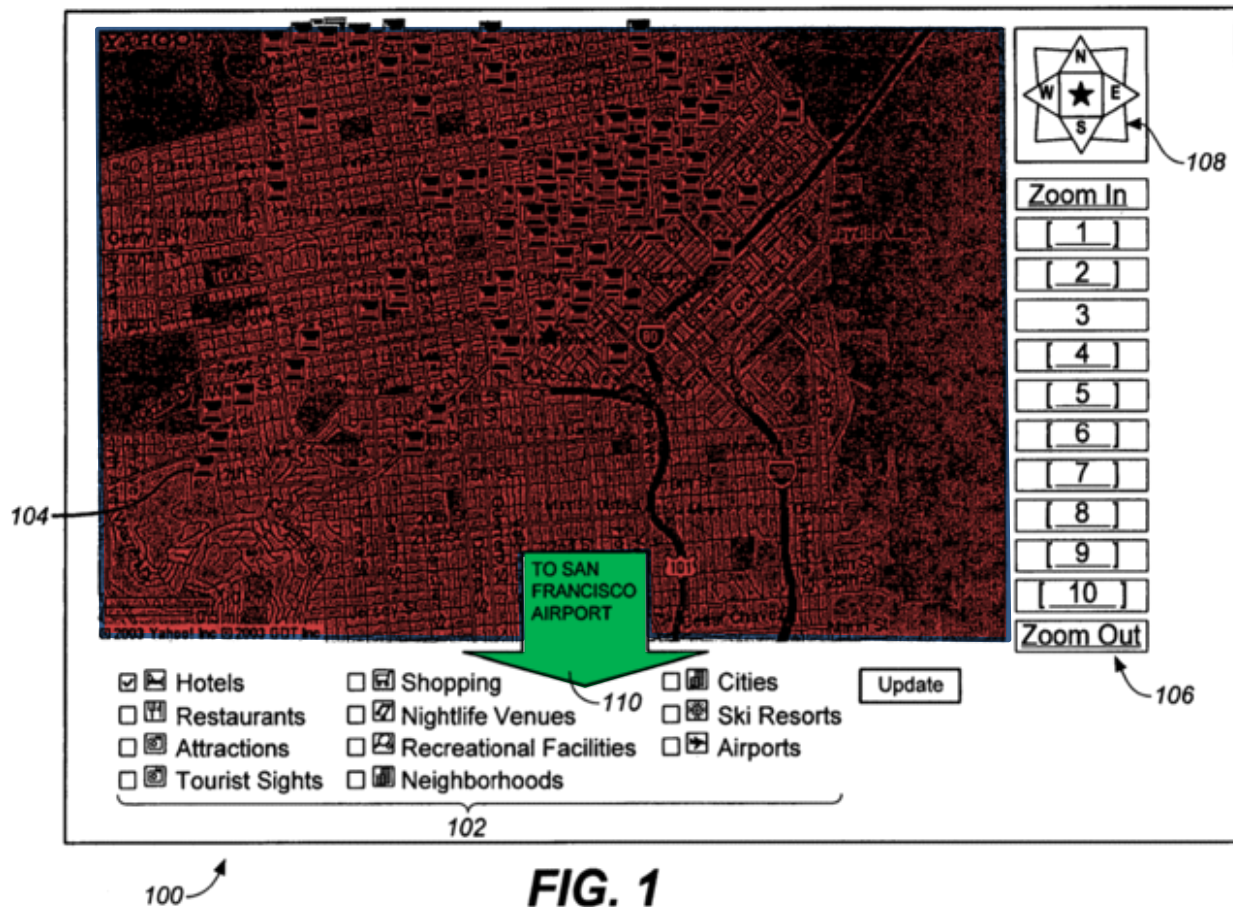
B. Independent Claims

1. Claim 1

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

Kreitler discloses [1pre] through displaying electronic maps including special icons (OVIs) identifying off-map POIs (MOs). *Id.*, 81.

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; *Rosenberg*, 82.



Kreitler, Fig. 1.

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

Kreitler teaches [1a] through a PDA or cellphone (electronic device) and interface application displaying a map (map-display application and display) communicating with an intelligent mapping application software system (mapping service). Rosenberg, 83.

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; Rosenberg, 84.

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, that 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; ’297, 1:15-19 (“Popular mapping services include ... Yahoo!® Maps”); Rosenberg, 85.

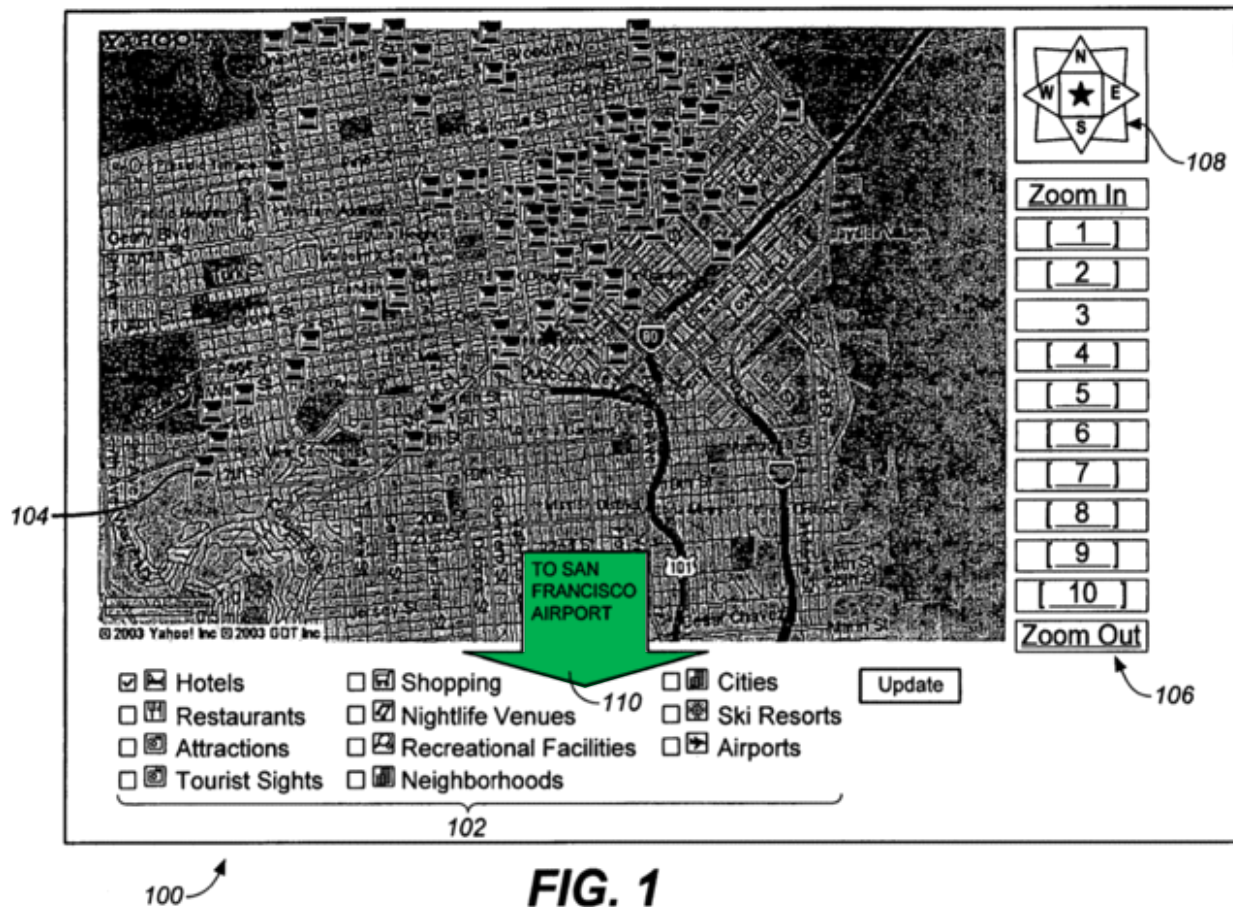
Kreitler’s map-display application is *coupled to a display for displaying a selected area of the electronic map* because *Kreitler* teaches displaying a selected area of the electronic map. *Kreitler*, Figs. 1-2, 1:38-46, 2:20-24 (“FIG. 1 shows a map display.... FIG. 2 shows a map display....”), 5:36-37 (“FIG. 1 shows an exemplary map 100 with a display of San Francisco.”); Rosenberg, 86.

c. [1b]: determining that coordinates of the MO are not within the selected area of the electronic map

Kreitler teaches [1b] 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”); Rosenberg, 87, 89.

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; Rosenberg, 88.



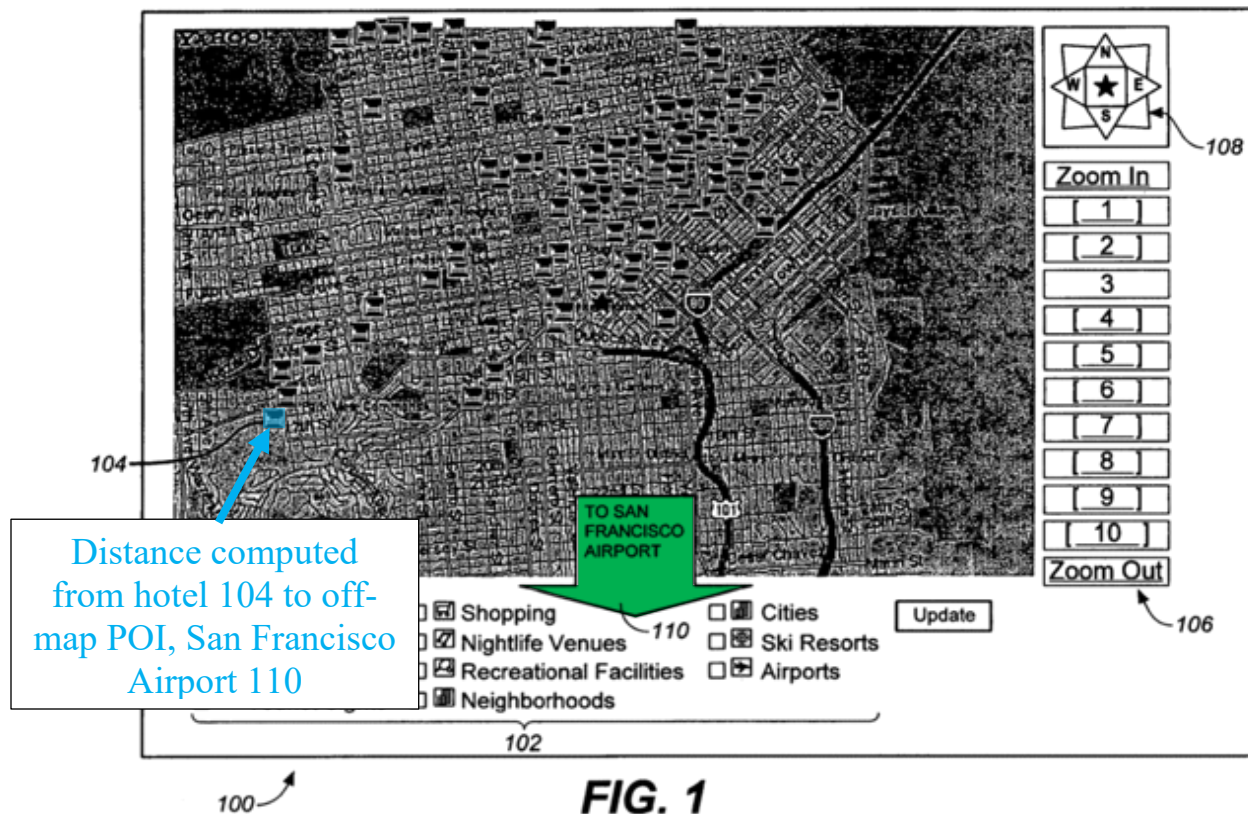
Kreitler, Fig. 1.

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; Rosenberg, 89.

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

Kreitler teaches [1c] via determining navigational information including distance and direction (travel-related information) to a [POI \(MO\)](#). Rosenberg, 90.

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; ’297, Fig. 1, 1:66-2:2, 5:6-9 (distance and direction are “information”); Rosenberg, 91. *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; ’297, 1:66-2:2; Rosenberg, 92-93. 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; Rosenberg, 92-93.

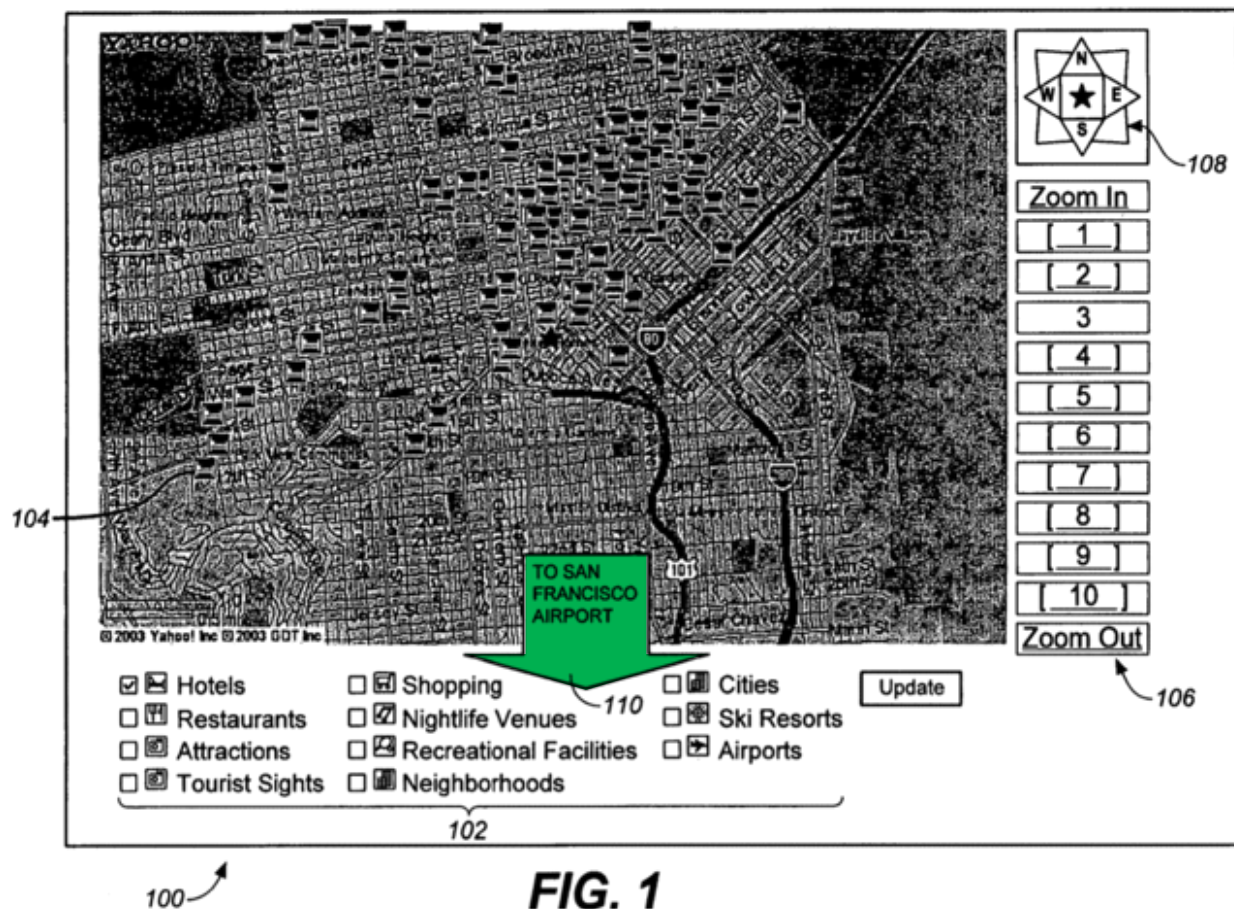


Kreitler, Fig. 1.

e. [1d]: computing a placement position of an OVI
referencing the MO on the map-display application

Kreitler teaches [1d] via placing a special icon (OVI) in a position corresponding to the off-map item of interest (MO). Rosenberg, 94.

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; Rosenberg, 95.



Kreitler, Fig. 1.

A POSITA 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. *Id.*, 25:1-19; Rosenberg, 95-96.

f. [1e]: creating the OVI containing the distance and travel-related information

Kreitler/Suomela renders obvious [1e].

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; '297, 1:66-2:2; Rosenberg, 98.

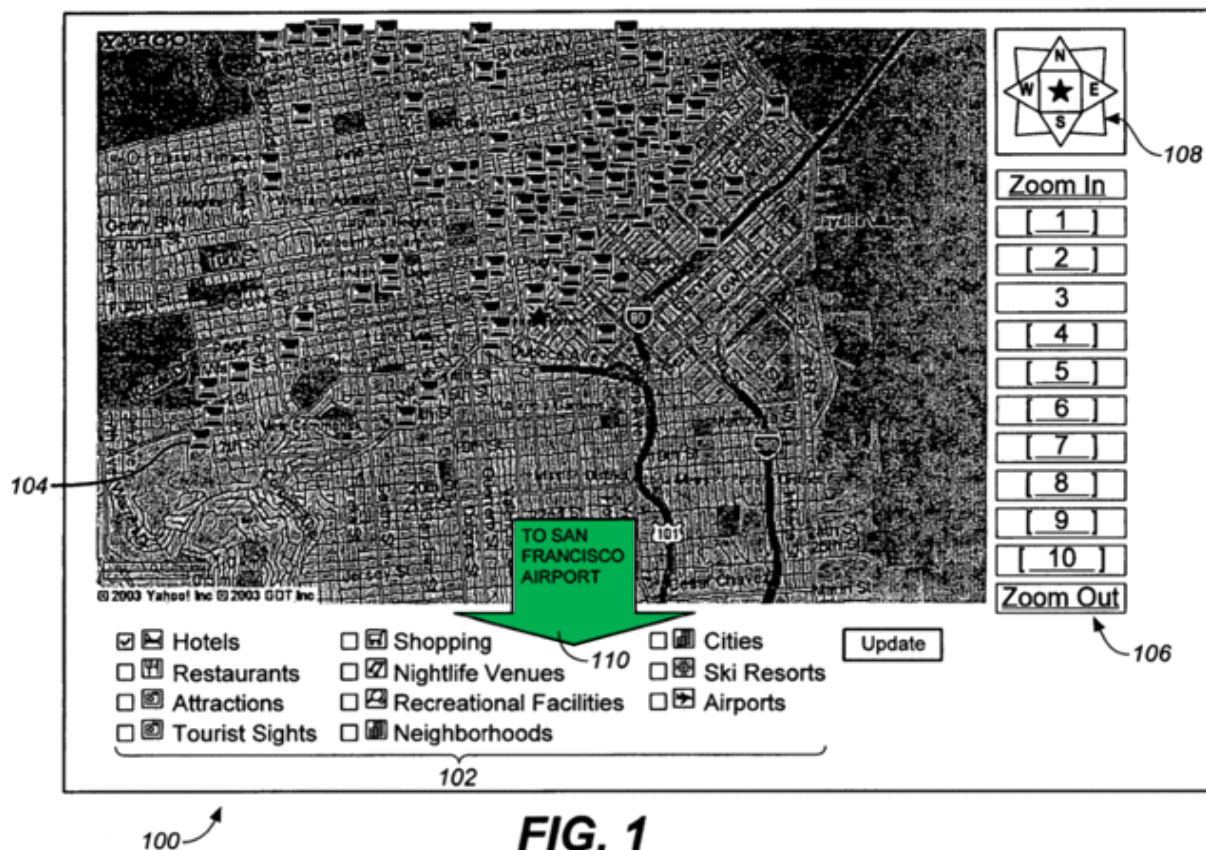
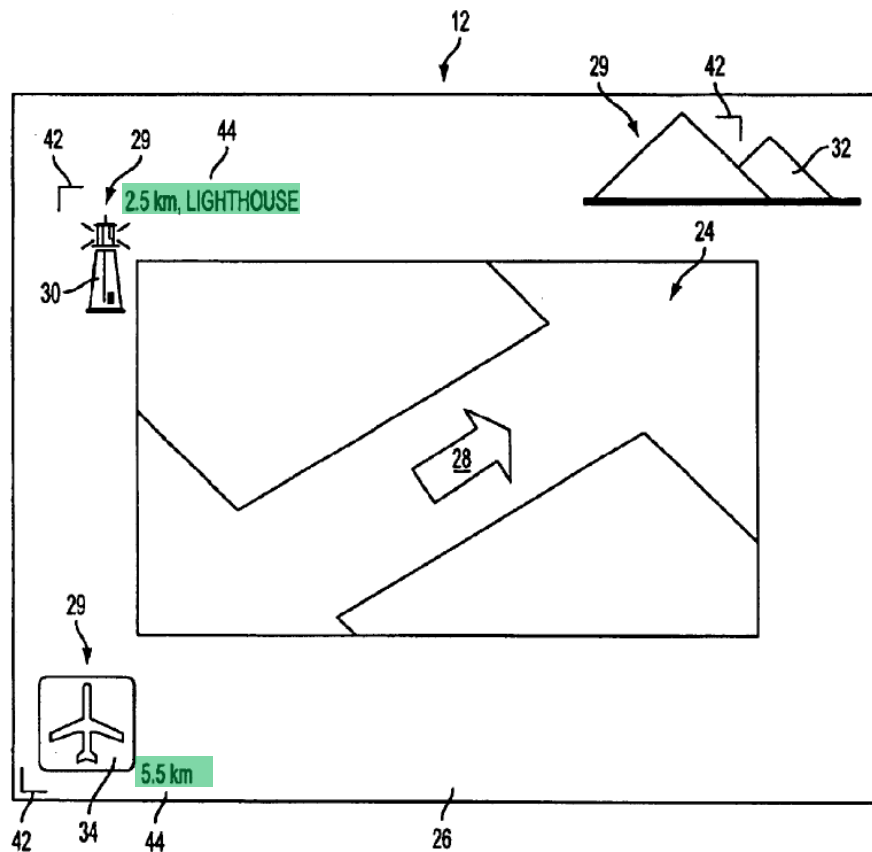


FIG. 1

Kreitler, Fig. 1.

Kreitler does not expressly disclose an OVI with **distance information**, but suggests it by computing distance and driving directions as explained for [1c] (§VI.B.1.d). *Suomela* expressly discloses displaying both distance and travel-related information. Rosenberg, 99.

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; Rosenberg, 99-100.

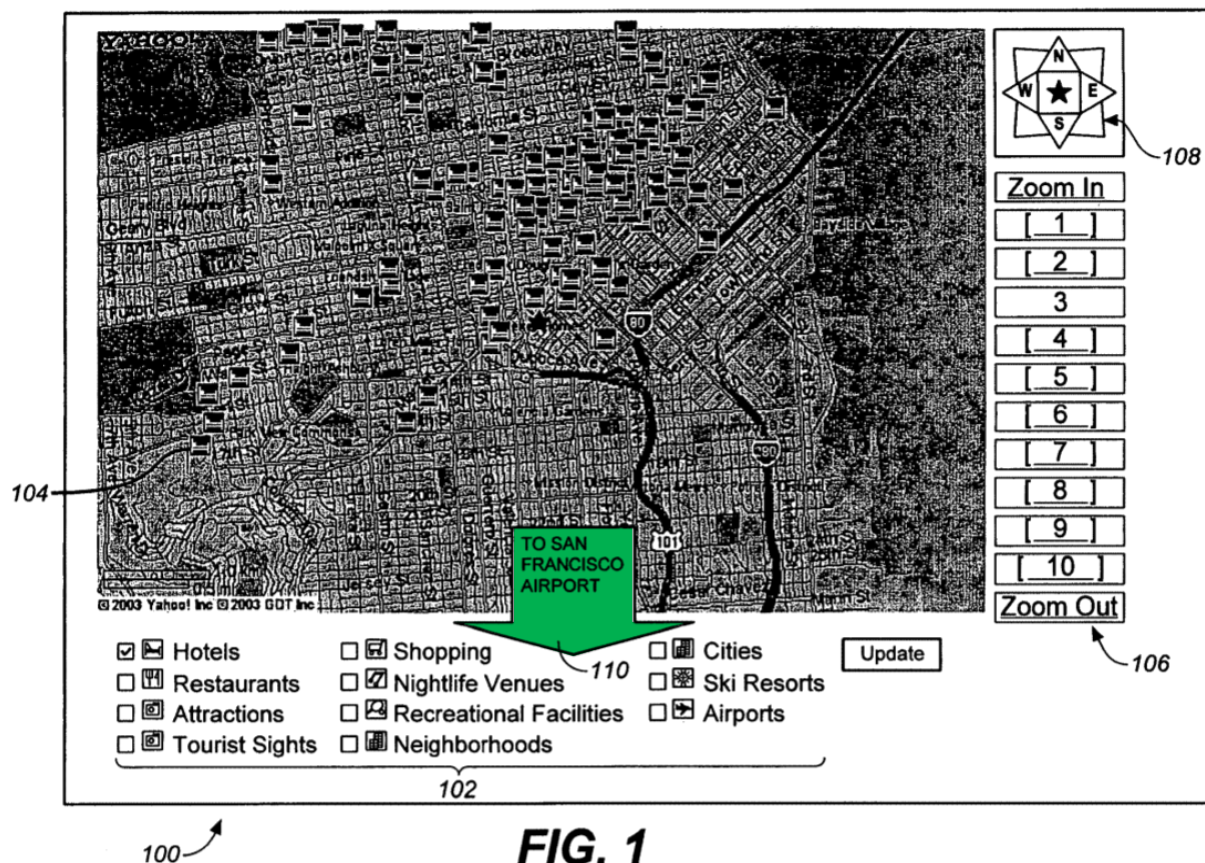


Suomela, Fig. 5.

A POSITA would have been motivated to add *Suomela*'s distance and travel-related information to *Kreitler*'s OVI to provide further helpful information to a user. §VI.A; Rosenberg, 100-101.

g. [1f]: displaying the OVI on the display at the computed placement position

Kreitler/Suomela renders obvious [1f] 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; Rosenberg, 103-104.



Kreitler, Fig. 1.

h. [1g]: receiving user input selecting the OVI

Kreitler/Suomela renders obvious [1g] because *Kreitler* discloses that the user may click on the **special icon (OVI)**. *Kreitler*, 6:58-60 (“the user clicks on that [special] icon 110”); Rosenberg, 105.

i. [1h]: displaying a secondary area of the electronic map, wherein the secondary area is a region of the electronic map centered approximately around the MO

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

Kreitler/Suomela renders obvious [1h] and [1i] because *Kreitler* discloses 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; Rosenberg, 106-108.

2. Claim 18

Claim 18 is similar to claim 1. Rosenberg, 109. Elements [18pre]-[18b] and [18g] recite additional limitations to those recited in claim 1, discussed above.

Kreitler/Suomela renders obvious the remaining limitations for the reasons explained for the corresponding limitations in claim 1.

a. [18pre]: A method of panning an electronic map, comprising:

Kreitler discloses [18pre] via allowing “the user to navigate around the map by zooming and panning around.” *Kreitler*, 5:23-24; Rosenberg, 111.

b. [18a]: receiving a list of map objects (“MOs”)

Kreitler discloses [18a] through search engines receiving a list of **location-based items (MOs)** from content databases. *Kreitler*, 10:65-11:44; Rosenberg, 112.

Kreitler’s content databases 402 contain “information about different kinds of items, for example **hotels, airports, restaurants,**” and “may interact with one or more search engines” that receive data items from the databases. *Kreitler*, 10:65-11:3, 11:49-50. The search engines use the received data items to satisfy user queries. *Id.*, 11:50-52, 12:63-67, Fig. 5. A POSITA reading would have understood that *Kreitler*’s query results would result in the system receiving a list of location items (MOs). Rosenberg, 113.

c. [18b]: determining the geographic coordinates of the MOs

Kreitler discloses [18b] via determining latitude and longitude coordinates for **POIs (MOs)**. Rosenberg, 114.

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”); Rosenberg, 115.

d. [18g]: determining one of the MOs referenced by the selected OVI

Kreitler discloses [18g] because each special icon (OVI) corresponds to an off-map POI (MO). *Kreitler*, 6:58-60; Rosenberg, 120.

A POSITA 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. Rosenberg, 121.

e. [18h]: 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;

Kreitler renders obvious element [18h].

As explained regarding [1h], [1i] (§V1.B.1.i), *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; Rosenberg, 123.

f. Elements [18c]-[18f] and [18i]

Elements [18c]-[18f] and [18i] correspond to elements of claim 1. Rosenberg, 116-119, 124. Like the '297, *Suomela* discloses multiple OVIs with icons that represent geographic locations and landmarks. A POSITA would have been motivated to modify *Kreitler* to include *Suomela*'s multiple OVIs including

the distance and travel-related information to allow a user to automatically view multiple POIs on the map-display, and it would allow users to identify further helpful information. *Id.*, 77-79. “For example, one object includes a lighthouse icon 30 representing the geographical location where an actual lighthouse (not shown) is located. Also, another object includes a mountain icon 32 representing the geographical location where mountains are located, and a further object includes an airport icon 34 representing the geographical location of an airport.” *Suomela*, 3:57-66; Rosenberg, 78. Such a modification would allow users to effortlessly identify POIs based on their location. *Suomela*, 3:48-51, 3:58-66, 3:67-4:7; Rosenberg, 78.

Claim Element	Relevant Explanation
[18c]	[1b]: §VI.B.1.c
[18d]	[1e]: §VI.B.1.f
[18e]	[1f]: §VI.B.1.g
[18f]	[1g]: §VI.B.1.h
[18i]	[1i]: §VI.B.1.i

3. Claim 23

Claim 23 is similar to claim 1. Rosenberg, 125. Elements [23pre], [23a], and [23d] recite additional limitations to those recited in claim 1. *Kreitler/Suomela*

renders obvious the remaining claim limitations for the same reasons explained for the corresponding limitations in claim 1.

a. **[23pre]: A method for selecting information to display in an electronic map display application, comprising**

Kreitler discloses [23pre] via its “browser or another more specialized client application” that includes an electronic map. *Kreitler*, 12:3-12, 12:23-13:11, Fig. 5; §VI.B.1.b; Rosenberg, 126-128.

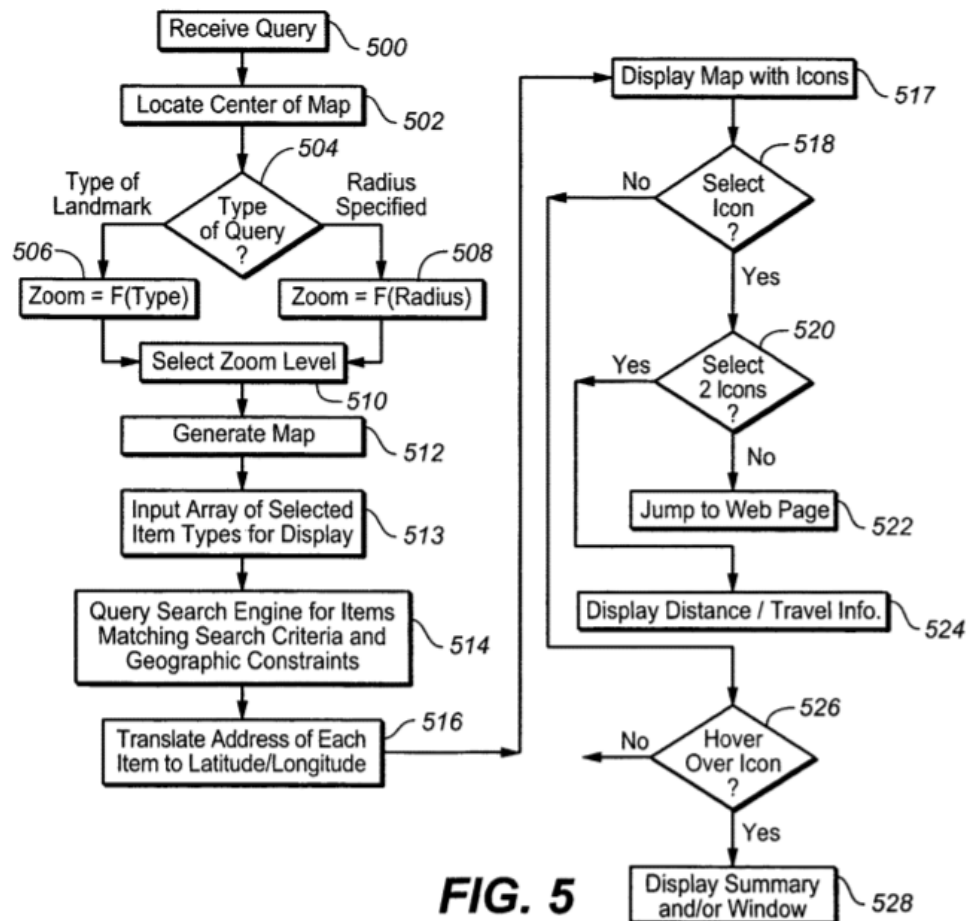


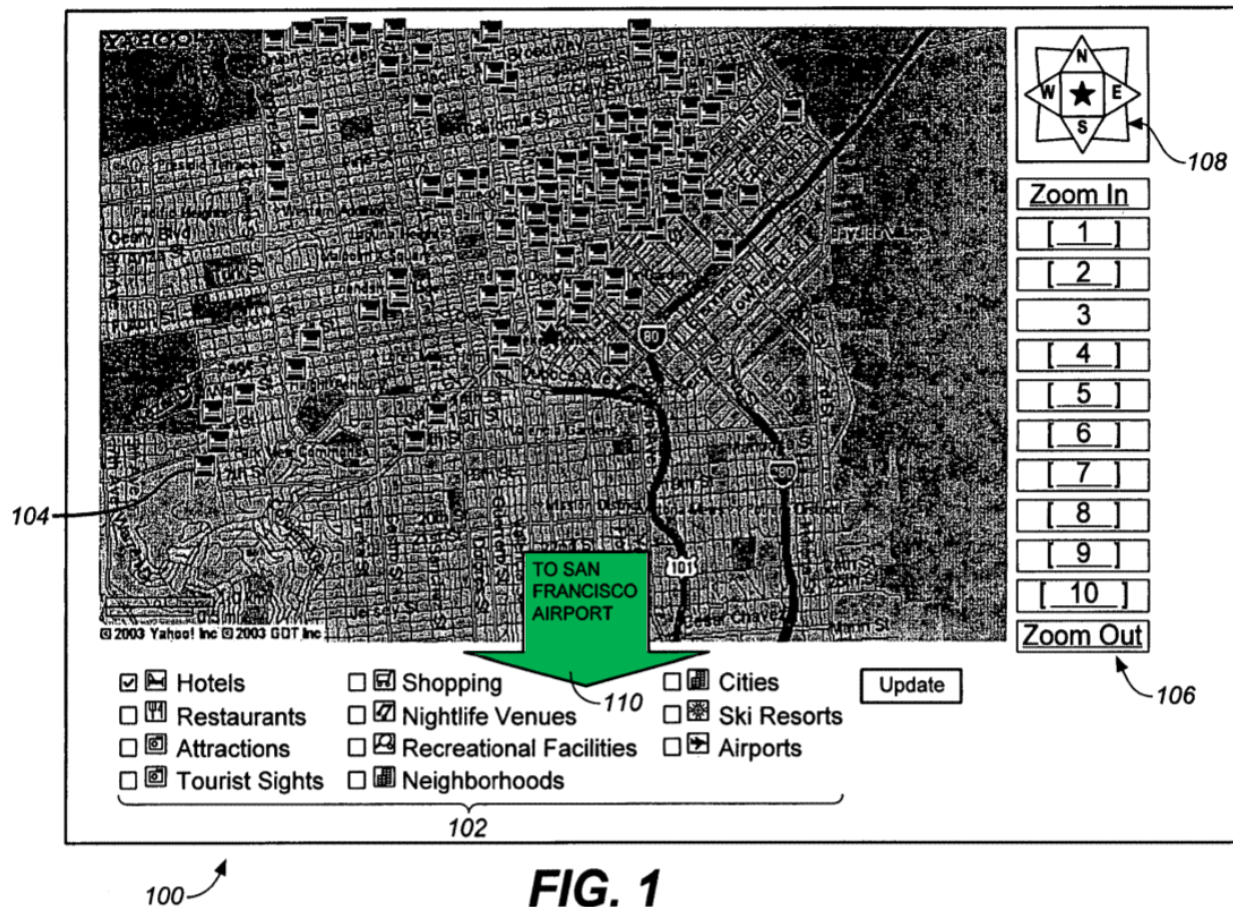
FIG. 5

Kreitler, Fig. 5.

b. [23a]: displaying a first portion of an electronic map generated by the electronic map display application

Kreitler discloses [23a] via “generating ... a rendering of ... location-based data overlaid on the map[] and displaying the rendering on the client computer.”

Kreitler, Fig. 1, 1:43-46, 12:13-16, 13:8-11; Rosenberg, 129-130.



Kreitler, Fig. 1.

c. [23d]: determining that the user input is associated with the OVI

Kreitler discloses [23d] via the user clicking a special icon (OVI). *Kreitler*, 6:50-62; §VI.B.1.h; Rosenberg, 133.

d. [23e]: determining a second portion of the electronic map

Kreitler/Suomela discloses [23e] by “re-center[ing] and resiz[ing] (re-zoom[ing]) the map...,” *Kreitler*, 6:30-34, 6:58-60, 12:32-36, necessarily includes determining a second map portion. *Rosenberg*, 134-135.

e. Elements [23b], [23c], and [23f]

Elements [23b], [23c], and [23f] correspond to elements of claim 1. *Id.*, 131-132, 136.

Claim Element	Relevant Explanation
[23b]	[1f]: §VI.B.1.g
[23c]	[1g]: §VI.B.1.h
[23f]	[1h]: §VI.B.1.i

4. Claim 28

Claim 28 is similar to claim 1. *Id.*, 137. Elements [28pre]-[28e] recite limitations beyond those recited in claim 1. *Kreitler/Suomela* renders obvious the remaining limitations for the same reasons explained in claim 1.

- a. **[28pre]: A method for creating and displaying an object vector indicator on an electronic map of a global navigation system (“GPS”) device, comprising:**

Kreitler/Suomela discloses [28pre] as explained for [1pre] (method) (§VI.B.1.a), [1e] (creating) (§VI.B.1.f), and [1f] (displaying) (§VI.B.1.g); *Id.*, 138-139.

Unlike *Kreitler*, *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; Rosenberg, 140-141.

It would have been obvious to a POSITA to improve *Kreitler* with GPS capabilities, taught by *Suomela*, to enable a user to easily and automatically track their location and identify places of interest as explained in §VI.A. Rosenberg, 142.

- b. **[28a]: providing the GPS device having a map display application that is coupled to a map-content service and a display for displaying a portion of the electronic map**

Kreitler/Suomela discloses [28a] as explained for [1a]. §VI.B.1.b; *Id.*, 143-146.

- c. **[28b]: receiving coordinates of the GPS device**

Kreitler/Suomela discloses [28b].

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. A POSITA 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. Rosenberg, 147-149.

d. [28c]: receiving information on a map-object (“MO”)

Kreitler discloses [28c] 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. 5; §VI.B.2.b; Rosenberg, 150-151.

e. [28d]: determining coordinates of the MO from the received information

Kreitler discloses [28d] 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. 5; §VI.B.4.c-d; Rosenberg, 152-153.

f. [28e]: determining a range of coordinates inclusive of the displayed portion of the electronic map

Kreitler discloses [28e], 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; §VI.B.1.c; Rosenberg, 154-155.

g. Elements [28f]-[28k]

Elements [28f]-[28k] correspond to elements of claim 1. Rosenberg, 156-161.

Claim Element	Relevant Explanation
[28f]	[1b]: §VI.B.1.c
[28g]	[1e]: §VI.B.1.f
[28h]	[1d]: §VI.B.1.e
[28i]	[1f]: §VI.B.1.g
[28j]	[1g]: §VI.B.1.h
[28k]	[18h-i]/[1i]: §VI.B.2.e-f, §VI.B.1.i

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.**

Kreitler/Suomela renders obvious claim 2.

Kreitler discloses that “[e]ach map is defined by its center point” (*Kreitler*, 5:4-6), and *Suomela* teaches “location indicator 28 may include a You Are Here (YAH) indicator” and “shows a **location of interest** around which the digital map is generally centered” (*Suomela*, Figs. 3, 4, 3:30-33, 3:35-40). *Rosenberg*, 162-165.

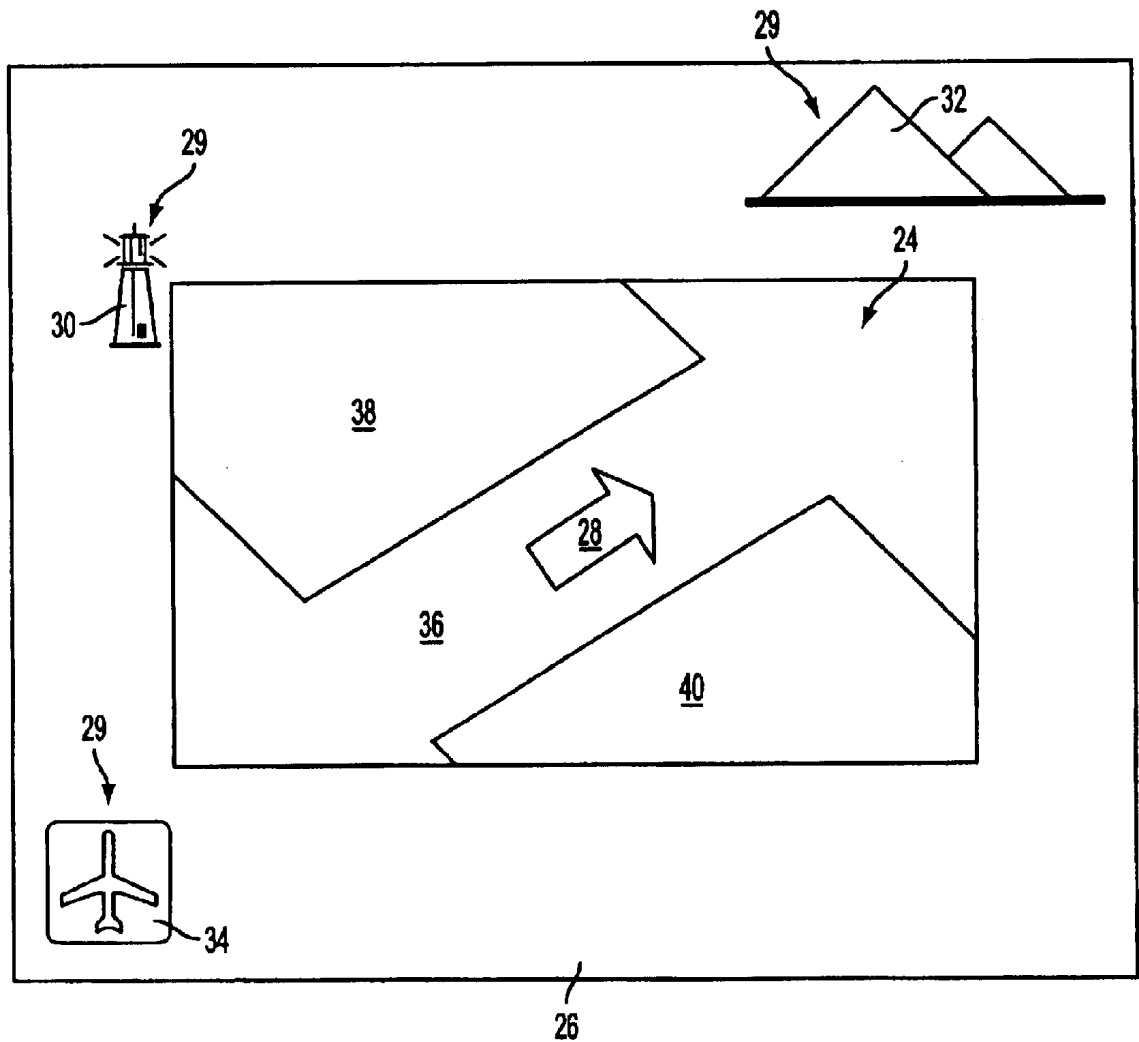


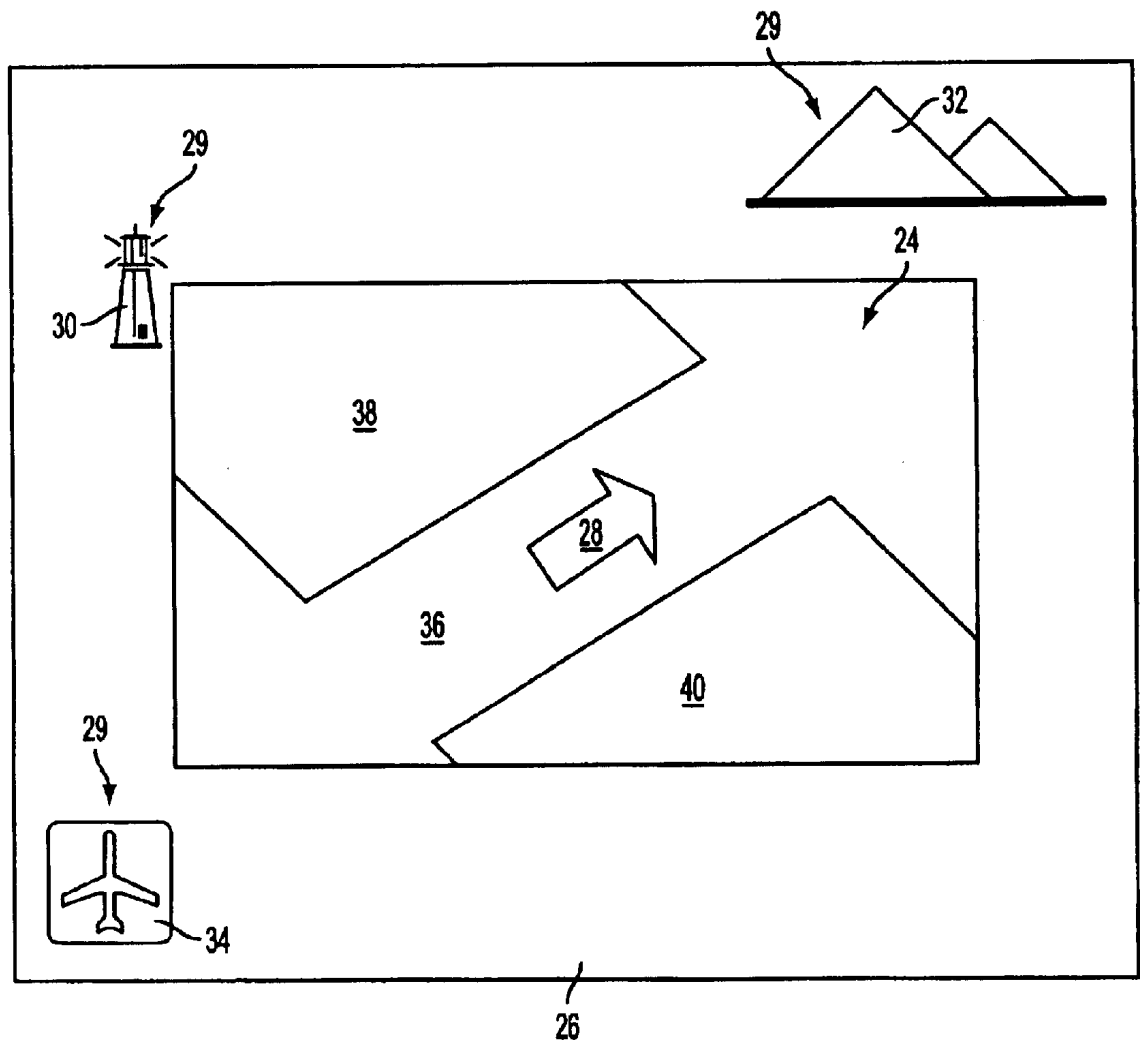
FIG. 4

Suomela, Fig. 4.

A POSITA would have been motivated to implement *Suomela*'s area centered on the user's current location in *Kreitler* to allow a user to automatically have a map-display relevant to their present location (as identified by GPS), as explained in §VI.A. Rosenberg, 165.

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

Kreitler/Suomela renders obvious claim 3 through *Suomela*'s "location indicator 28, which shows a **location of interest** around which the digital map is generally centered." *Suomela*, Fig. 4, 3:35-37; Rosenberg, 166-167.



Suomela, Fig. 4.

3. Claim 4: wherein the location marker is selected by the user.

Kreitler/Suomela renders obvious claim 4 because “user navigational choices (by clicking the **icon**)” cause *Kreitler* to “re-center the map around the center of the **icon** with one click.” *Kreitler*, 6:30-34, 6:55-60; Rosenberg, 168-169.

4. Claim 5: wherein the user input is a voice command.

Kreitler/Suomela discloses claim 5 because *Kreitler* discloses receiving user input, [1g] (§VI.B.1.h), and that all selection functions “may be done using voice activation.” *Kreitler*, 17:29-31; Rosenberg, 170-171.

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

Kreitler/Suomela renders obvious claim 7.

Suomela teaches the user may “track his route ... while maintaining his orientation with **known objects**....” *Suomela*, 5:13-22; Rosenberg, 174.

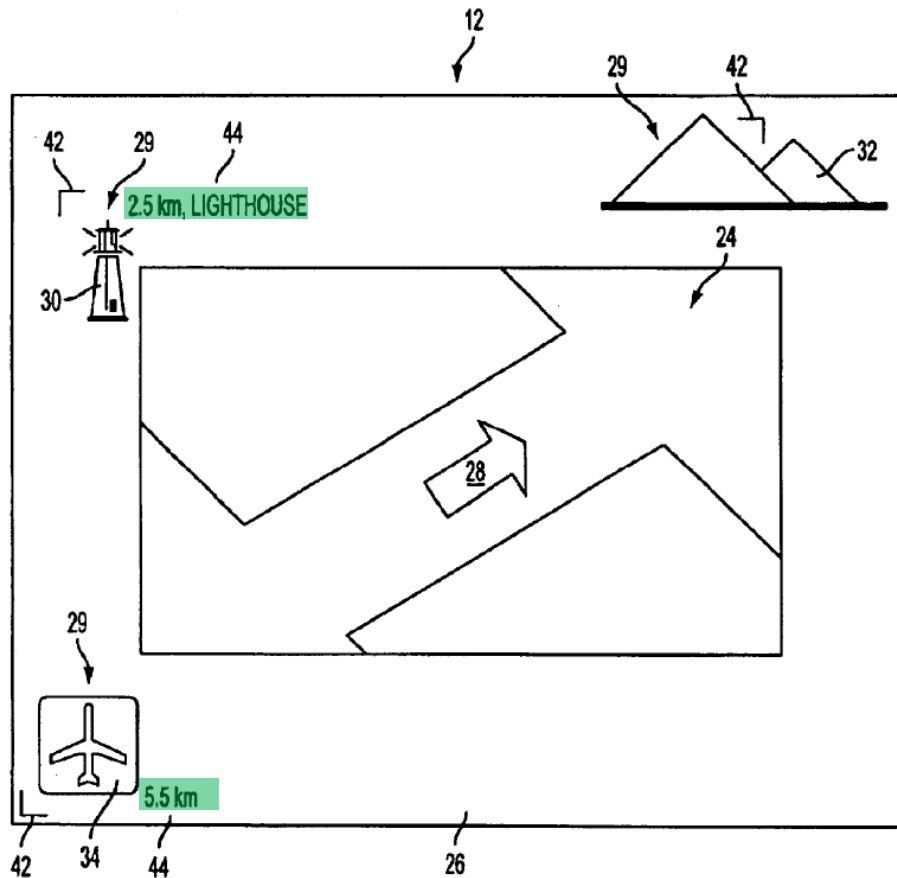


FIG. 5

Suomela, Fig. 5.

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*, 5:13-22, a POSITA 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; Rosenberg, 172-175. And if the user turns right, the **icons** would shift accordingly to indicate

their direction based on the user's updated current orientation and direction of travel. Rosenberg, 175-176.

6. **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.**

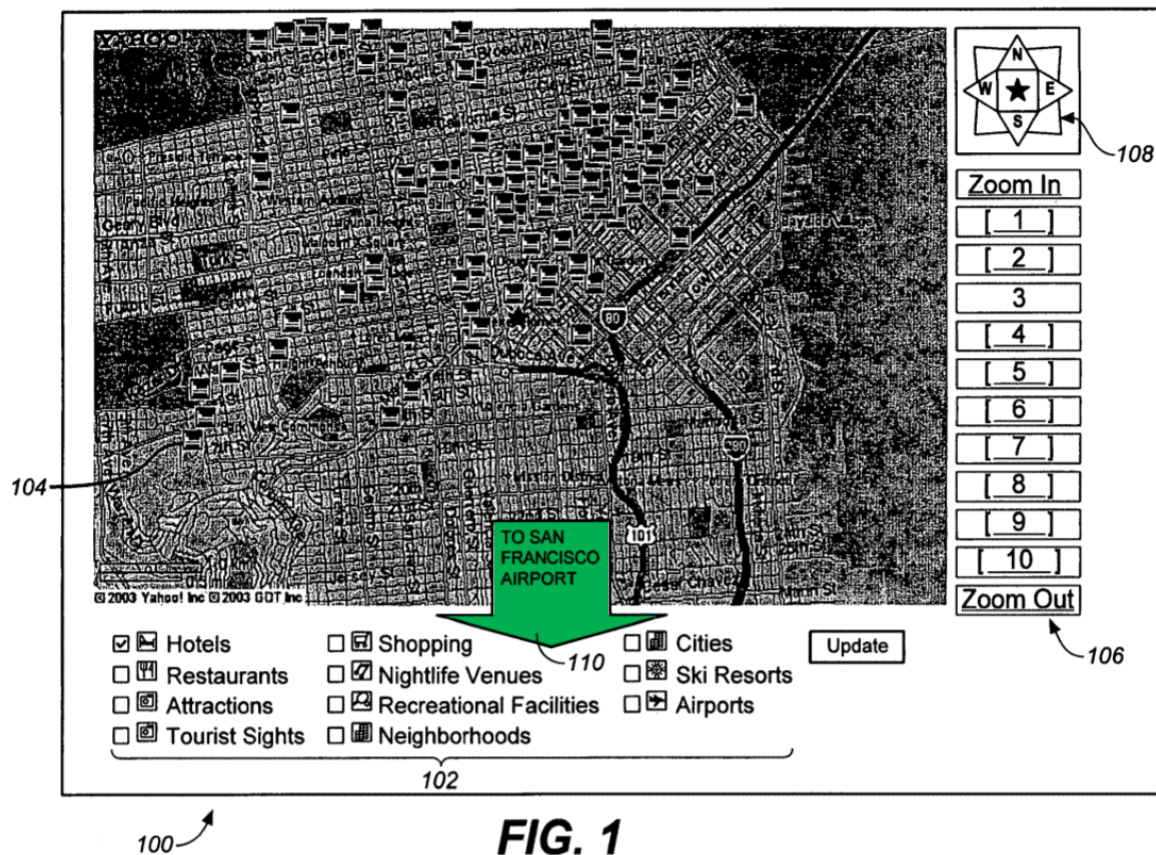
Kreitler/Suomela renders obvious claim 8.

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 POSITA would have understood trigonometric functions ignore travel routes or other information and thus calculate the shortest (aerial) distance between two points. Rosenberg, 177-178.

Kreitler teaches computing *estimated travel-time* because it provides “information such as the approximate driving time between the points.” *Kreitler*, 7:16-19; Rosenberg, 179.

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; Rosenberg, 180.



Kreitler, Fig. 1.

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

Kreitler/Suomela renders obvious claim 11.

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; Rosenberg, 181-182.

A POSITA 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”); Rosenberg, 183-184.

Touchscreens were in wide use well before the ’297, 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 touch released in 2007); Ex. 1011 (Garmin nüvi GPS system with touchscreen display released 2005). A POSITA would have understood that the mobile device of *Kreitler* (or *Suomela*) would have had a touchscreen interface, or it would have been obvious to implement the method of *Kreitler* (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 POSITA reading *Kreitler*’s disclosure of a PDA or cellphone would have readily understood that PDAs and cellphones at least suggested touchscreens. Ex. 1016, 33:31-39, 34:16-28; Rosenberg, 185.

Indeed, the ’297 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 '297 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; Rosenberg, 186.

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

Kreitler/Suomela renders obvious claim 12.

As explained for [1c] (§VI.B.1.d), *Kreitler* discloses computing navigational information, including distance and driving directions, between two items selected by the user. Rosenberg, 188.

As explained for claim 7 (§VI.C.5), *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). §VI.A; Rosenberg, 189-190.

9. 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.

Kreitler/Suomela renders obvious claim 14.

As explained for [1c] (§VI.B.1.d), *Kreitler* discloses computing navigational information, including distance and driving directions, between two items selected by the user. Rosenberg, 192.

As explained for [1d] (§VI.B.1.e), *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; Rosenberg, 193.

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; Rosenberg, 194.

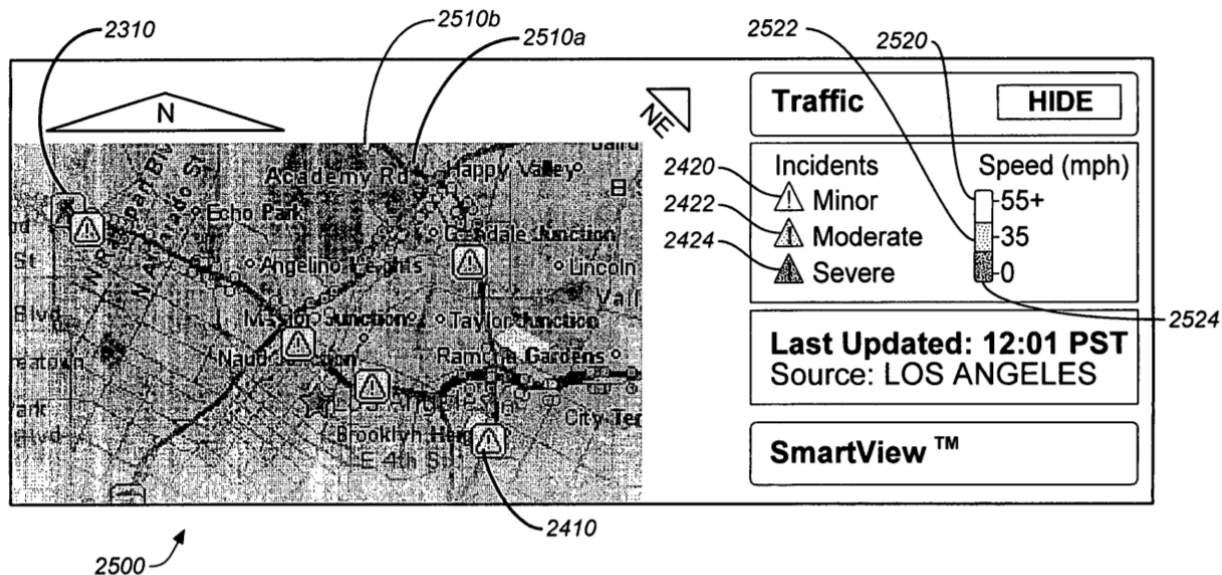


FIG. 25

Kreitler, Fig. 25.

A POSITA 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; Rosenberg, 195. 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.”); Rosenberg, 195. A POSITA would have understood *Kreitler* discloses recalculating the distance-and-travel information to provide accurate, real-time navigational information to the *user*. Rosenberg, 195. A POSITA would have understood *Kreitler* discloses recalculating the placement position of the special icon to update the icon’s positioning to reflect the most efficient direction of travel considering the updated traffic conditions. *Kreitler*, 18:65-19:7; Rosenberg, 195.

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

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

Kreitler/Suomela renders obvious [15a] because *Suomela* teaches locating the device via GPS. §VI.B.4.c; *Suomela*, 1:27-34, 3:2-20; §VI.A; Rosenberg, 197-199.

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

Kreitler/Suomela renders obvious [15b].

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.*, 1:48-56. 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. Rosenberg, 201.

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; Rosenberg, 202.

By using the process of obtaining position with an electronic device taught by *Suomela*, the method of *Kreitler* would be improved to provide information

relevant to the user’s automatically-determined current location. §VI.A;

Rosenberg, 203.

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

Kreitler/Suomela renders obvious [15c].

As explained for [1c] (§VI.B.1.d), *Kreitler* discloses computing distance and travel-related information. This information is *receive[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; Rosenberg, 205.

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; Rosenberg, 206-207.

11. Claim 16

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

Kreitler/Suomela renders obvious [16a].

[1c] (§VI.B.1.d) 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/Suomela* for the reasons explained for [1c] (§VI.B.1.d) because a POSITA 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. Rosenberg, 210.

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

Kreitler/Suomela renders obvious [16b].

Kreitler teaches computing a placement position of an OVI, as explained in [1d] (§VI.B.1.e). *Id.*, 212.

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; Rosenberg, 213.

A POSITA 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; §VI.A; Rosenberg, 214.

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

Kreitler/Suomela renders obvious [16c].

As explained for [1e] (§VI.B.1.f), *Kreitler/Suomela* teaches “*creating ... [an] OVI including the distance and travel-related information*.” Rosenberg, 216.

As explained for [16b] (§VI.C.11.b), *Kreitler/Suomela* teaches calculating and placing a second OVI. *Id.*, 217.

A POSITA 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. *Id.*, 218.

A POSITA would have been motivated to add *Suomela*'s multiple OVIs including the distance and travel-related information to *Kreitler*'s OVI to provide further helpful information to a user, as explained in §VI.A. *Id.*, 219.

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

Kreitler/Suomela renders obvious [16d].

As explained for [1f] (§VI.B.1.g), *Kreitler/Suomela* teaches “***displaying the ... OVI including the distance and travel-related information.***” *Id.*, 221.

As explained for [16b] (§VI.C.11.b), *Kreitler/Suomela* teaches calculating and placing a second OVI. *Id.*, 222.

A POSITA 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. *Id.*, 223-224.

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

Kreitler/Suomela renders obvious claim 17.

Claim 17 is similar to [28pre]. As explained for [28pre] (§VI.B.4.a), *Kreitler/Suomela* renders obvious using a GPS-enabled navigation unit. *Id.*, 226.

D. Claim 24: The method of claim 23,

Kreitler/Suomela renders obvious claim 24.

1. **[24a]: determining a map object (“MO”) referenced by the OVI;**

See limitation [18g] (§**Error! Reference source not found.**d). *Id.*, 228.

2. **[24b]: determining coordinates of the MO;**

See limitation [18b] (§**Error! Reference source not found.**). *Id.*, 229.

3. **[24c]: panning the electronic map such that the center of the electronic map corresponds approximately to the coordinates of the MO.**

See limitations [18h-i]/[1i] (§VI.B.2.e-f, §VI.B.1.j). *Id.*, 230.

E. Claim 30: The method of claim 28, further comprising: changing at least one of: GPS coordinates of the GPS device; MO information; a zoom-level of the electronic map.

Kreitler/Suomela renders obvious claim 30.

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; Rosenberg, 232. *Suomela* discloses “mobile device 10 is able to continually update and monitor its location via **GPS hardware 22**.” *Suomela*, 5:7-16; §VI.A Rosenberg, 232-234.

VII. GROUND 2: CLAIMS 6 AND 13 ARE OBVIOUS OVER *KREITLER* IN VIEW OF *SUOMELA* AND *ALTMAN*

A. Overview and Motivation-to-Combine

Kreitler/Suomela renders obvious all independent claims. Dependent claims 6 and 13 recite computing OVI placement position, distance, and travel information in response to a change in the position of the MO. *Kreitler* and *Suomela* do not expressly disclose this feature, but *Altman* does. It would have been obvious to incorporate computation of position, distance, and travel information in response to a change in the position of the MO—like another user moving. Rosenberg, 235.

Altman discloses location sharing amongst users and displaying shared location information on electronic maps. *Altman*, 3:53-56. *Altman* determines the geographic location of a user's mobile communication device, displays a map of the area around the mobile communication device 208, and allows the user to build a database of trusted friends 206 (other users) whose locations are displayed to the user. *Id.*, 2:8-19, 7:56-65; Rosenberg, 236.

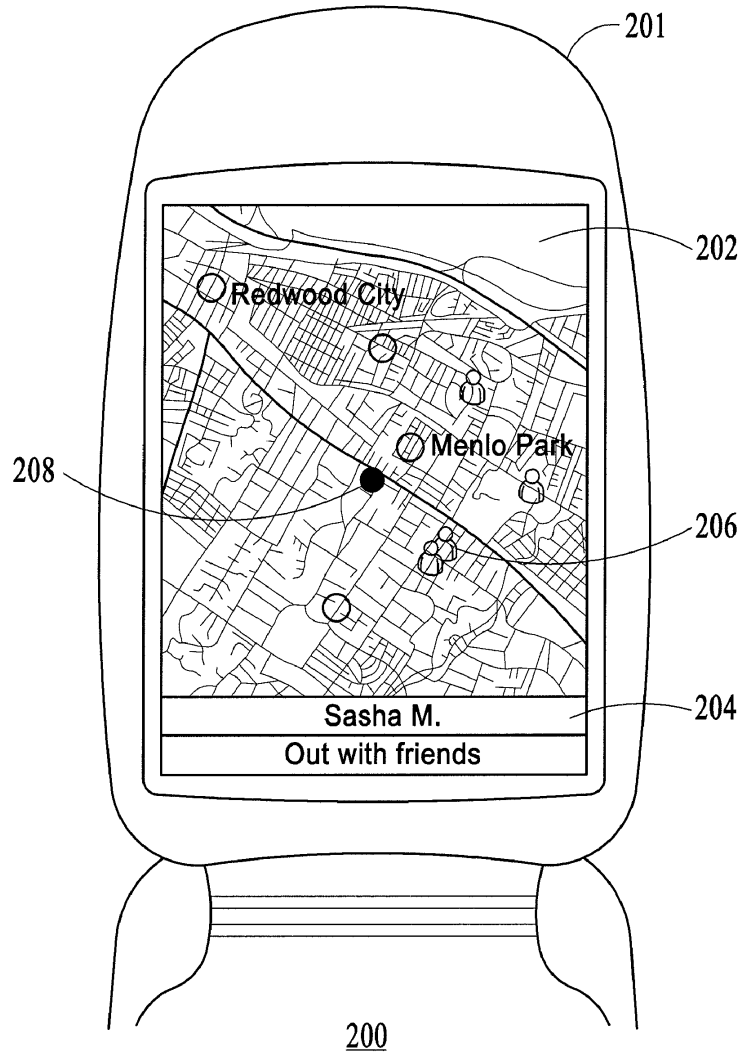


FIG.2A

Altman, Fig. 2A.

“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.*, 4:26-32. “As the user moves, the position of his location on the displayed map is updated in real-time or

near real-time.” *Id.*, 7:30:35, 9:56-62. These features would have been obvious and advantageous modifications to *Kreitler/Suomela*, 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 *Altman*. Rosenberg, 237.

The ’297, *Kreitler*, *Suomela*, and *Altman* are all in the field of mapping on electronic devices. All address the known problem of updating location information of the user or MO, with *Kreitler/Suomela/Altman* disclosing known solutions for multiple users in real-time, the combination of which yields predictable results. Therefore, it would have been obvious for a POSITA to combine *Kreitler* and *Suomela* to allow users to track their friends’ locations in real-time, obtain information on how far away a friend is, and obtain information on how to travel to meet them. Rosenberg, 238.

A POSITA studying *Kreitler/Suomela* 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 *Altman*, within *Kreitler/Suomela*’s display. *Id.*, 239. 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/Suomela* 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 *Altman*. *Altman*, 7:30-35, 9:56-62. 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/Suomela* and incorporate a valuable feature for users. *Kreitler*, 3:47-51, 22:10-14; Rosenberg, 239.

A POSITA would have been motivated to modify *Kreitler/Suomela*’s computation of travel information to include repeated computations based on the change in the position of the MO, taught by *Altman*, 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 *Altman* solves. *Altman*, 7:30-35, 9:56-62. Rosenberg, 240.

A POSITA would have reasonably expected success in modifying *Kreitler/Suomela* with *Altman*’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*, as combined

with *Suomela*, already calculates and displays the travel computations for stationary destinations and also already contemplates a system with multiple users, each of which uses a GPS-enabled mobile device that displays the user's own location on a map. *Kreitler*, 6:51-57, 7:5-19; *Suomela*, 1:27-30. Incorporating a user as an MO of another user would use the same location calculation and display method already taught by *Kreitler/Suomela*. 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 POSITA would have readily understood and expected to succeed in that endeavor. Rosenberg, 241.

B. 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.

Kreitler/Suomela/Altman renders obvious claim 6.

As explained for [1d] (§VI.B.1.e), *Kreitler* discloses *computing the placement position of the OVI*. *Kreitler* and *Suomela* do not expressly disclose repeating computing OVI placement in response to a change in the position of the MO, but *Altman* does. *Id.*, 243.

Altman 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.” *Altman*, 7:30-32. And

Altman expressly discloses that other users (MOs) are displayed to the user, updated in real-time, as the other user (MO) moves. *Altman* 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.*, 4:32-34, 11:1-13, 20:3-15; Rosenberg, 244.

As combined with *Kreitler/Suomela*, if another user (MO) were off-map, a POSITA 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 §VII.A, it would have been obvious to a POSITA to implement *Altman*’s real-time update on the location of other users within *Kreitler/Suomela*. Rosenberg, 245.

C. Claim 13: wherein the computing distance-and-travel information step is repeated in response to a change in the position of the MO.

Kreitler/Suomela/Altman renders obvious claim 13.

As explained for [1c] (§VI.B.1.d), *Kreitler* discloses *computing distance-and-travel information*. *Kreitler* does not disclose repeated computing *in response to a change in the position of the MO*. *Id.*, 247.

As explained for claim 6 (§VII.B), *Altman* 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.” *Altman*, 7:30-32. For each user or “listed friend,” *Altman* 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.*, 10:1-5. And *Altman* discloses “updating a [user] device’s location on a real or near real-time basis” by frequent polling of the user’s location. *Id.*, 17:37-19:30, Figs. 10-11; Rosenberg, 248.

As combined with *Kreitler/Suomela*, if another user (MO) were off-map, a POSITA 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. As explained in §VII.A, it would have been obvious to a POSITA to implement *Altman*’s real-time update on the location of other users within *Kreitler/Suomela*. Rosenberg, 249.

VIII. GROUND 3: CLAIMS 9-10, 20-21, AND 29 ARE OBVIOUS OVER KREITLER IN VIEW OF SUOMELA AND MYR

A. Overview and Motivation-to-Combine

Kreitler/Suomela renders obvious all independent claims. Dependent claims 9-10, 20-21, and 29 include additional limitations related to calculating a travel route and associated travel time. While these limitations are arguably not expressly disclosed by *Kreitler* or *Suomela*, they are expressly disclosed by *Myr*, and it

would have been obvious to incorporate travel routes and times as taught by *Myr* into the *Kreitler/Suomela* combination. *Id.*, 250.

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; Rosenberg, 251.

The '297, *Kreitler*, *Suomela*, and *Myr* are all in the field of mapping on electronic devices to show travel-related information. The '297, *Kreitler*, and *Myr* address the known problem of calculating and displaying travel time and travel route information, with *Kreitler/Suomela/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 combine *Myr* with *Kreitler* and *Suomela* for a more effective and efficient navigation system that shows travel routes and travel times based on the MO. Rosenberg, 252.

First, a POSITA would have found it obvious and advantageous to include a travel route, taught by *Myr*, with the *Suomela* and *Kreitler* 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; Rosenberg, 253.

A POSITA would have been motivated to modify *Kreitler/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. Rosenberg, 254.

A POSITA would have had a reasonable expectation of success in modifying *Kreitler/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 '297 patent, as evidenced by *Myr*. *Id.* *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 POSITA. Accordingly, displaying calculated travel route information with

Kreitler/Suomela would have been implemented using only conventional systems and methods in ways a POSITA would have readily understood and expected to succeed. Rosenberg, 255.

Second, a POSITA 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/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. *Id.*, 256.

A POSITA would have been motivated to modify *Kreitler/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. Rosenberg, 257.

A POSITA would have also had a reasonable expectation of success in modifying *Kreitler/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 '297 patent. *Id. 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 POSITA. Accordingly, displaying calculated time information with *Kreitler/Suomela*'s special icons would have been implemented using only conventional systems and methods in ways a POSITA would have readily understood and expected to succeed. Rosenberg, 258.

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.

Kreitler/Suomela/Myr renders obvious claim 9.

As explained in [1c] (§V1.B.1.d), *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; Rosenberg, 260.

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; Rosenberg, 261.

As explained in §VIII.A, a POSITA would have been motivated to add *Myr*'s travel route to the *Kreitler/Suomela* combination. Rosenberg, 262.

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

Kreitler/Suomela/Myr renders obvious claim 10.

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; Rosenberg, 264.

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; Rosenberg, 265.

As explained in §VIII.A, a POSITA would have been motivated to add *Myr*'s travel route to the *Kreitler/Suomela* combination. Rosenberg, 266.

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.

Kreitler/Suomela/Myr renders obvious claim 20.

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; Rosenberg, 268.

Suomela discloses ***creating an OVI includes calculating a distance ... to the location of the MO*** because, 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 §VI.A, a POSITA would have found it obvious to include distance indicators, taught by *Suomela*, with *Kreitler*'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. Rosenberg, 269.

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 §VIII.A, a POSITA would have found it obvious to include the travel time calculated by *Myr* in the OVI of *Kreitler/Suomela*. Rosenberg, 270.

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

Kreitler/Suomela/Myr renders obvious claim 21.

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 direction of travel.” *Id.*, 1:32-34, 3:2-20; Rosenberg, 272.

As explained in §VI.A and §VIII.A, a POSITA would have been motivated to include *Suomela*’s determination of the current location of the device within *Kreitler*. Rosenberg, 273.

F. Claim 29: wherein the step of creating an 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.

Kreitler/Suomela/Myr renders obvious claim 29.

As explained for claim 20 (§VIII.D), *Kreitler/Suomela* and *Myr* renders obvious *calculating the direction, distance and travel-time from the position of the electronic device to the MO*. Rosenberg, 275.

Kreitler does not expressly disclose displaying an OVI with travel-time, but it suggests displaying distance and driving directions as explained for [1f] (§VI.B.1.g). *Myr* expressly discloses displaying travel-time. *Id.*, 276.

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; Rosenberg, 277.

A POSITA would have been motivated to modify *Kreitler* to display travel-time in *Kreitler*'s OVI to provide further helpful information to a user. §VIII.A; Rosenberg, 278.

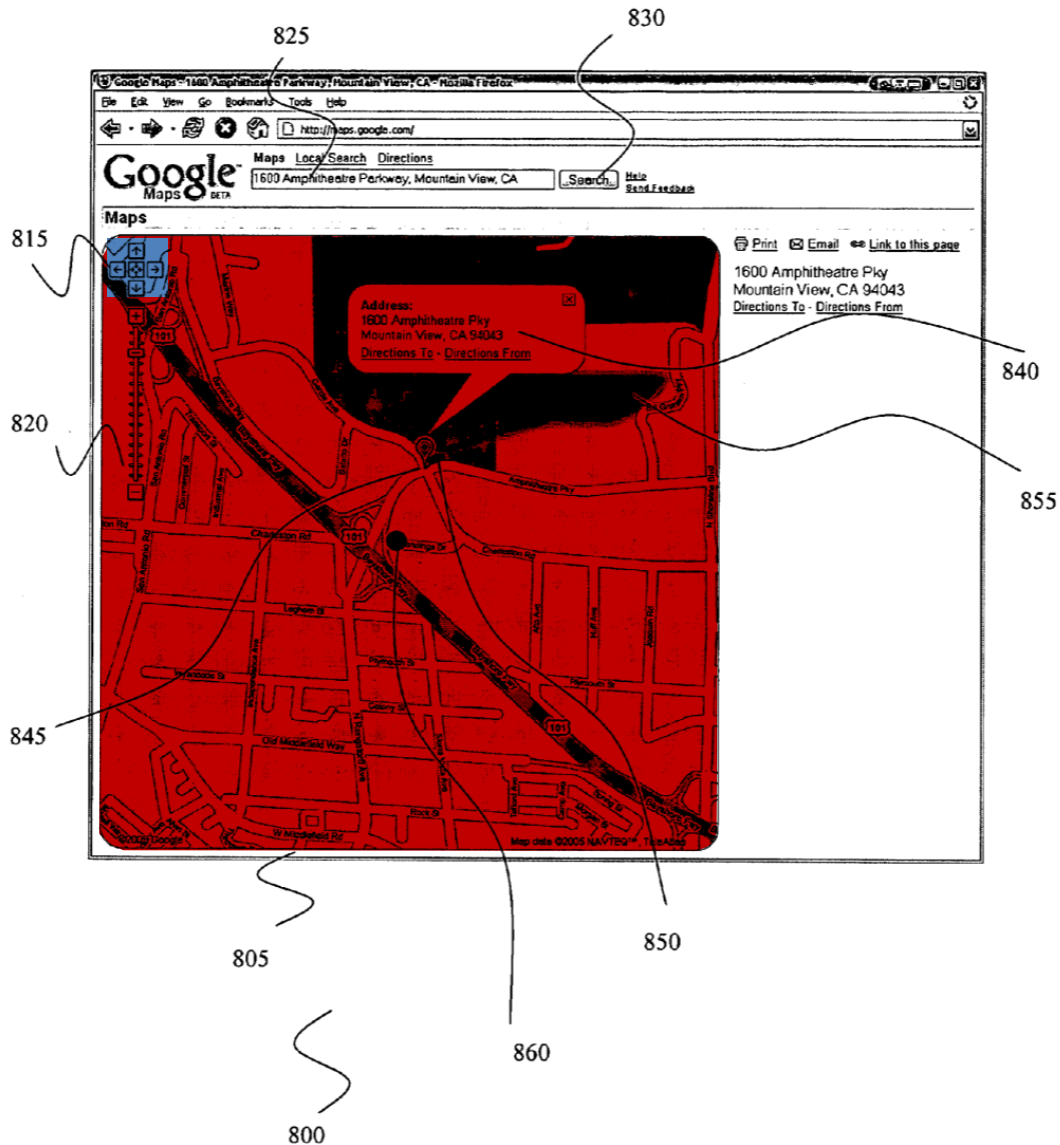
IX. GROUND 4: CLAIMS 19 AND 25 ARE OBVIOUS OVER *KREITLER* IN VIEW OF *SUOMELA* AND *RASMUSSEN*

A. Overview and Motivation-to-Combine

Kreitler/Suomela renders obvious all independent claims. Dependent claims 19 and 25 further recite animating the map's pan/zoom. While not expressly disclosed by *Kreitler* or *Suomela*, these limitations are taught by *Rasmussen*, and it would have been obvious to incorporate the animation/panning steps of *Rasmussen* within *Kreitler/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 adjustment. *Kreitler*, 5:23-26 (teaching “zooming and panning

around”), 5:41-45, 19:20-22. A POSITA would, therefore, have looked to other graphical user interface references that disclose technical details for adjusting a map-display, like *Rasmussen*. Rosenberg, 279.

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* is configured to include “map image panning operations” that present a transition from one map view to a new map view “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; Rosenberg, 280.



Rasmussen, Fig. 8.

The '297, *Kreitler*, *Suomela*, and *Rasmussen* are all in the field of mapping on electronic devices to show travel-related information. The '297, *Kreitler*, and *Rasmussen* address the known problem of calculating and displaying panning a map from one map view to another, with *Kreitler/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* and *Suomela* for smooth panning operations from one map view to another. Rosenberg, 281.

A POSITA would have found it obvious to include an animated transition from one map view to another map view, taught by *Rasmussen*, with *Kreitler/Suomela*'s mapping system to "present a smooth pan along contiguous map imagery." *Rasmussen*, 21:37-39. To present the smooth pan, a POSITA 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. Rosenberg, 282.

A POSITA would have been motivated to modify *Kreitler/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 POSITA would also have been motivated to modify *Kreitler/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/Suomela* system and allow for the pans to be “presented smoothly” using the process taught in *Rasmussen*. *Rasmussen*, 21:63-22:5.

Rosenberg, 283.

A POSITA would have had a reasonable expectation of success in modifying *Kreitler/Suomela* to include *Rasmussen*’s animated transition from one map view to another map view and including a path and an animation. Such a modification would have required only routine skill in the art, as implementing the steps taught by *Rasmussen* to define a path along which to incrementally pan a map from one map view to another map view, including a path between a determined MO and an approximate center of the first area of the map, and displaying a second portion to include an animation was common in the art before the date of the ’297 patent. *Id.* *Kreitler* itself already discloses panning a map from one map area to another map area (*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 POSITA. Accordingly, modifying *Kreitler/Suomela* to animate the transition from the first to second portions of the electronic map when a user selects a specific maps portion (an off-map entity information indicator control) or

the map movement controls would have implemented only conventional systems and methods in ways a POSITA would have readily understood and expected to succeed. Rosenberg, 284.

B. Claim 19

1. [19a]: defining a number of animation steps;

Kreitler/Suomela/Rasmussen renders obvious [19a].

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. Rosenberg, 287.

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; Rosenberg, 288-289.

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

Kreitler/Suomela/Rasmussen renders obvious [19b].

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; Rosenberg, 291-292.

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

Kreitler/Suomela/Rasmussen renders obvious [19c].

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)**. Rosenberg, 294. *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; Rosenberg, 295.

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.

Kreitler/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. Rosenberg, 297.

As explained for [19a]-[19c] (§IX.B.1-3), *Rasmussen* discloses defining animation steps, defining a time delay, and defining small travel distances. Rosenberg, 298.

As explained for [1h] (§VI.B.1.i), *Kreitler* discloses displaying the selected MO approximately at the center of the displayed secondary map. Rosenberg, 299.

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; Rosenberg, 300. *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/Suomela*, which disclose panning a map from a first area to a second area ([1h]-[1i], §VI.B.1.i), a POSITA 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. Rosenberg, 300.

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; Rosenberg, 301.

Rasmussen discloses *waiting an amount of time specified by the time delay* as explained for [19b] (§IX.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; Rosenberg, 302. As combined with *Kreitler/Suomela*, which disclose panning a map from a first area to a second area centered on the selected MO ([1h]-[1i], §VI.B.1.i), a POSITA would have understood that *Rasmussen*'s panning would be repeated until the selected MO is at the center of the map. Rosenberg, 302.

As explained in §IX.A, a POSITA would have been motivated to include *Rasmussen*'s panning animation within *Kreitler/Suomela. Id.*, 303.

C. Claim 25: wherein the displaying the second portion of the electronic map includes an animation.

Kreitler/Suomela/Rasmussen renders obvious claim 25.

Kreitler discloses re-centering and resizing the map when the user clicks on a special icon such that the item corresponding to the special icon is shown on the map. *Kreitler*, 6:58-60. However, *Kreitler* and *Suomela* do not expressly disclose an animation. Rosenberg, 305.

Rasmussen discloses that “from one map view (x, y, z) to a new map view (x', y', z[']) ... should be animated over n frames” *Rasmussen*, 20:60-66, 7:60-

64 (“scripts may be used to smoothly animate the transition from the old to the new map view”), 22:6-9; §IX.A; Rosenberg, 306-308.

**X. GROUND 5: CLAIMS 22 AND 26-27 ARE OBVIOUS OVER
KREITLER IN VIEW OF SUOMELA, RASMUSSEN, AND MYR**

A. Overview and Motivation-to-Combine

Kreitler/Suomela (Ground 1) and *Kreitler/Suomela/Rasmussen* (Ground 4) render most claims of the ’297 obvious. Rosenberg, 309.

Dependent claims 22, 26, and 27 further recite that the animating and panning the electronic map takes place along a travel route with associated travel time (disclosed by *Myr*, Ground 3). While these additional limitations are not expressly disclosed by *Kreitler/Suomela/Rasmussen* (Ground 4), they are expressly disclosed by the addition of *Myr*’s travel routes and times, which it would have been obvious to incorporate within *Kreitler/Suomela/Rasmussen*. *Id.*, 309.

The ’297, *Kreitler*, *Suomela*, *Rasmussen*, and *Myr* are all in the field of mapping on electronic devices to show travel-related information. All five address the known problem of calculating and displaying travel information, with *Kreitler/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 combine *Myr* with *Kreitler*, *Suomela*, and

Rasmussen for a more effective and efficient navigation system that shows panning maps with travel routes to the MO. *Id.*, 310.

A POSITA would have been motivated to modify and have had a reasonable expectation of success in modifying *Kreitler/Suomela/Rasmussen* to include travel route information as taught by *Myr* for the reasons in §VIII.A. *Id.*

A POSITA would have found it obvious to include panning operations in short intervals, taught by *Rasmussen*, along the travel route, taught by *Myr*, until the center of the map corresponds to the MO when the map is repositioned to display a travel route from a point on the first portion of the map to the MO to “present a smooth pan along contiguous map imagery.” *Rasmussen*, 21:37-39. To present the smooth pan in short intervals along the travel route, a POSITA 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*, 20:59-22:1; Figs. 17-21), with *Myr*’s travel route that is calculated from a point on the first portion of the electronic map to the MO when “[t]he driver enters the desired destination point” on a travel map displayed on a screen. *Myr*, 7:1-6. Rosenberg, 311.

A POSITA would have been motivated to modify *Kreitler/Suomela* to display an animated transition, taught by *Rasmussen*, to provide “a smoother, animated pan” (*Rasmussen*, 20:60-66) with Myr’s travel route with “algorithm Z [that] is used to calculate the shortest travel route using current travel times” between the starting point and desired destination point (*Myr*, 6:18-19) 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 POSITA would also have been motivated to modify *Kreitler/Suomela*’s mapping system to include a path to a determined MO to improve the overall user experience of the *Kreitler/Suomela* system and allow for the pans to be “presented smoothly” using the process taught in *Rasmussen* and *Myr*. *Rasmussen*, 21:63-22:1 *Myr*, 6:18-19, 7:1-6. Rosenberg, 312.

A POSITA would have also had a reasonable expectation of success in modifying *Kreitler/Suomela* to include *Rasmussen*’s animated transition with *Myr*’s travel route. Such a modification would have required only routine skill in the art, as implementing the steps taught by *Rasmussen* to define a path along which to incrementally pan a map from one map view to another map view, including a path to an MO, and *Myr* to define a travel route was common in the art before the date of the ’297 patent. *Id.* *Kreitler* itself already discloses panning a map from one map area to another map area (*Kreitler*, 6:58-60) and using the

MO's address as the center point to generate the map image (*id.*, 6:58-60, 12:32-36) and adding the panning operations, taught by *Rasmussen*, and travel route, taught by *Myr*, 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 POSITA. Accordingly, modifying *Kreitler/Suomela* to display an animated transition to include panning operations in short intervals along the travel route and until the center of the map corresponds to the MO to display a travel route from a point on the first portion of the electronic map to the MO when the map is repositioned would have implemented only conventional systems and methods in ways a POSITA would have readily understood and expected to succeed. Rosenberg, 313.

B. Claim 22

Kreitler/Suomela/Rasmussen/Myr discloses claim 22.

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

Kreitler/Suomela/Rasmussen/Myr discloses [22a].

Myr discloses defining and “calculat[ing] the shortest travel route.” *Myr*, 6:18-19. Moreover, *Myr* discloses repeatedly performing calculations “until an optimal travel route and corresponding travel time have been calculated.” *Id.*, 14:19-22; Rosenberg, 316.

As explained in §X.A, a POSITA would have been motivated to incorporate *Myr*'s travel route calculation into the *Kreitler/Suomela/Rasmussen* combination. *Id.*, 317.

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

Kreitler/Suomela/Rasmussen/Myr renders obvious [22b].

Rasmussen discloses a digital mapping system that uses a tiling approach for displaying digital maps. *Rasmussen*, 3:13-21, 3:25-42, 6:21-48. The system is configured to include “map image panning operations” that present a transition from one map view to a new map view “as a smooth[], animated pan.” *Id.*, 20:59-66; Rosenberg, 319.

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 §X.A, a POSITA 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 POSITA would have understood that *Myr* also uses the shortest distance between two points in determining the shortest route to any destination. Therefore, a POSITA 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 POSITA would have

understood that panning in *Rasmussen* includes panning along the defined travel route. Rosenberg, 320.

C. Claim 26: wherein the animation includes panning the electronic map in small intervals along a travel route until the center of the electronic map corresponds approximately to the coordinates of the MO.

Kreitler/Suomela/Rasmussen/Myr renders obvious claim 26.

As explained in [19d-g] and [22a-b] (§IX.B.4 and §X.B),

Kreitler/Suomela/Rasmussen teaches panning the electronic map until the center of the electronic map corresponds approximately to the coordinates of the MO. *Id.*, 322. *Rasmussen* discloses that panning operations occur in small intervals along a path by calculating the change in pixel coordinates in both the x and y directions with the linear equation “ $(dx, dy) = (x, y) - (x^1, y^1)$,” “mov[ing] the tile grid [of the map] by an offset of $(dx, dy)/n$ and display[ing] the resulting frame.” *Rasmussen*, 20:59-66, 21:19-21, 21:28-30, Figs. 17-21; Rosenberg, 323.

As explained in [22a-b] (§X.B), *Kreitler/Suomela/Rasmussen/Myr* discloses panning the map along a travel route. Rosenberg, 324-325.

As explained in §X.A, a POSITA would have understood that when the map is repositioned to display a travel route from a point on the first portion of the electronic map to the MO, panning operations are implemented in short intervals

along the travel route and until the center of the map corresponds to the MO. *Id.*, 326.

As explained in §X.A, a POSITA would have been motivated to incorporate *Myr*'s travel route into the *Kreitler/Suomela/Rasmussen*. *Id.*, 327.

D. Claim 27: wherein the travel route spans a distance from a point on the first portion of the electronic map to the MO.

Kreitler/Suomela/Rasmussen/Myr renders obvious claim 27.

As explained for [19c] and [19d] (§IX.B.3 and §IX.B.4), *Kreitler/Suomela/Rasmussen* teaches spanning a distance from a point on the first portion of the electronic map to the MO. *Id.*, 329.

As explained for claim 20 (§VIII.D), *Myr* discloses calculating a travel route using current travel times from a starting point (a point in the first area of the map) to a destination point (the location of the MO), which route necessarily “*spans a distance*” between those two points. *Myr*, 5:59-65, 6:18-19; Rosenberg, 330.

XI. FINTIV DISCRETIONARY DENIAL IS INAPPROPRIATE

At this time, no factors from *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 5-6 (PTAB Mar. 20, 2020), favor non-institution under 35 U.S.C. §314(a) because no trial date has been set in the parallel litigation.

XII. DISCRETIONARY DENIAL IS INAPPROPRIATE UNDER 35 U.S.C. § 325(D)

Denial of institution under 35 U.S.C. §325 would be improper under *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 (PTAB Dec. 15, 2017). None of the references cited here were before the Office during prosecution. *See generally* Ex. 1002. And the asserted references and combinations are materially different and not cumulative of the prior art cited during prosecution, where the Examiner relied solely on U.S. Patent App. Pub. No. 2007/0050129 (“*Salmre*,” Ex. 1010). Ex. 1002, 89-90. But the Examiner found *Salmre* did not disclose “receiving user input selecting the OVI”; “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 “displaying the MO approximately at the center of the secondary area,” which were added by amendment. *Id.*, 66, 74; *see also id.*, 55-59 (allowing claims following amendment).

The prior art references relied on here are materially different from and not cumulative of the earlier references at least because they teach claim elements identified as “allowable” during prosecution, including, “receiving user input selecting the OVI”; “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 “displaying the MO approximately at the center of the secondary

area” as explained in the grounds above. There is thus little to no overlap to arguments during prosecution. *Becton*, Paper 8 at 23-24.

XIII. MANDATORY NOTICES

A. Real Party-in-Interest

The real parties-in-interest are BMW of North America, LLC, and Bayerische Motoren Werke AG.

B. Related Matters

To the best of Petitioner’s knowledge, the ’297 patent has been or is involved in at least each of the following district court litigations, of which the latest three cases are currently active:

Name	Number	Court	Filed
<i>NorthStar Systems LLC v. Bayerische Motoren Werke AG</i>	2:22-cv-00496	EDTX	Dec. 27, 2022
<i>NorthStar Systems LLC v. Hyundai Motor Company et al.</i>	2:22-cv-00495	EDTX	Dec. 23, 2022
<i>NorthStar Systems LLC v. Volkswagen AG</i>	2:22-cv-00486	EDTX	Dec. 22, 2022
<i>NorthStar Systems LLC v. Mercedes-Benz Group AG</i>	2:22-cv-00323	EDTX	Aug. 19, 2022
<i>NorthStar Systems LLC v. Lenovo Group Ltd.</i>	2:22-cv-00267	EDTX	July 18, 2022
<i>NorthStar Systems LLC v. HP Inc.</i>	2:22-cv-00265	EDTX	July 15, 2022
<i>NorthStar Systems LLC v. Honda Motor Company, Ltd.</i>	2:22-cv-00143	EDTX	May 11, 2022
<i>NorthStar Systems LLC v. Xiaomi Corporation et al.</i>	2:22-cv-00139	EDTX	May 10, 2022

<i>NorthStar Systems LLC v. TCT Mobile Int'l Ltd.</i>	2:20-cv-00383	EDTX	Dec. 15, 2020
<i>NorthStar Systems LLC v. Kyocera Corp.</i>	2:20-cv-00384	EDTX	Dec. 15, 2020
<i>NorthStar Systems LLC v. Shenzhen OnePlus Science & Tech. Co., Ltd.</i>	2:20-cv-00385	EDTX	Dec. 15, 2020
<i>NorthStar Systems LLC v. ZTE Corp.</i>	2:20-cv-00386	EDTX	Dec. 15, 2020

C. Lead and Back-Up Counsel, and Service Information

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Petitioner consents to e-mail service at BMW-NorthStar-
IPRs@finnegan.com.

XIV. GROUNDS FOR STANDING

Petitioner certifies the '297 patent is available for IPR, and Petitioner is not barred or estopped from requesting IPR on the grounds identified in this Petition.

XV. CONCLUSION

Petitioner requests the Board institute IPR and cancel claims 1-30 as unpatentable.

Date: May 5, 2023

Respectfully Submitted,

/Lionel M. Lavenue/

Lionel M. Lavenue, Lead Counsel
Reg. No. 46,859

CERTIFICATION UNDER 37 C.F.R. §42.24(d)

Pursuant to 37 C.F.R. §42.24(a)(1)(i), the undersigned hereby certifies that the foregoing PETITION FOR *INTER PARTES* REVIEW contains 13,947 words, excluding the parts of this Petition that are exempted under 37 C.F.R. §42.24(a), as measured by the word-processing system used to prepare this paper.

/Lionel M. Lavenue/

Lionel M. Lavenue, Lead Counsel

Reg. No. 46,859

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§42.6(e) and 42.105(a), the undersigned certifies that on May 5, 2023, a copy of the foregoing **Petition for *Inter Partes* Review, Petitioner's Power of Attorney and Designation of Lead and Backup Counsel, and Exhibits 1001-1017** were served by Priority Overnight FedEx on the correspondence address of record with the USPTO as follows:

Michael Cofield
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A courtesy copy has also been mailed to the following:

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Date: May 5, 2023

By: /Lisa C. Hines/

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