

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,

Petitioner,

v.

BLUESTONE VENTURES INC.,

Patent Owner.

Case No. IPR2026-00418
U.S. Patent No. 11,473,925

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,473,925**

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List of Exhibits

Exhibit	Description
EX1001	U.S. Patent No. 11,473,925 (“the ’925 patent”)
EX1002	Prosecution File History of the ’925 patent
EX1003	Expert Declaration of Dr. Philip A. Dafesh
EX1004	<i>Curriculum Vitae</i> of Dr. Philip A. Dafesh
EX1005	U.S. Patent Application Publication No. 2002/0052689 (“Yamashita”)
EX1006	U.S. Patent No. 6,381,535 (“Durocher”)
EX1007	U.S. Patent No. 6,636,806 (“Irie”)
EX1008	U.S. Patent Application Publication No. 2001/0037174 (“Dickerson”)
EX1009	Complaint, <i>Bluestone Ventures Inc., v. Google LLC</i> , No. 7-25-cv-00569 (W.D. Tex. Dec. 12, 2025) (Dkt. 1)
EX1010	U.S. Patent No. 5,541,845 (“Klein”)
EX1011	U.S. Patent No. 5,774,824 (“Streit”)
EX1012	Lawrence E. Sweeney, Jr., Ph.D., <i>Comparative Benefits of Various Automotive Navigation and Routing Technologies</i> , PROCEEDINGS OF POSITION, LOCATION AND NAVIGATION SYMPOSIUM - PLANS ’96, 415-421 (1996)
EX1013	Eric Abbott and David Powell, <i>Land-Vehicle Navigation Using GPS</i> , 87 PROCEEDINGS OF IEEE 1, 145-62 (1999)
EX1014	Yilin Zhao, <i>Vehicle Location and Navigation Systems</i> (1997)
EX1015	John Lu et al., <i>Operational Evaluation of Right Turns Followed By U-turns as an Alternative to Direct Left Turns</i> , UNIVERSITY OF SOUTH FLORIDA CENTER FOR URBAN TRANSPORTATION RESEARCH,

Exhibit	Description
	VOL. 3 (2001)
EX1016	Letter from Google, LLC, to Bluestone Ventures, Inc., Regarding Sotera Stipulation (July 30, 2026).

LISTING OF CLAIMS

Claim 1	
[1pre]	A computer program product of a navigation system for dynamically calculating and displaying multiple travel routes for a mobile device and for tracking the mobile device along the multiple travel routes, the navigation system including the mobile device and one or more servers, the computer program product comprising a non-transitory computer readable medium including computer instructions that when executed by at least one processor of the navigation system cause the navigation system to:
[1a]	provide a graphical user interface (GUI) on a display of the mobile device;
[1b]	enable a user of the mobile device to, using the GUI, specify a destination location; and
[1c]	as the mobile device travels to the destination location,
[1d]	(i) receive a first location update signal generated by a positioning device of the mobile device, the positioning device including a GPS receiver, and the first location update signal representing a first location of the mobile device at a first time,
[1e]	(ii) automatically calculate, using map data, the destination location and at least the first location update, a first possible route of travel of the mobile device from the first location towards the destination location and a second possible route of travel of the mobile device from the first location towards the destination location, the first possible route of travel including a first roadway intersection and the second route of travel including the first roadway intersection,
[1f]	(iii) cause the GUI to display a graphical representation of a map together with a graphical representation of the first possible route of travel and a graphical representation of the second possible route of travel on segments of roadways of the graphical representation of the map,
[1g]	(iv) receive a second location update generated by the positioning device of the mobile device, the second location update representing a second location of the mobile device at a second time after the first time,
[1h]	(v) automatically calculate, using the map data and at least the first location update and the second location update, a first estimated route

	of travel of the mobile device from the first location to the second location,
[1i]	(vi) determine whether the first estimated route of travel includes the first roadway intersection, whether the first possible route of travel includes the second location, and whether the second possible route of travel includes the second location,
[1j]	(vii) if the first estimated route of travel is determined to include the first roadway intersection, the first possible route of travel is determined to include the second location, and the second possible route of travel is determined to not include the second location, automatically causing the GUI to continue to display the graphical representation of the map together with the graphical representation of the first possible route of travel and automatically causing the GUI to no longer display the graphical representation of the second possible route of travel,
[1k]	(viii) if the first estimated route of travel is determined to include the first roadway intersection, the first possible route of travel is determined to not include the second location, and the second possible route of travel is determined to include the second location, automatically cause the GUI to continue to display the graphical representation of the map together with the graphical representation of the second possible route of travel and automatically cause the GUI to no longer display the graphical representation of the first possible route of travel,
[1l]	(ix) automatically calculate, using map data, the destination location and at least the second location update, a third possible route of travel of the mobile device from the second location towards the destination location and a fourth possible route of travel of the mobile device from the second location towards the destination location, the second possible route of travel including a second roadway intersection and the third route of travel including the first roadway intersection,
[1m]	(x) cause the GUI to display the graphical representation of the map together with a graphical representation of the third possible route of travel and a graphical representation of the fourth possible route of travel on segments of roadways of the graphical representation of the map,

[1n]	(xi) receive a third location update generated by the positioning device of the mobile device, the third location update representing a third location of the mobile device at a third time after the second time,
[1o]	(xii) automatically calculate, using the map data and at least the second location update and the third location update, a second estimated route of travel of the mobile device from the second location to the third location,
[1p]	(xiii) determine whether the second estimated route of travel includes the second roadway intersection, whether the third possible route of travel includes the third location, and whether the fourth possible route of travel includes the third location,
[1q]	(xiv) if the second estimated route of travel is determined to include the second roadway intersection, the third possible route of travel is determined to include the third location, and the fourth possible route of travel is determined to not include the third location, automatically cause the GUI to continue to display the graphical representation of the map together with the graphical representation of the third possible route of travel and automatically cause the GUI to no longer display the graphical representation of the fourth possible route of travel,
[1r]	(xv) if the second estimated route of travel is determined to include the second roadway intersection, the third possible route of travel is determined to not include the third location, and the fourth possible route of travel is determined to include the third location, automatically cause the GUI to continue to display the graphical representation of the map together with the graphical representation of the fourth possible route of travel and automatically cause the GUI to no longer display the graphical representation of the third possible route of travel.
Claim 2	
[2]	The computer program product of claim 1, wherein first possible route of travel, the second possible route of travel, the third possible route of travel, and the fourth possible route of travel are calculated by the mobile device.
Claim 3	
[3]	The computer program product of claim 1, wherein first possible route of travel, the second possible route of travel, the third possible route of travel, and the fourth possible route of travel are calculated by the one or more servers.

Claim 4	
[4]	The computer program product of claim 1, wherein first estimated route of travel and the second estimated route of travel are calculated by the mobile device.
Claim 5	
[5]	The computer program product of claim 1, wherein first estimated route of travel and the second estimated route of travel are calculated by the one or more servers.
Claim 6	
[6]	The computer program product of claim 1, wherein the first estimated route of travel is an actual route traveled by the mobile device from the first location to the second location along a known network of road paths and the second estimated route of travel is an actual route traveled by the mobile device from the second location to the third location along the known network of road paths.
Claim 7	
[7pre]	The computer program product of claim 1, wherein the mobile device corresponds to a preferred service provider and wherein the non-transitory computer readable medium further includes computer instructions that when executed by the at least one processor of the computing system cause the computing system to:
[7a]	designate, based on a determined distance between the preferred service provider and the destination location, a determined estimated time of arrival at the destination location of the preferred service provider, and a vehicle type of the preferred service provider, one of a plurality of available service providers as the preferred service provider to provide a service for a customer.
Claim 9	
[9pre]	A method for dynamically calculating and displaying multiple travel routes for a mobile device and for tracking the mobile device along the multiple travel routes, the method performed by a navigation system including the mobile device and one or more servers, the computer program product comprising a non-transitory computer readable medium including computer instructions that when executed by at least one processor of the navigation system cause the navigation system to:
[9a]	providing a graphical user interface (GUI) on a display of a mobile device,

[9b]	the GUI enabling a user of the mobile device to specify a destination location; and
[9c]	as the mobile device travels to the destination location,
[9d]	(i) receiving a first location update signal generated by a positioning device of the mobile device, the positioning device including a GPS receiver, and the first location update signal representing a first location of the mobile device at a first time,
[9e]	(ii) automatically calculating, using map data, the destination location and at least the first location update, a first possible route of travel of the mobile device from the first location towards the destination location and a second possible route of travel of the mobile device from the first location towards the destination location, the first possible route of travel including a first roadway intersection and the second route of travel including the first roadway intersection,
[9f]	(iii) causing the GUI to display a graphical representation of a map together with a graphical representation of the first possible route of travel and a graphical representation of the second possible route of travel on segments of roadways of the graphical representation of the map,
[9g]	(iv) receiving a second location update generated by the positioning device of the mobile device, the second location update representing a second location of the mobile device at a second time after the first time,
[9h]	(v) automatically calculating, using the map data and at least the first location update and the second location update, a first estimated route of travel of the mobile device from the first location to the second location,
[9i]	(vi) determining whether the first estimated route of travel includes the first roadway intersection, whether the first possible route of travel includes the second location, and whether the second possible route of travel includes the second location,
[9j]	(vii) if the first estimated route of travel is determined to include the first roadway intersection, the first possible route of travel is determined to include the second location, and the second possible route of travel is determined to not include the second location, automatically causing the GUI to continue to display the graphical representation of the map together with the graphical representation of the first possible route of travel and automatically causing the GUI to

	no longer display the graphical representation of the second possible route of travel,
[9k]	(viii) if the first estimated route of travel is determined to include the first roadway intersection, the first possible route of travel is determined to not include the second location, and the second possible route of travel is determined to include the second location, automatically causing the GUI to continue to display the graphical representation of the map together with the graphical representation of the second possible route of travel and automatically causing the GUI to no longer display the graphical representation of the first possible route of travel,
[9l]	(ix) automatically calculating, using map data, the destination location and at least the second location update, a third possible route of travel of the mobile device from the second location towards the destination location and a fourth possible route of travel of the mobile device from the second location towards the destination location, the second possible route of travel including a second roadway intersection and the third route of travel including the first roadway intersection,
[9m]	(x) causing the GUI to display the graphical representation of the map together with a graphical representation of the third possible route of travel and a graphical representation of the fourth possible route of travel on segments of roadways of the graphical representation of the map,
[9n]	(xi) receiving a third location update generated by the positioning device of the mobile device, the third location update representing a third location of the mobile device at a third time after the second time,
[9o]	(xii) automatically calculating, using the map data and at least the second location update and the third location update, a second estimated route of travel of the mobile device from the second location to the third location,
[9p]	(xiii) determining whether the second estimated route of travel includes the second roadway intersection, whether the third possible route of travel includes the third location, and whether the fourth possible route of travel includes the third location,
[9q]	(xiv) if the second estimated route of travel is determined to include the second roadway intersection, the third possible route of travel is determined to include the third location, and the fourth possible route of travel is determined to not include the third location, automatically

	causing the GUI to continue to display the graphical representation of the map together with the graphical representation of the third possible route of travel and automatically causing the GUI to no longer display the graphical representation of the fourth possible route of travel,
[9r]	(xv) if the second estimated route of travel is determined to include the second roadway intersection, the third possible route of travel is determined to not include the third location, and the fourth possible route of travel is determined to include the third location, automatically causing the GUI to continue to display the graphical representation of the map together with the graphical representation of the fourth possible route of travel and automatically causing the GUI to no longer display the graphical representation of the third possible route of travel.
Claim 10	
[10]	The method of claim 9, wherein first possible route of travel, the second possible route of travel, the third possible route of travel, and the fourth possible route of travel are calculated by the mobile device.
Claim 11	
[11]	The method of claim 9, wherein first possible route of travel, the second possible route of travel, the third possible route of travel, and the fourth possible route of travel are calculated by one or more servers remote from the mobile device.
Claim 12	
[12]	The method of claim 9, wherein first estimated route of travel and the second estimated route of travel are calculated by the mobile device.
Claim 13	
[13]	The method of claim 9, wherein first estimated route of travel and the second estimated route of travel are calculated by one or more servers remote from the mobile device.
Claim 14	
[14]	The method of claim 9, wherein the first estimated route of travel is an actual route traveled by the mobile device from the first location to the second location along a known network of road paths and the second estimated route of travel is an actual route traveled by the mobile device from the second location to the third location along the known network of road paths.
Claim 15	
[15pre]	The method of claim 9, wherein the mobile device corresponds to a preferred service provider and wherein the method further comprises:

[15a]	designating, based on a determined distance between the preferred service provider and the destination location, a determined estimated time of arrival at the destination location of the preferred service provider, and a vehicle type of the preferred service provider, one of a plurality of available service providers as the preferred service provider to provide a service for a customer.
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I. Introduction

Google LLC respectfully requests review and cancellation of claims 1-7 and 9-15 of U.S. Patent No. 11,473,925.

The '925 patent was filed until May 17, 2021—almost two decades after both the originating provisional application (April 10, 2002) and the first nonprovisional (April 10, 2003). EX1001, code (60). Less than six months after issuing on October 18, 2022, the '925 patent expired on April 1, 2023. Bluestone Ventures Inc. (“Patent Owner”) waited almost three years after its expiration to assert the '925 patent against Google. EX1009.

During prosecution, Applicant canceled its first thirty-nine claims to overcome §§101 and 112 rejections. EX1002, 99-108. Applicant then added sixteen claims that had little-to-no overlap with the canceled claims. EX1002, 99-108. The Office allowed these claims without expressing reasons for allowance. EX1002, 74-79.

Had the Office conducted a thorough examination of the claims, it would have found the challenged claims unpatentable over the prior art. Neither the Office nor Patent Owner identified or considered the asserted prior art during examination. Claims 1-6 and 9-14 are obvious over Yamashita (EX1005), Durocher (EX1006), and Irie (EX1007), and claims 7 and 15 are obvious over Yamashita, Durocher, Irie, and Dickerson (EX1008).

II. Relief Requested and Grounds

Petitioner relies on the following prior art and grounds:

Exhibit	Prior Art	Filed	Published	Prior Art at least under pre-AIA 35 U.S.C.
EX1005	U.S. Pub. No. 2002/0052689 (“Yamashita”)	10/29/2001	5/2/2002	§102(e)
EX1006	U.S. Patent No. 6,381,535 (“Durocher”)	3/20/1998-PCT 9/8/2000-US	4/30/2002	§102(e)
EX1007	U.S. Patent No. 6,636,806 (“Irie”)	7/4/2000-PCT 2/27/2002-US	10/21/2003	§102(e)
EX1008	U.S. Pub. No. 2001/0037174 (“Dickerson”)	4/4/2001	11/1/2001	§102(a)

Grounds	Claims	Basis	Prior Art
1	1-6 and 9-14	§103	Yamashita, Durocher, and Irie
2	7 and 15	§103	Yamashita, Durocher, Irie, and Dickerson

III. Level of Ordinary Skill

A person of ordinary skill in the art (“POSITA”) as of the earliest claimed priority date of the ’925 patent would have possessed at least a bachelor’s degree in electrical engineering, computer science, or related engineering disciplines, and at least two years of experience in navigation systems, location-based services,

map-based technologies, and/or interfaces for their use. A POSITA could have more formal education and less technical experience, or vice versa. EX1003, ¶62.

IV. Claim Construction

Claims must be construed only to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Here, no terms need construction to resolve the controversy. Petitioner asserts that the preambles of independent claims 1 and 9 are limiting and has addressed them accordingly.¹

V. The '925 Patent

The '925 patent was filed May 17, 2021, claiming priority to April 10, 2002.² EX1001, codes (22), (60).

The original claim set covered designating subsets of service providers. EX1002, 258-60. The Office rejected the original claims under §101, §112(b), and non-statutory double patenting grounds. EX1002, 190-206. Applicant subsequently

¹ Petitioner asserts that claim 9's preamble is limiting in the related litigation.

That is the only construction Petitioner offers in the related litigation for the '925 patent.

² Petitioner does not concede that any of the challenged claims are entitled to the earliest possible priority date.

submitted terminal disclaimers, canceled half of the original claims, and submitted new claims with a similar scope. EX1002, 136-39, 174-79. The Office again rejected the claims under §101 and §112(a). EX1002, 116-29. Applicant then canceled all existing claims and submitted entirely new claims directed to different and broader subject matter—route determination and navigation with only 2 claims requiring the system be used by service providers. EX1002, 98-108. The Office allowed the claims without expressing reasons for allowance. EX1002, 74-79.

The '925 patent claims “a navigation system for dynamically calculating and displaying multiple travel routes for a mobile device and for tracking the mobile device along the multiple travel routes.” EX1002, 108; EX1001, 1:66-2:1, 4:62-67, 6:30-34, 10:55-57. The claimed process recites three basic steps:

Step 1: as a mobile device travels to a destination, calculate and display multiple possible routes of travel based on the iteratively updated location of the device ([1c]-[1f]);

Step 2: determine which route and display only that route the mobile device is on by estimating the route traveled and then comparing the estimated route and the location of the mobile device with the possible routes ([1h]-[1k]); and

Step 3: repeat steps 1 and 2 ([1l]-[1r]).

VI. Overview of the Prior Art and Combinations

A. Overview of Ground 1: Yamashita, Durocher, and Irie

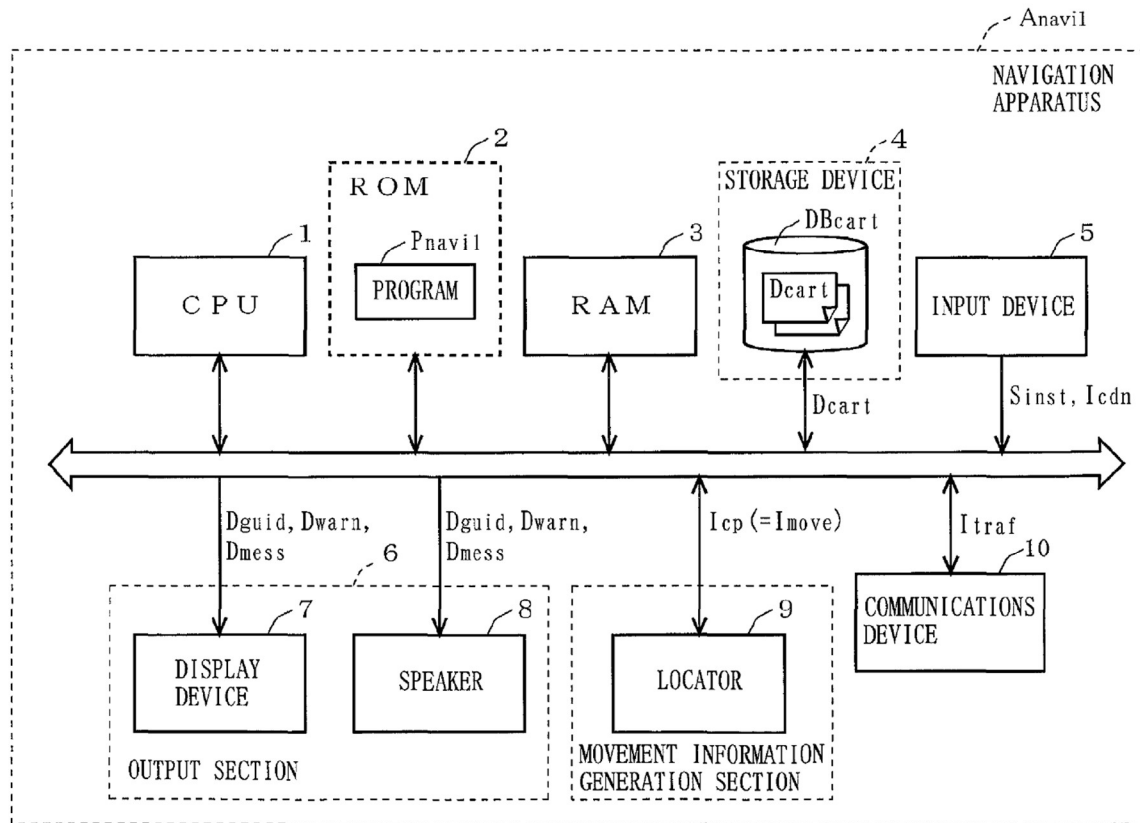
Yamashita discloses a navigation system, comprising a mobile device with a graphical user interface (“GUI”) and servers, that performs the three claimed steps ([1c]-[1f], [1h]-[1k], and [1l]-[1r]). Durocher and Irie disclose ancillary claimed features (like calculating routes on a server and rerouting through a previously traversed location).

1. Yamashita

Yamashita discloses a navigation system, including a navigation apparatus Anavi,³ for “guiding a user to a destination” by “searching for a plurality of routes” and “automatically selecting one route from several others derived through route search.” Yamashita, ¶¶1-2, 15, 18-19, 21, 74-75, 96, 112, 159-60, Figs. 1, 17.

³ Yamashita references “Anavi” with different numbers (e.g., Anavi1, Anavi3, etc.). The numbers designate certain features implemented on the device, but the base device remains the same.

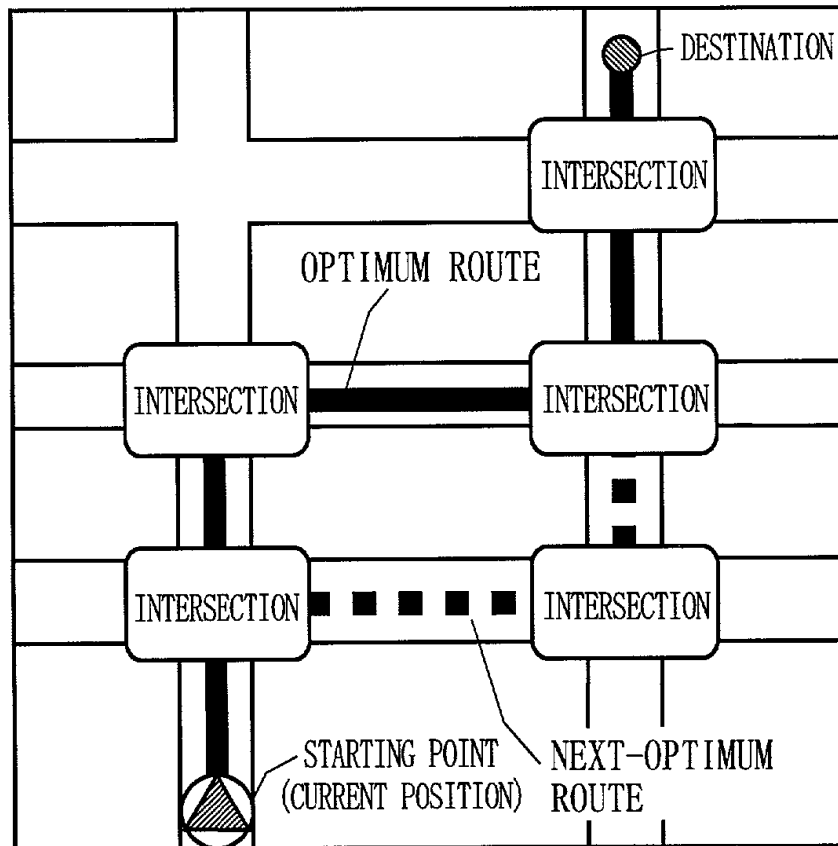
FIG. 1



Yamashita, Fig. 1; Fig. 17.

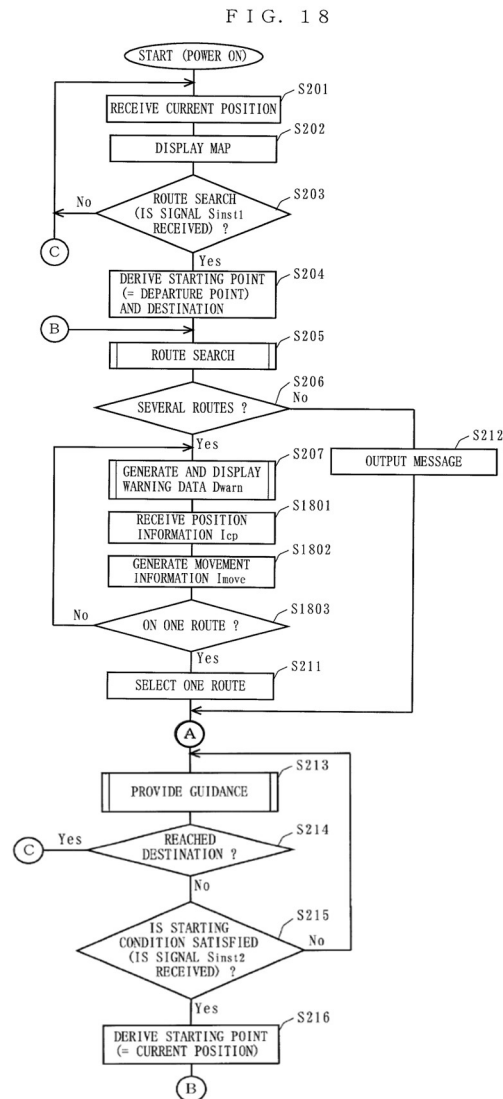
Anavi includes a processor (CPU 1), memory (ROM 2, RAM 3, storage device 4), an input device 5, a display device 7 (that displays a GUI map), a GPS receiver (locator 9), and a transmitter to communicate over the Internet with servers (communications device 10). *Id.*, ¶58. These components allow for “the departure point and the destination” to be “inputted by the user via the input device 5.” *Id.*, ¶74-75. The locator 9 is “a GPS receiver” (*id.*, ¶67) that “detects the user’s current position, and generates position information *Icp*.” *Id.* The output section 6 presents routing information shown in Figure 9. *Id.*, ¶¶66, 109, Fig 9.

F I G . 9



Yamashita, Fig. 9.

As in the '925 patent, Yamashita performs an iterative process for generating alternative possible routes the user travels. Yamashita, ¶¶86, 94, 103. Figures 2 and/or 18 combined with Figure 3 (at A) depicts this process:



Yamashita, Figs. 3 and 18 (combined).

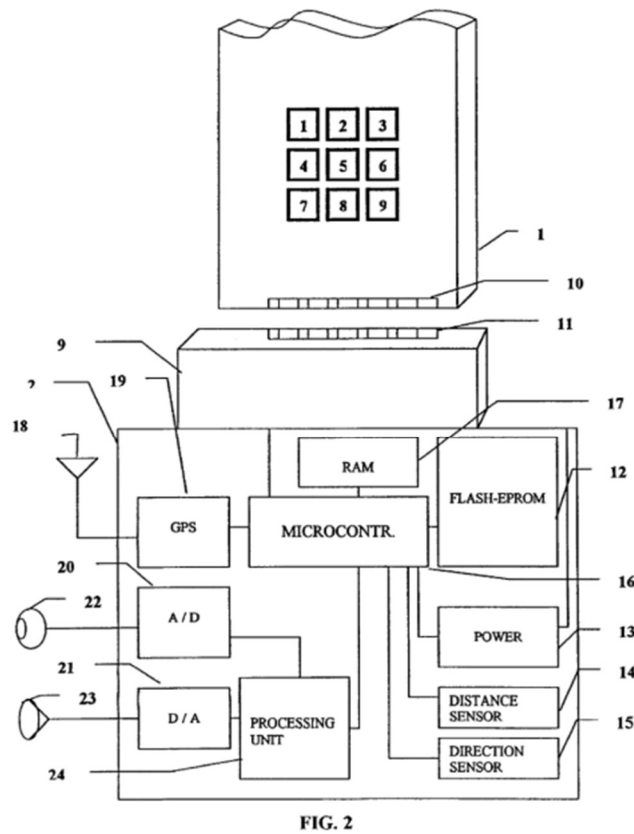
Anavi receives the current position from a GPS receiver; displays a map of the current location and surrounding area; receives instructions to start the route search process through a user specifying a desired destination; derives the starting and destination points; and searches for potential routes. Yamashita, ¶¶67, 69-72, 74-77, 152 (noting Figs. 2 and 18 are largely the same). If there are several

possible routes (e.g., an optimum and a next-optimum route), Yamashita displays each route on the map. Yamashita, ¶¶78-83, 85-93. As the device travels, it collects movement information. Yamashita, ¶¶112-119 (S208-S210), 153-56 (S1801-S1803), Figs 2, 18. In Figure 18, this movement information includes trail data, abbreviated as “Itraj,” about the user’s path and then compares the user’s traveled path against the routes to determine which route was taken. Yamashita, ¶¶154-56. Yamashita proposes additional routes based on current location and traffic. Yamashita, ¶¶68, 133. Yamashita repeats this process until the device reaches the destination. Yamashita, ¶¶124-25.

Yamashita is analogous to the ’925 patent at least because it is within the same field of endeavor: facilitating dynamic route-mapping and navigation assistance. EX1001, 1:5-10, 3:42-45; Yamashita, ¶¶2, 6, 15-16, 18-19.

2. Durocher

Like the ’925 patent and Yamashita, Durocher discloses a navigational system with a centralized server to facilitate real-time guidance for navigating to a destination. Durocher, 1:5-11, 1:14-23. The user enters their request on the terminal, which may be “a mobile telephone or an electronic organizer” (*id.*, 7:65-67, 8:23-29) using a “keyboard, light pen or touch screen” (*id.*, 9:56-60), and the server determines routes (*id.*, 3:3-10).



Durocher, Fig. 2.

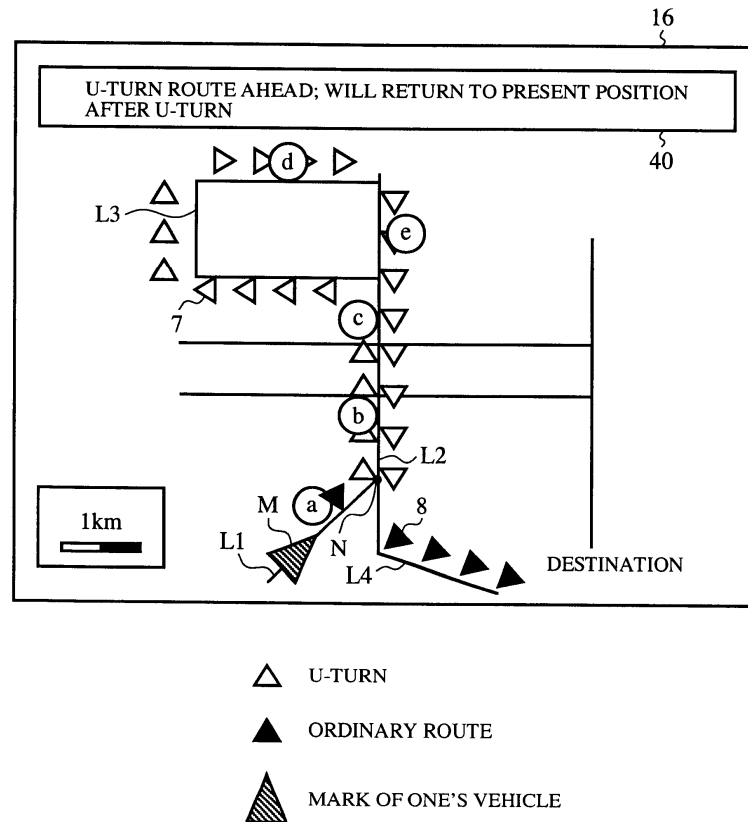
Durocher’s “server contains cartographic data and is capable of calculating itineraries” based on a user request indicating “start and destination points” and transmits both a primary route and a “best alternative” route, in the case the driver “deviat[es] from its course and take[s] one or the other of the crossroads.” *Id.*, 2:60-3:2, 6:66-7:4, 3:3-6, 3:59-67.

Durocher is analogous to the '925 patent at least because it is within the same field of endeavor: facilitating dynamic route-mapping and navigation assistance. EX1001, 1:5-10, 3:42-45; Durocher, 3:38-46, 3:59-4:3; EX1003, ¶¶76-80.

3. Irie

Irie discloses a “guide indication method in an onboard navigator” that addresses the case in which a traveling vehicle needs to make a U-turn or backtrack through an earlier-traversed point or intersection to reach a subsequent location. Irie, 1:10-17, 1:63-2:5, 4:23-43, 5:11-17. This scenario expressly proposes a solution to a problem Yamashita recognized—if there is a traffic jam and a user needs to reroute. Yamashita, ¶¶68, 133. The next optimal route may require backtracking or making a U-turn. EX1015, 9. Irie explains a U-turn may also be necessary when an intersection prohibits a turn in a certain direction. Irie, 4:23-43, 5:11-17.

FIG.2



Irie, Fig. 2.

Irie is analogous to the '925 patent at least because it is within the field of endeavor: facilitating dynamic route-mapping and navigation assistance. EX1001, 1:5-10, 3:42-45; Irie, 3:20-23; 4:1-4; EX1003, ¶¶81-84.

B. Overview of Ground 2: Yamashita, Durocher, Irie, and Dickerson

Claims 7 and 15 add that the system is used by a service provider, like a ride-share service. While Yamashita does not expressly disclose a service provider implementation, Dickerson does, and it would have been obvious and beneficial to

combine Yamashita's modified navigation system with Dickerson's central assignment system for service providers.

1. Dickerson

Dickerson facilitates passenger transportation using a central assigning system "capable of matching a passenger's trip request with current transit parameters to determine vehicle assignment and routes that reduce passenger trip and wait times." Dickerson, Abstract, ¶¶3, 19, Fig. 1.

Dickerson is analogous to the '925 patent at least because it is within the field of endeavor: facilitating dynamic route-mapping and navigation assistance. EX1001, 1:5-10, 3:42-45; Dickerson, ¶¶19, 102; EX1003, ¶¶87-89. Dickerson discloses a system that facilitates multi-vehicle navigation and route generation, to efficiently transport passengers to their respective destinations. Dickerson, ¶¶19, 102. Dickerson is also pertinent to a problem the '925 patent purports to solve: "designating ... one of a plurality of available service providers ... [to] a customer" based on various metrics. EX1001, cl. 15, 18:44-48; Dickerson, ¶24.

VII. Ground 1: Yamashita, Durocher, and Irie Render Obvious Claims 1-6 and 9-14

A. Independent Claim 1

- 1. [1pre] A computer program product of a navigation system for dynamically calculating and displaying multiple travel routes for a mobile device and for tracking the mobile device along the multiple travel routes,**

the navigation system including the mobile device and one or more servers,

the computer program product comprising a non-transitory computer readable medium including computer instructions that when executed by at least one processor of the navigation system cause the navigation system to:

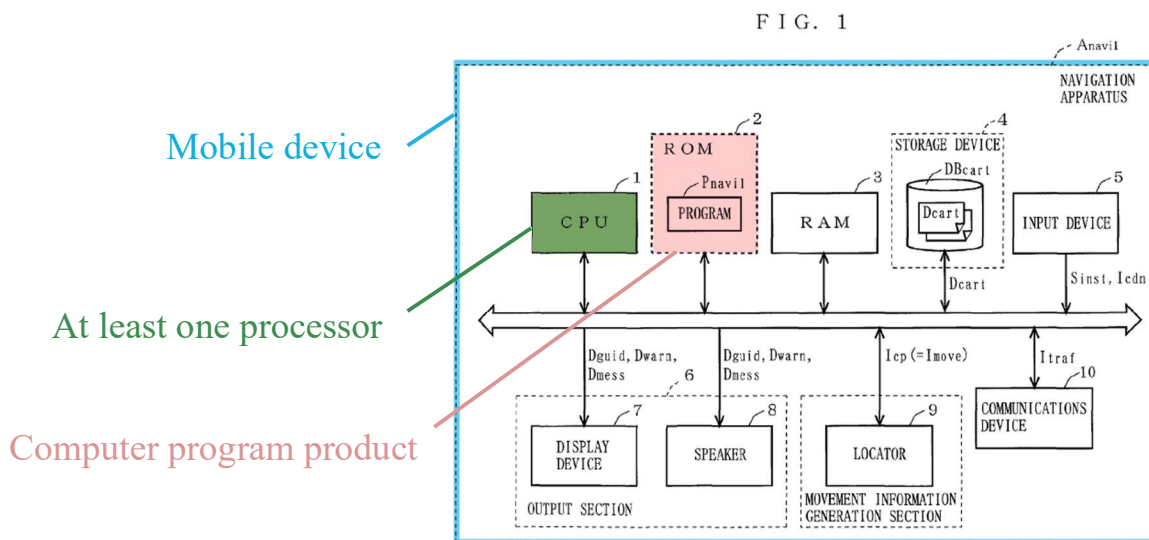
Yamashita teaches [1pre]. EX1003, ¶¶90-95. A POSITA would have understood that claim 1's preamble is limiting. *Id.*

Yamashita discloses the claimed computer program product because its “navigation apparatus Anavi1” includes “ROM 2 [that] is a program memory on which a program Pnavi1 for the navigation apparatus Anavi1 has been previously” downloaded from a “network server.” Yamashita, ¶¶58-61, 67-69, 159-60, Figs. 1, 17; EX1003, ¶91. Yamashita's Anavi3 (Fig. 17) contains the same components as Anavi1 (Fig. 1), but runs Pnavi3 (Fig. 18's process) on ROM 14 in place of Pnavi1 (Fig. 2's process) on ROM 2, so there is no difference between the devices/ROMs, just the program. Yamashita, ¶¶58-61, 67-69, 149-51, 159-60, Figs. 1, 17; [1h] (discussing Figs. 2 and 18's overlap); EX1003, ¶¶92-93. Anavi1/Anavi3 and

Pnavi1/Pnavi3 are referenced as Anavi and Pnavi. EX1003, ¶¶92, 71, 73-74.

Yamashita's ROM is a non-transitory computer readable memory that stores Pnavi (computer instructions) for a navigation program executed by the CPU. Yamashita, ¶¶59, 69, 149-51, 159-60; EX1003, ¶¶91-92.

Yamashita discloses the claimed mobile device because Anavi is a vehicle-mounted mobile device consistent with the '925 patent. Yamashita, ¶¶58, 68, 159, Figs. 1, 17; EX1001, 4:27-33 (“another mobile device, such as an in-vehicle navigation device”); *id.*, 2:22-27, 11:3-8; EX1003, ¶93.



Yamashita, Fig. 1 (annotated); Fig. 17.

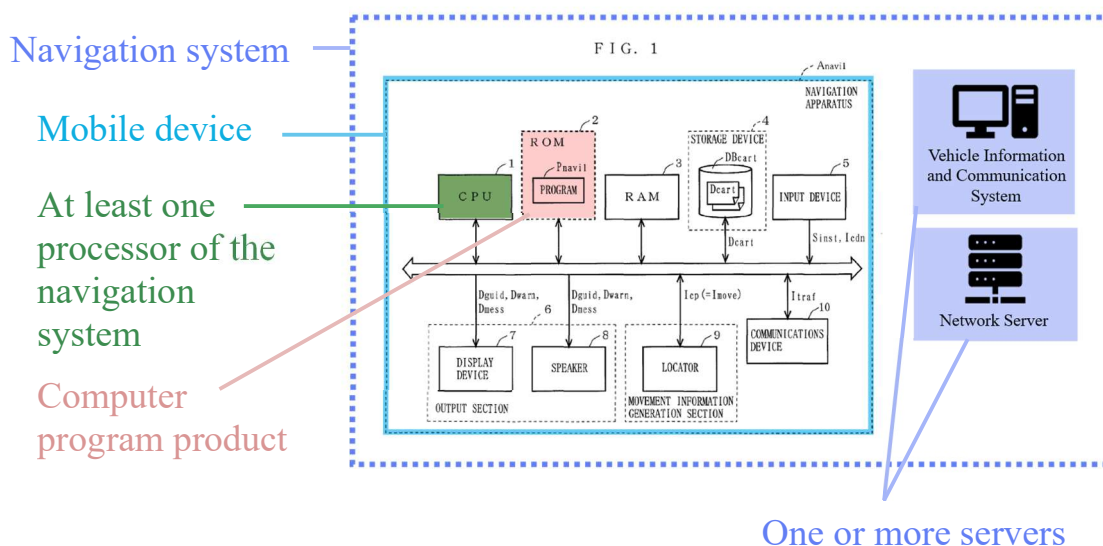
Yamashita discloses the claimed navigation system because Anavi (mobile device) communicates with at least a “network server” and/or a “Vehicle Information and Communication System.” Yamashita, ¶¶58, 67-68, 133, 160;

EX1003, ¶¶94-95. A POSITA would have understood Yamashita's Vehicle Information and Communication System involves servers that collect and distribute traffic information to beacons, which communicate it to Anavi.

Yamashita, ¶¶68, 133, 160; EX1003, ¶¶52, 56, 59, 94; EX1014, 202-03, 255-56.

Yamashita's navigation system uses location data from Anavi to calculate routes, update those routes based on traffic conditions, and display routes as Anavi travels.

Yamashita, ¶¶15-16, 18-19, 68, 133; EX1003, ¶¶94-95.

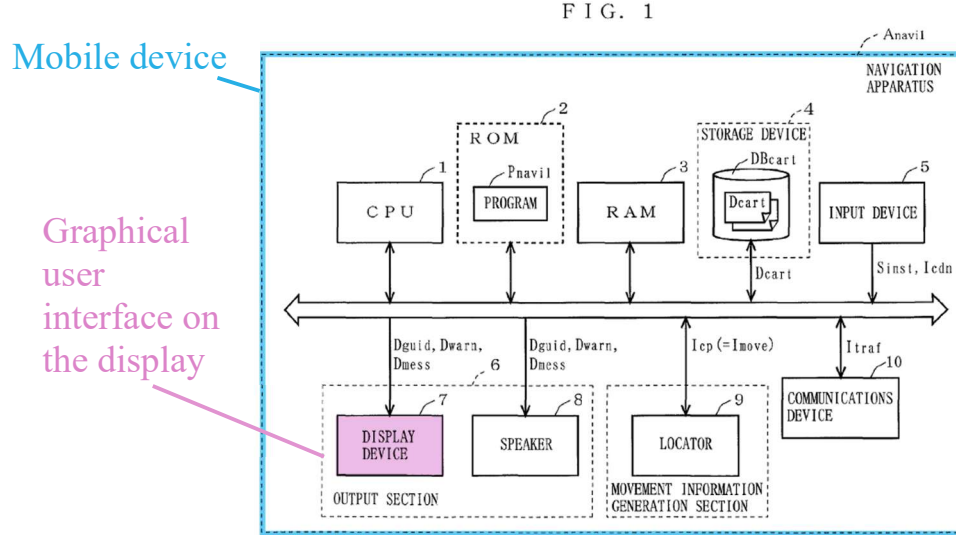


Yamashita, Fig. 1 (annotated).

2. [1a] provide a graphical user interface (GUI) on a display of the mobile device;

Yamashita teaches [1a] because Anavi (mobile device) includes display device 7 that displays a navigation screen (a GUI) that a user interacts with.

Yamashita, ¶¶58, 61, 66, 71, 93; EX1003, ¶¶96-97, ¶¶58, 72.



Yamashita, Fig. 1 (annotated); Fig. 17.

Yamashita’s display device 7 depicts “display data which is displayed as a map ... and road network data which represents road connections on the map.”

Yamashita, ¶¶61, 63, 93. When Yamashita calculates routes, it graphically displays “the user’s current position, the destination, and the optimum and next-optimum routes overlaid all together on the map.” Yamashita, ¶¶89-90. Figures 6A, 6B, 9, and 34A illustrate Yamashita’s GUI for user interaction. EX1003, ¶¶96-97.

FIG. 6A

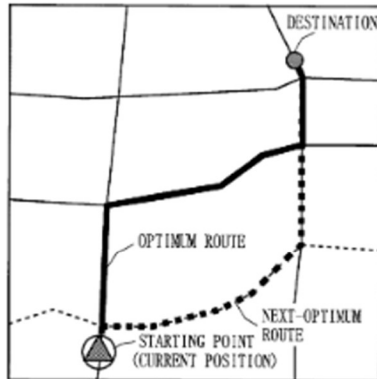


FIG. 9

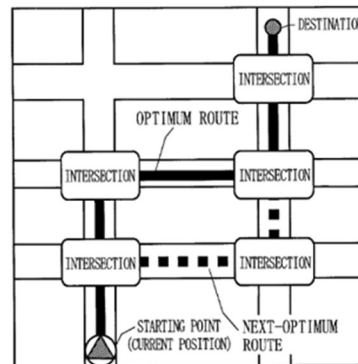


FIG. 6B

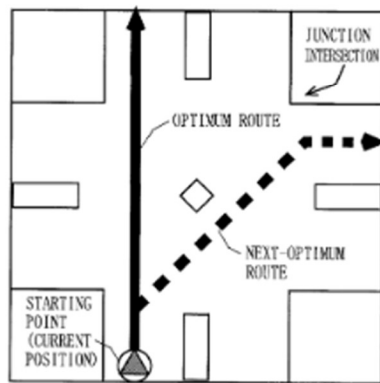
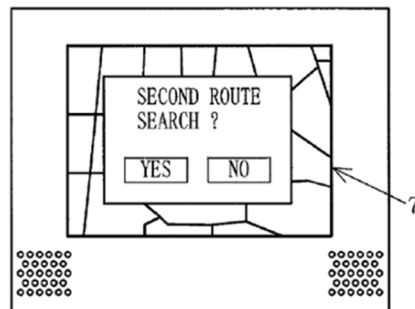


FIG. 34A



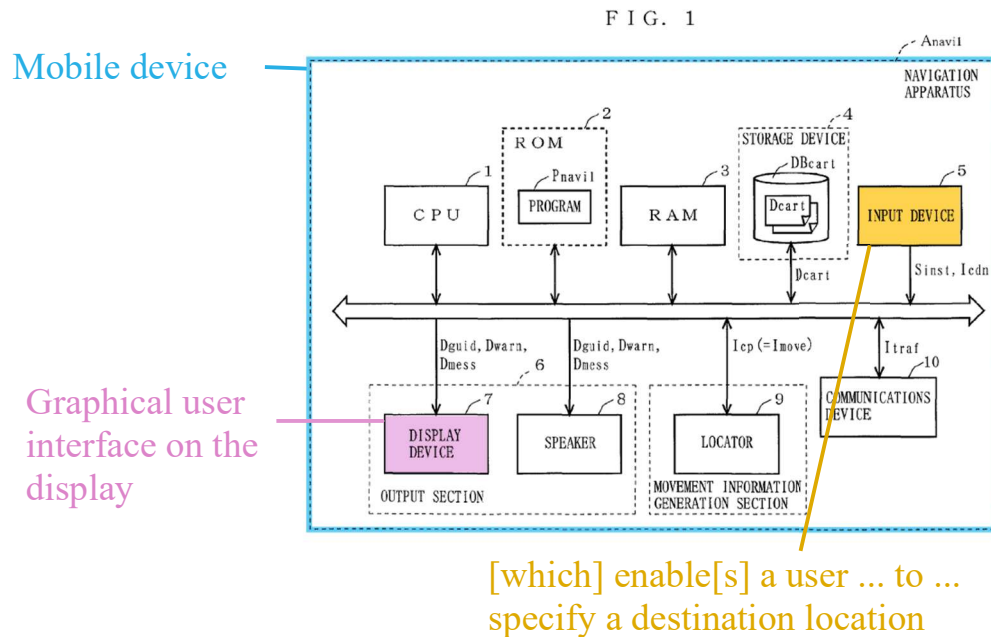
Yamashita, Figs. 6A, 6B, 9, 34A; *id.*, ¶¶26-27, 30, 93, 102, 109, 128.

3. [1b] enable a user of the mobile device to, using the GUI, specify a destination location; and

Yamashita alone or Yamashita and Durocher teach [1b]. EX1003, ¶¶98-109.

Yamashita explains, “in step S204, the user may input only the destination through the input device 5,” which is displayed on display device 7. Yamashita, ¶¶75, 87; EX1003, ¶¶99-100.

As Figure 1 shows, Anavi includes “an input device 5 [and] an output section 6” that includes display device 7 (GUI). Yamashita, ¶58; EX1003, ¶100.



Yamashita, Fig. 1 (annotated), Fig. 17.

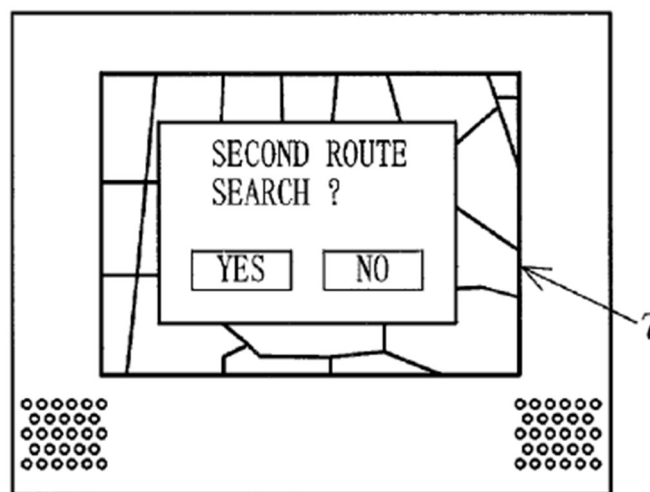
Yamashita’s “input device 5 is typically composed of a remote controller, a touch sensor, keys, buttons, or a mouse, all of which are user operable.”

Yamashita, ¶65. A POSITA would have understood that the input device allows user input to control the display. EX1014, 144; EX1003, ¶¶58, 101. Yamashita instructs that “the user may input only the destination through the input device 5,” which is shown on the display device 7. Yamashita, ¶¶75, 89.

A POSITA would have understood display device 7 and input device 5 are integrated, such that a user is entering a destination using the GUI, for two reasons. EX1003, ¶¶58, 101-04.

First, a user's interaction with or input to the input device controls the display. Yamashita states, "if the user operates a predetermined portion [of input device 5]," such as designating a destination or selecting an option, then the input device generates a signal that initiates a route search. Yamashita, ¶¶72-76. Figure 34A depicts display device 7 showing an interactive option to select yes or no on the display. Yamashita, ¶234, Fig. 34A; EX1003, ¶¶58, 101-03. Yamashita's input device allows the user to interact with the display, by inputting a destination on the input device to specify the destination using the GUI. *Id.*

F I G . 3 4 A



Yamashita, Fig. 34A.

Second, Yamashita's Anavi device is a vehicle mounted navigation device or a mobile phone. Yamashita, ¶¶58, 68, 159. Both were known at the time to be configured with buttons and/or touchscreens to navigate and use GUIs, and a POSITA would have understood that Yamashita's display would include a GUI controlled via the input device to allow a user to enter a destination using the GUI. Yamashita, ¶¶65-66, 74-75, 159; EX1003, ¶¶58, 93, 101, 104.

If Patent Owner disputes that Yamashita teaches this limitation, a POSITA would have found it obvious in view of Durocher, which expressly discloses entering a destination on a touchscreen display. EX1003, ¶¶105-09.

Durocher describes a "mobile telephone or an electronic organizer [that] can function as [a] mobile terminal for the navigational aid system." Durocher, 7:65-67. Durocher summarizes:

[an] advantage of using a portable telephone is that it comes with an integrated screen and keyboard (or touch screen or light pen) and that it possesses the communications components required for implementing this navigational system. Thus, no other screen is required, nor any other communications module (not for request, nor for answers, nor for differential information).

Durocher, 8:23-29. The "request includes a choice of destinations" and "is entered on the terminal ... with the aid of a ... touch screen." Durocher, 9:43-47, 9:56-60.

Durocher discloses a navigation apparatus where a user directly inputs a destination using a GUI. EX1003, ¶106.

A POSITA would have been motivated to implement Yamashita's input device 5 and display device 7 as a single unit, if they are separate, as disclosed by Durocher, to simplify the navigation apparatus and improve the user's experience/improved safety. EX1003, ¶¶58, 107, 109. Anavi is designed to simplify a user's navigation experience by "automatically selecting one route from several others derived through route search." Yamashita, ¶15. A POSITA would have found that implementing Yamashita's input device 5 and display device 7 as one unit further simplifies the physical navigation apparatus by removing the need for separate buttons by accepting input directly on the display. EX1003, ¶¶58, 107, 109. Integration would have added the benefit of minimized distractions caused by having to look between multiple locations to make selections. EX1014, 151. By enabling the user to interact with the maps and selection screens on the display (GUI) directly, the user merely would press the screen/display to input any information. EX1003, ¶¶58, 107; EX1014, 151. A POSITA would have further understood such a modification would have enhanced the safety of the apparatus by requiring less attention from the user. EX1003, ¶¶58, 107-08; EX1014, 156.

A POSITA would have had a reasonable expectation of success in integrating Yamashita's input device 5 with its display device 7 because it merely

would have involved combining prior art elements (i.e., input device 5 with its display device 7) according to known methods (i.e., Durocher's use of a single screen for destination input) to yield the predictable result of an interface that receives input. EX1003, ¶¶108-09; EX1014, 144. Yamashita and Durocher describe similar devices that are used for the same purpose of navigation. Yamashita, ¶¶15-16, 58, 159; Durocher, 2:60-3:15, 3:37-50, 4:19-34. Both references display graphical user interfaces and provide for the use of touch-based input in some capacity. Yamashita, ¶¶65-66, 75; Durocher 8:20-29, 9:56-65. Before the time of invention, such devices with an input receiving display, such as a touchscreen, were known. EX1003, ¶¶58, 109; EX1014, 151-55. A POSITA would have reasonably expected success in modifying Yamashita's navigation apparatus because it would have merely involved a simple substitution of one known element for another to obtain predictable results. EX1003, ¶¶58, 107-09.

4. [1c] as the mobile device travels to the destination location,

Yamashita teaches [1c] because Yamashita teaches that Anavi is configured to automatically calculate possible routes while in transit. Yamashita, ¶¶18, 67, 86, 94, 96-97, 103-104, 110, 112, 153-58, Figs. 2, 18; EX1003, ¶¶110-11.

As explained for [1d]-[1r], Yamashita discloses that, after the user inputs a destination location, "CPU 1 automatically performs route selection by monitoring the user's (i.e., the vehicle's) actual movement without the user having to operate

the input device 5.” Yamashita, ¶¶67, 70-76, 112, 158, Figs. 6A, 12. Because the navigation apparatus Anavi moves with the user/vehicle, it is also traveling to the destination location and calculating/displaying routes throughout travel. EX1003, ¶111.

5. [1d] (i) receive a first location update signal generated by a positioning device of the mobile device, the positioning device including a GPS receiver, and the first location update signal representing a first location of the mobile device at a first time,

[1d] requires that the mobile device includes a GPS receiver that generates a first location of the device at a given time. Yamashita teaches [1d] because Yamashita’s Anavi includes a GPS receiver that, as Yamashita’s Anavi travels to the destination ([1c]), detects the current location (first location) of the device, generates position information Icp (first location update signal), and transmits the Icp to other components within the device. Yamashita, ¶¶67, 70-75, Figs. 1, 17; EX1003, ¶¶112-18.

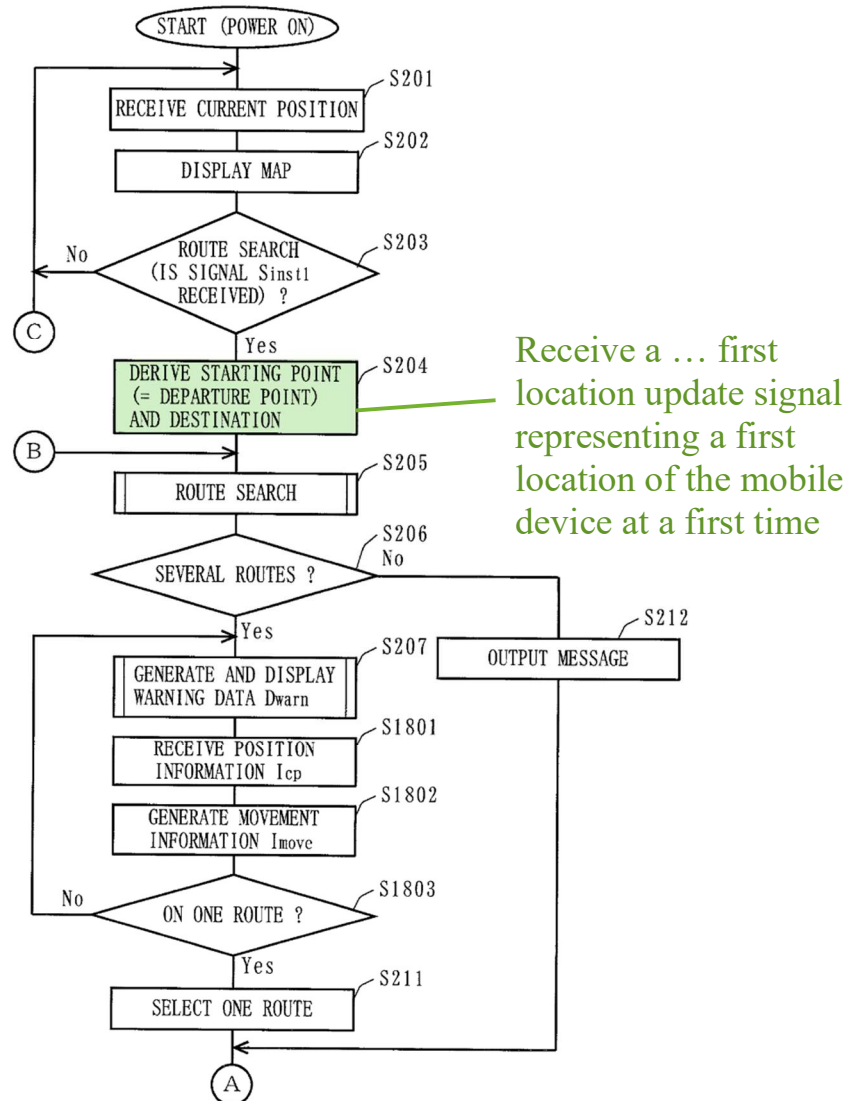
Yamashita’s Anavi navigation device includes locator 9 that is “typically composed of a GPS receiver (Global Positioning System).” *Id.*, ¶67. It “detects the user’s current position, and generates position information Icp which indicates the coordinates of the position.” *Id.*; EX1003, ¶113. As shown in Figure 18 (incorporating steps described with reference to Fig. 2), Yamashita’s “CPU 1

receives from the locator 9 the position information Icp indicating where the user currently is (step S201).” Yamashita, ¶¶70, 152, Figs.17-18.

In S202, “CPU 1 then reads the cartographic data Dcart representing the map of a predetermined area” that “covers the area around the user’s current position indicated by the position information,” and uses the cartographic data and user’s location to “generate display data Ddis, indicating the user’s current position by a mark appropriately disposed on any corresponding road in the predetermined area [of the map]” such that display device 7 displays the location on the map. Yamashita, ¶71; EX1003, ¶114.

In S204, depicted below in Fig. 18, if the user does not specify a different starting point than their current location, the CPU uses the Icp of the current location provided by locator 9, derives coordinates indicating the current position, and those “derived coordinates of the user’s position are used as those of the departure point.” Yamashita, ¶¶74-75, 152; EX1003, ¶¶115-16.

FIG. 18



Yamashita, Fig. 18 (annotated), Fig. 2.

Yamashita's method iteratively calculates routes to a destination based on the current position of Anavi. *See infra* [1e]-[1r]; Yamashita, ¶¶126-28, 153-58; EX1003, ¶117. In each iteration of Yamashita's position determination and route calculation, like S204, Yamashita discloses receiving a current position in repeated

S216 used to perform rerouting. Yamashita, ¶¶126-28, Fig. 3; EX1003, ¶117. Even if Patent Owner disputes whether S204 corresponds to the first location update signal, Yamashita teaches [1d] because the generation of Icp for rerouting alternatively corresponds to a first location update signal in the iterative process. EX1003, ¶117.

Figure A(1) is an illustration of Yamashita's process for this limitation.⁴ EX1003, ¶118.

⁴ Throughout the Petition, Figures A(1)-(8) and B(1)-(7) are used as visual representations of Yamashita's process based on Yamashita's teachings, not an annotated figure from Yamashita.

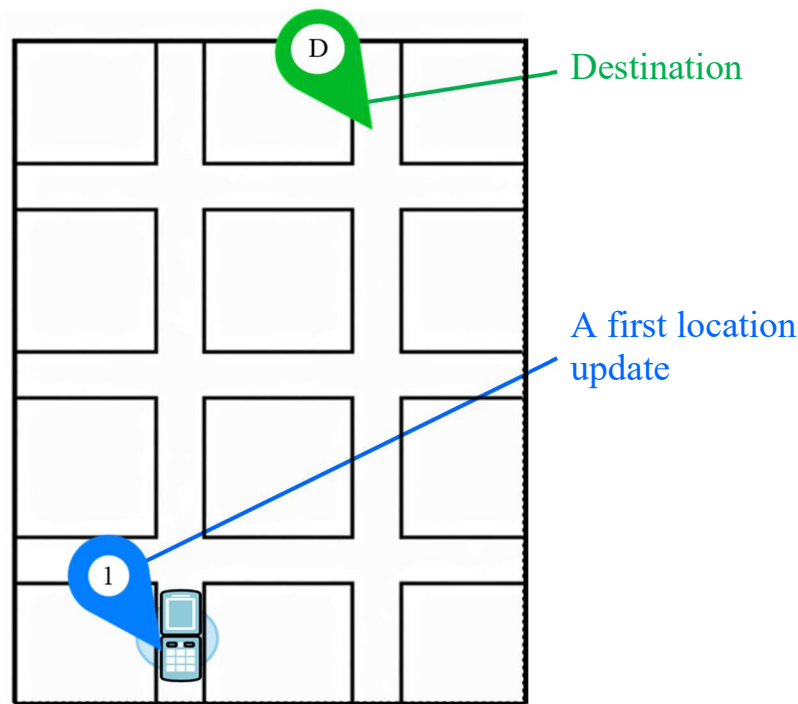


Fig. A(1).

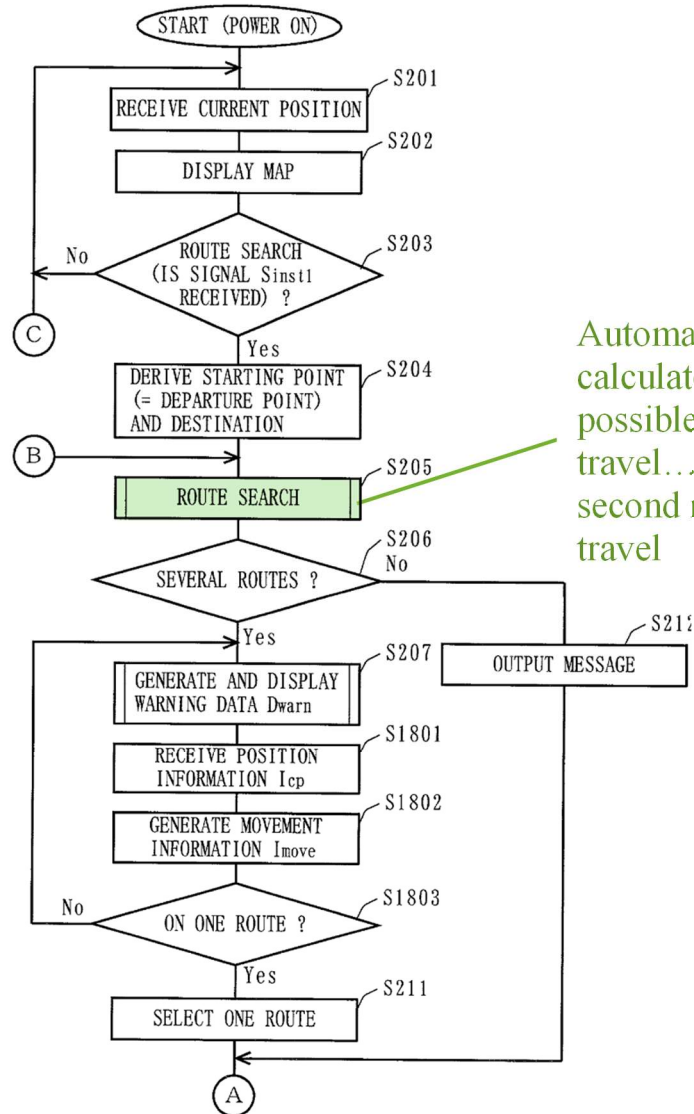
6. **[1e] (ii) automatically calculate, using map data, the destination location and at least the first location update, a first possible route of travel of the mobile device from the first location towards the destination location and a second possible route of travel of the mobile device from the first location towards the destination location, the first possible route of travel including a first roadway intersection and the second route of travel including the first roadway intersection,**

[1e] requires automatically calculating two different routes, each passing through one common intersection. Yamashita teaches [1e] because, as Yamashita's Anavi travels to the destination ([1c]), Anavi performs a route search S205 that calculates, using cartographic data (map data), an "optimum route" and a "next-

optimum route” where the routes “head in different directions at a certain intersection.” Yamashita, ¶¶76-77, 96; *id.* ¶¶78-79, 129; EX1003, ¶¶119-23.

Yamashita’s Figure 18 depicts Anavi’s process where, after the current position and destination are determined, “[t]he CPU 1 then searches for several routes under any well known route search algorithm such as the Dijkstra’s algorithm (step S205).” Yamashita, ¶¶75-76; EX1003, ¶120.

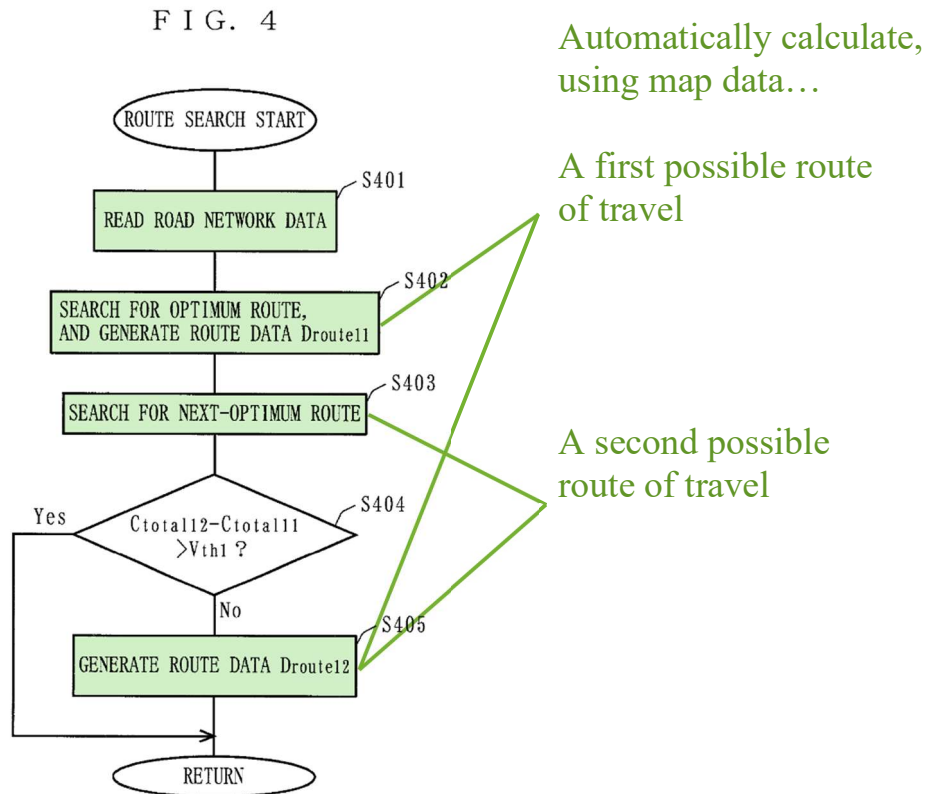
FIG. 18



Yamashita, Fig. 18 (annotated).

Yamashita explains that its “routes, however, differ in course on the way. Such routes include, for example, those taking the user to his/her destination in the shortest distance [i.e., optimum route] and the second-shortest distance [i.e., next-optimum route], or in the shortest time [i.e., optimum route] and the second-

shortest time [i.e., next-optimum route].” Yamashita, ¶77; EX1003, ¶121. This process is further described in Figure 4, showing “the detailed process of route search (step 205)” (Yamashita, ¶24), which discloses that the optimum and next-optimum routes are determined “using the cartographic data Dcart on the RAM 3, more specifically, the road network data and the cost.” Yamashita, ¶¶78-79, Fig. 4; *id.*, ¶¶80-85. Yamashita discloses that “route data Droute11 [] represents the found optimum route” and “route data Droute12 [] represents the next-optimum route.” Yamashita, ¶¶79, 82-83, Fig. 4; *id.*, ¶¶80-85. Both routes are “composed of a node string,” i.e., a string of intersections, where they diverge at a “certain intersection.” Yamashita, ¶¶79, 82, 96-97.



Yamashita, Fig. 4 (annotated).

S205 occurs as part of Yamashita's iterative process, depicting an automated process that continually calculates routes based on updated location information. EX1003, ¶122; Yamashita, ¶¶126-129, 133, 152-158. Yamashita's route search process corresponds to [1e] because Yamashita discloses automatically calculating two routes, which diverge at the shared intersection, based on cartographic data, a starting position, and a destination. EX1003, ¶¶119-23.

Figure A(2) below illustrates Yamashita's calculation of two possible routes calculated (optimum route and next-optimum route) using the roadway network map. EX1003, ¶123.

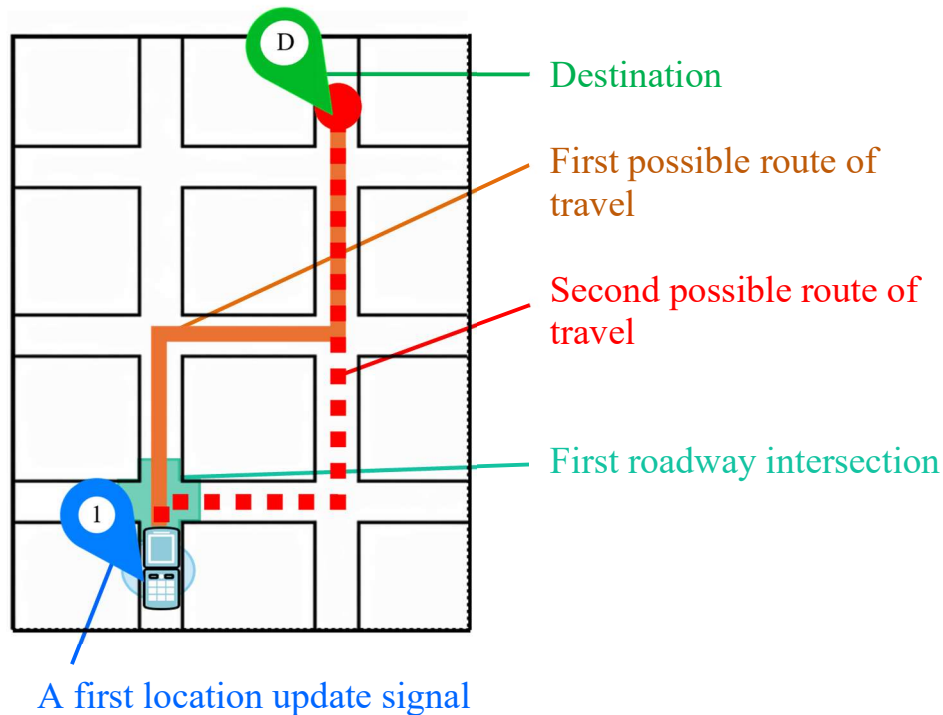


Fig. A(2); Yamashita, Figs. 9, 6A, 6B.

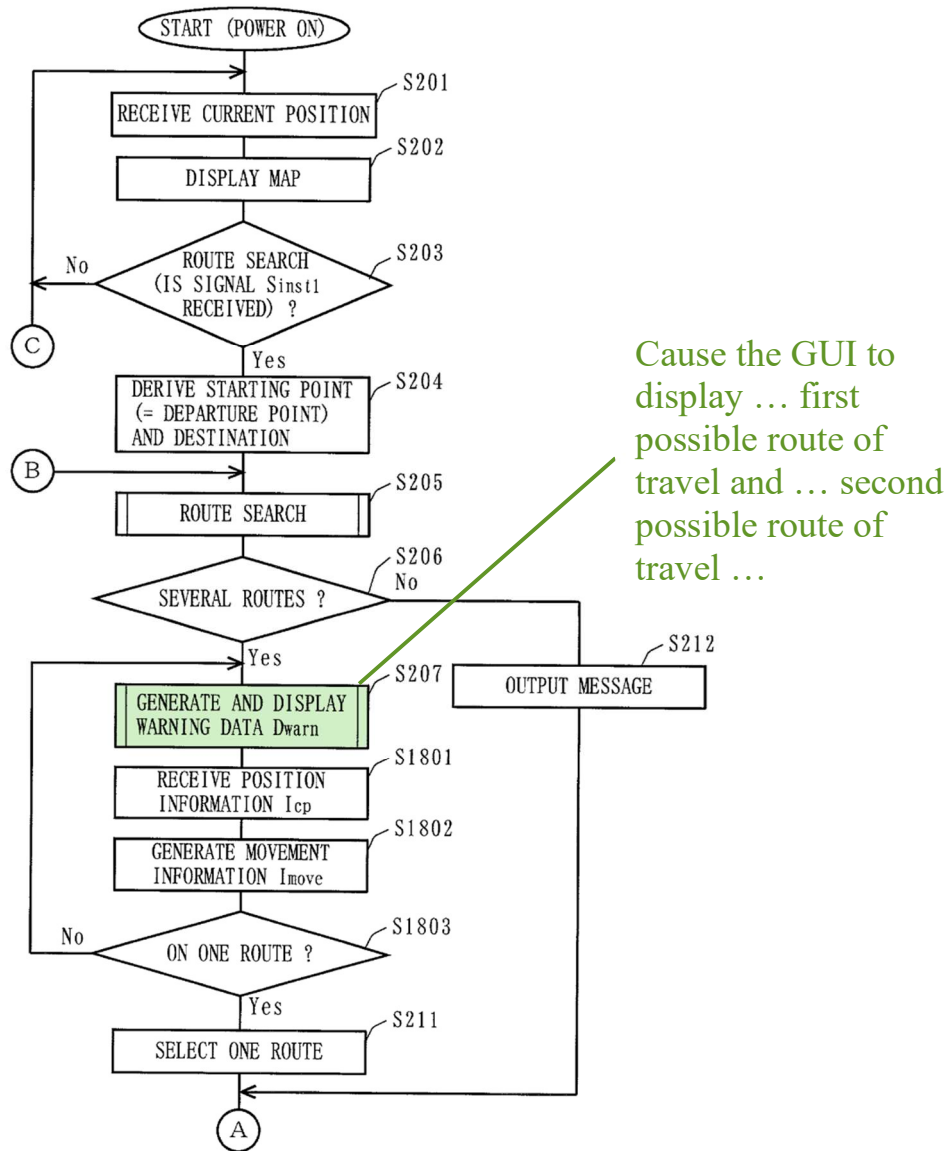
7. [1f] (iii) cause the GUI to display a graphical representation of a map together with a graphical representation of the first possible route of travel and a graphical representation of the second possible route of travel on segments of roadways of the graphical representation of the map,

[1f] requires displaying the first and second routes graphically on a map on the GUI, showing the various roadway segments that would be traversed by each. Yamashita teaches [1f] because, after the optimum and next-optimum routes are calculated, the generation and transfer of Dwarn to the display causes the routes to

be displayed at S207. Yamashita, ¶¶85-93, 102, 112-13, 153, Figs. 5, 7, 18; EX1003, ¶¶124-27.

After route calculation in S205, if there are multiple routes (S206), Yamashita discloses that “the procedure goes to step S207 for a process of generating and displaying warning data Dwarn.” Yamashita, ¶¶82-85. Yamashita describes that Dwarn “allows the display device 7 to display the user’s current position, the destination, and the optimum and next-optimum routes overlaid all together on the map.” Yamashita, ¶89; EX1003, ¶125.

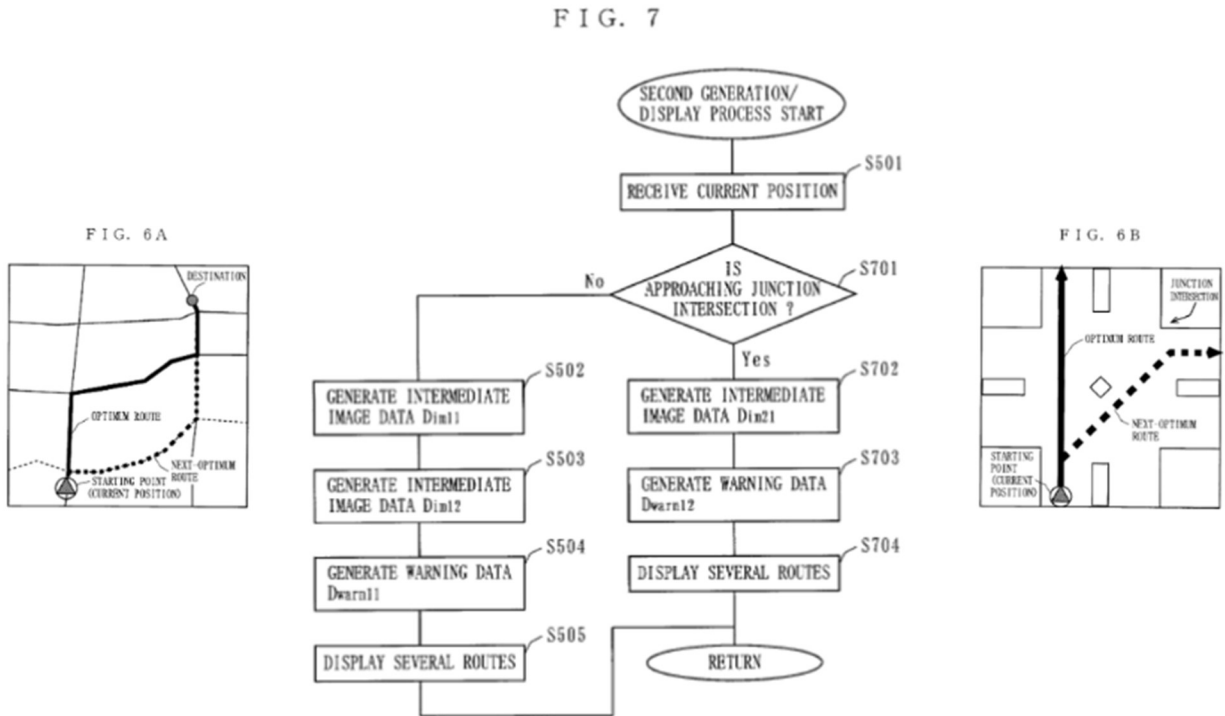
FIG. 18



Yamashita, Fig. 18 (annotated).

Figure 7 explains S207 in greater detail. EX1005 (Yamashita), ¶¶25, 28, 85, 86, 94, Figs. 5, 7; *id.*, ¶¶103, 110, Figs. 8, 10; EX1003, ¶¶126, 133. The CPU receives the current position (S501), determines whether the Anavi is approaching a first intersection (S701), and then displays both respective routes (in Figures 6A

(full routes)/6B (focused display of an intersection with both routes)). Yamashita, ¶¶87-93, 95-102. The result of the process displays “a map image having, at least, the optimum and next-optimum routes overlaid thereon.” Yamashita, ¶¶93, 102.



Yamashita, Figs. 6A, 6B, 7.

Figure A(3) below depicts Yamashita’s process for this limitation where the possible routes are displayed on the GUI. EX1003, ¶127.

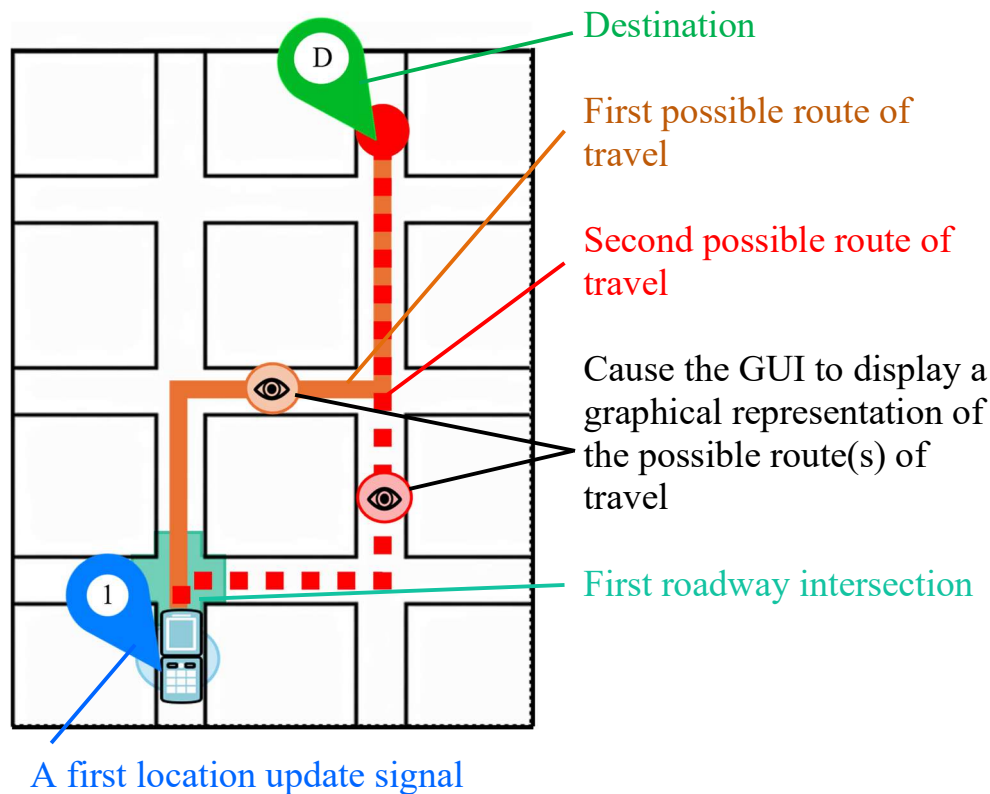


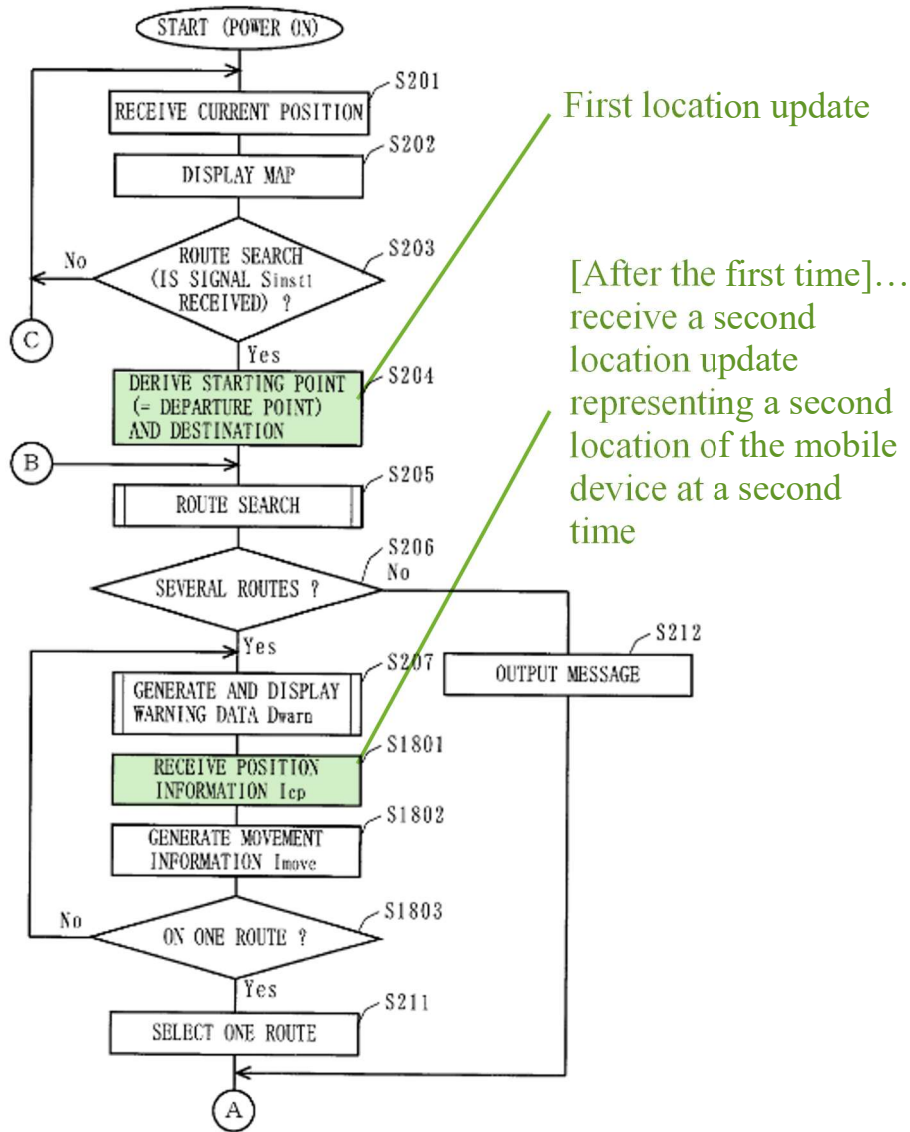
Fig. A(3).

8. [1g] (iv) receive a second location update generated by the positioning device of the mobile device, the second location update representing a second location of the mobile device at a second time after the first time,

[1g] requires receipt of a second location of the mobile device at a second, later time. Yamashita teaches [1g] because, after the optimum and next-optimum route are displayed, “the CPU 1 receives the position information I_{cp} from the locator 9 (step S1801)” at a time later than when the current position was received at S204 (at a second time after the first time). Yamashita, ¶¶67, 153, 158; EX1003, ¶¶128-29. In fact, Yamashita discloses iteratively collecting successive position

information (Icps) of the user as they travel that collectively comprise the Imove data of 1802 (loop between S1803 and S207 that results in multiple successive locations received and displayed). Yamashita, ¶¶67, 153, 155-56, 158; EX1003, ¶128. Any subsequent location received at S1801 satisfies [1g]; however, as explained for [1h], the subsequent location received at S1801 after sufficient iterations such that a user has traveled far enough to determine whether an estimated route coincides with only either the first or second possible route is the claimed “second location update” in Yamashita. EX1003, ¶¶119, 121, 128-29.

FIG. 18



Yamashita, Fig. 18 (annotated).

Figure A(4) depicts Yamashita's process for this limitation. EX1003, ¶129.

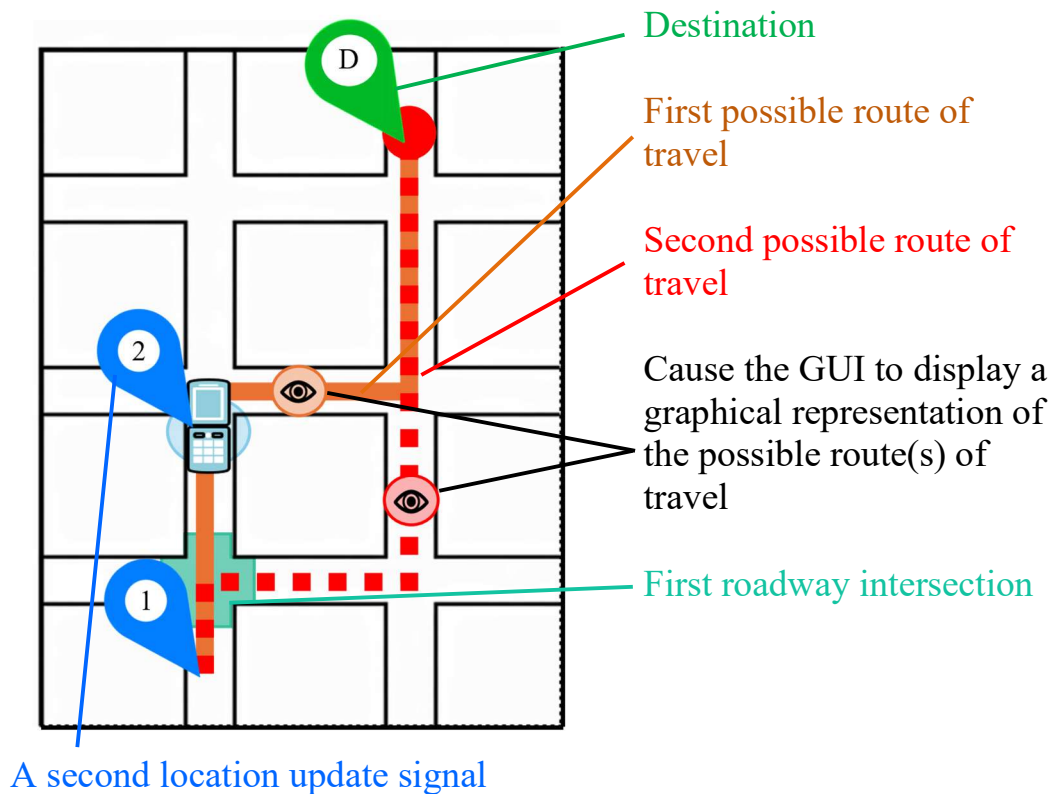


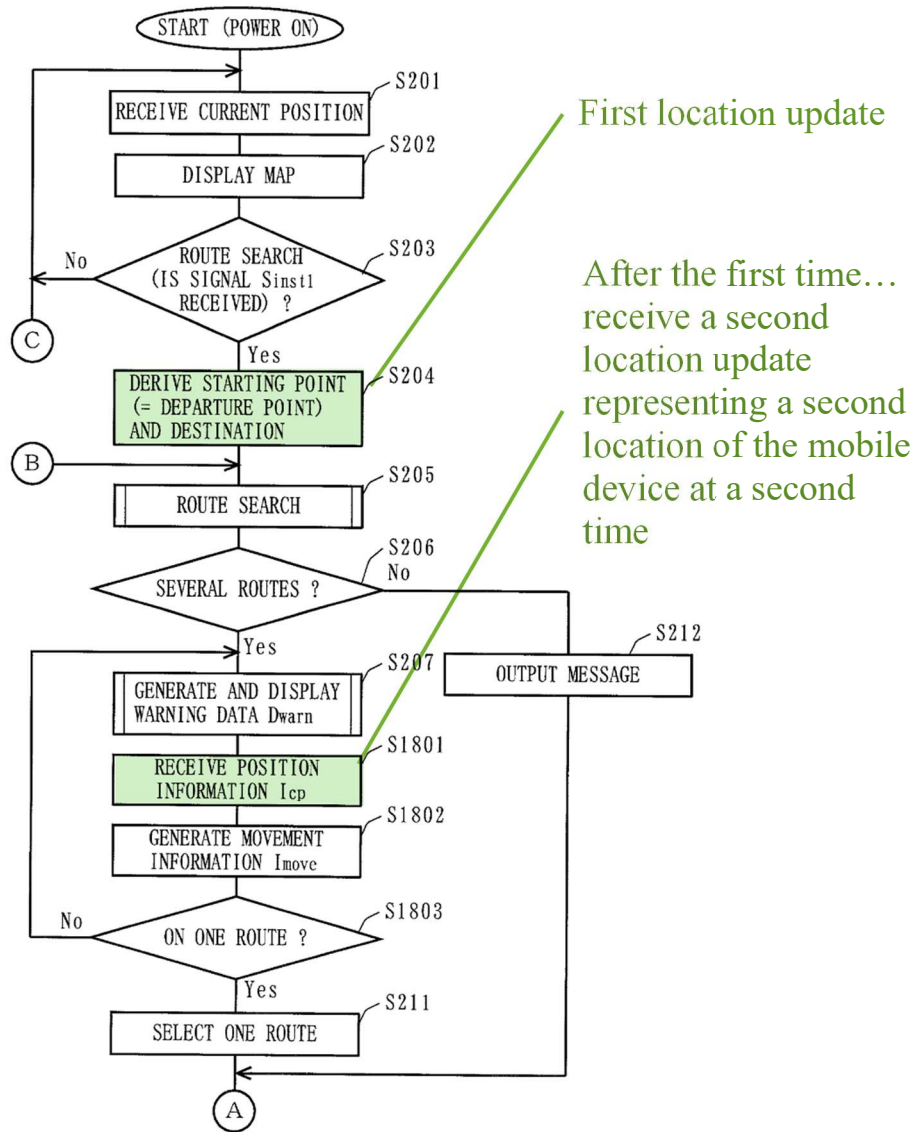
Fig. A(4).

9. [1h] (v) automatically calculate, using the map data and at least the first location update and the second location update, a first estimated route of travel of the mobile device from the first location to the second location,

[1h] requires estimating the user's route of travel based on map data and the first and second location updates. Yamashita teaches [1h] because Yamashita teaches that Anavi calculates a first estimated route using "movement information Imove" (comprised of first and second location updates) and "cartographic data" (the map data). Yamashita, ¶¶113-115, 153, 158, Figs. 2, 18; EX1003, ¶¶130-40.

As explained for [1d], Yamashita's locator 9 generates position information Icp indicating where the user currently is (S204) (first location update). Yamashita, ¶¶70, 74-75; EX1003, ¶¶112-15, 130. This position is displayed using the Dcart (the map data). Yamashita, ¶¶71, 89, 100; EX1003, ¶131. As explained for [1g], the CPU receives a second position update after the first (S1801, iteratively) and displays the updated position on the map (the map data) (S207, iteratively). EX1003, ¶¶128-29, 131; ¶¶132-36.

FIG. 18



Yamashita, Fig. 18 (annotated).

Yamashita discloses automatically calculating a first estimated route of travel of the mobile device from the first location to the second location using these first and second updates and the cartographic data using the following

process of Figure 18 (incorporating relevant processes of Figures 2, 5, and 7 as explained by Yamashita). EX1003, ¶¶132-38.

At S207, Yamashita displays the first location update with reference to cartographic data. Yamashita, ¶¶113-14 (“The CPU 1 performs map matching by using cartographic data Dcart on the Ram 3 and the received position information Icp so as to calculate the user’s current position on the road network on the map (step S209).”), ¶99 (“The CPU 1 performs map matching by using the position information Icp and the corresponding cartographic data Dcart so as to generate, on the RAM 3, intermediate image data Dim21 in which a mark denoting the user’s current position is correctly overlaid on any corresponding road in the map (step S702).”), ¶87 (same), ¶86 (“... Dwarn is a displaying portion of the cartographic data Dcart.”); ¶109.⁵ As a user’s location changes as they travel throughout the iterative process, S207 depicts that Anavi continues to update the display to show the current location. EX1003, ¶133.

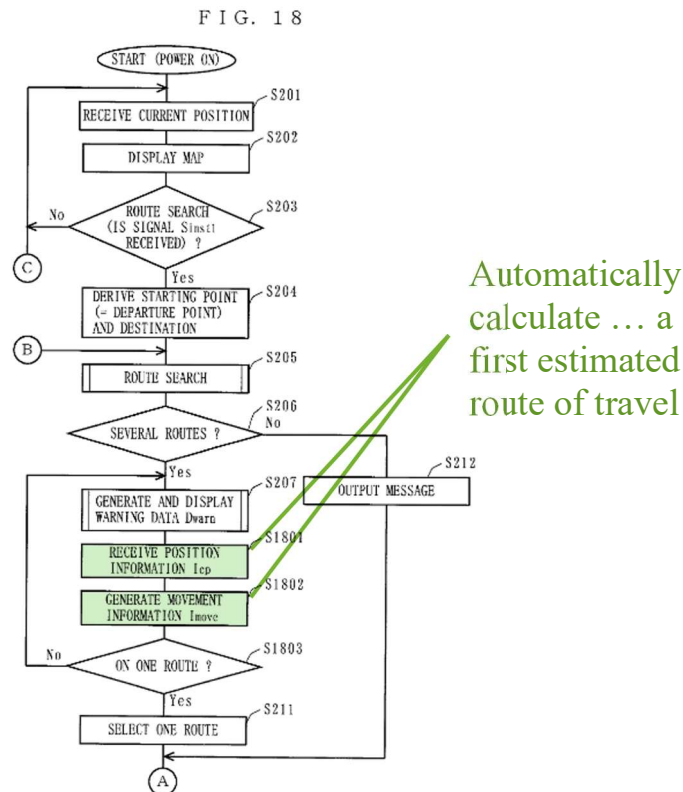
⁵ Paragraphs 86 and 87 describe Figure 5, paragraph 99 describes Figure 7, paragraph 109 describes Figure 8, and paragraphs 113-114 describe Figure 10, all of which are a detailed flowchart of S207. Yamashita, ¶¶25, 28, 31. Yamashita further explains that “any one of the following first to fourth generation/display processes is performed in step 207.” Yamashita, ¶85.

At S1801, Yamashita receives a subsequent location, the updated “position information Icp from the locator 9” of Anavi. Yamashita, ¶153; EX1003, ¶134.

At S1802, Yamashita generates “movement information” called “Itraj,” which “indicates the trail the user *has moved so far*, and is composed of the string of coordinate values indicated by several pieces of position information Icp.” Yamashita, ¶153 (emphasis added). In the first iteration of S1802, a POSITA would have understood that to generate “movement information,” the first location determined at step S204 would have been used to create the trail to the location at step S1801. Yamashita, ¶153; EX1003, ¶135.

At S1803, Yamashita repeats the process from S207 through S1802 if the Itraj/Imove data collected thus far is not enough to determine whether the user is on a particular route. Yamashita, ¶154 (“The CPU 1 then determines whether or not the user’s trail substantially coincides with only one route, i.e., optimum or next-optimum route (step S1803),” or in other words, “determines if **the route specified by the trail information Itraj** coincides with only either of the optimum route ... or the next-optimum route.”) (emphasis added). If the Itraj/Imove data is not sufficient, Yamashita iterates the process again, stating that “the CPU 1 determines that the user is not being on one route so that the procedure returns to step S207.” Yamashita, ¶155; *id.*, ¶156 (describing the opposite, which is addressed with reference to later claim limitations). So, when Itraj is not sufficient,

Yamashita returns to S207, displays the most recent location on the displayed map (207), receives another updated location Icp (1801), generates an updated Itraj/Imove string (1802) (Yamashita, ¶153 (“every time in step S1802, the trail information Itraj is to be updated by being added with coordinate values of the position information Icp derived in step S1801”), and again determines if the data is sufficient. EX1003, ¶136.

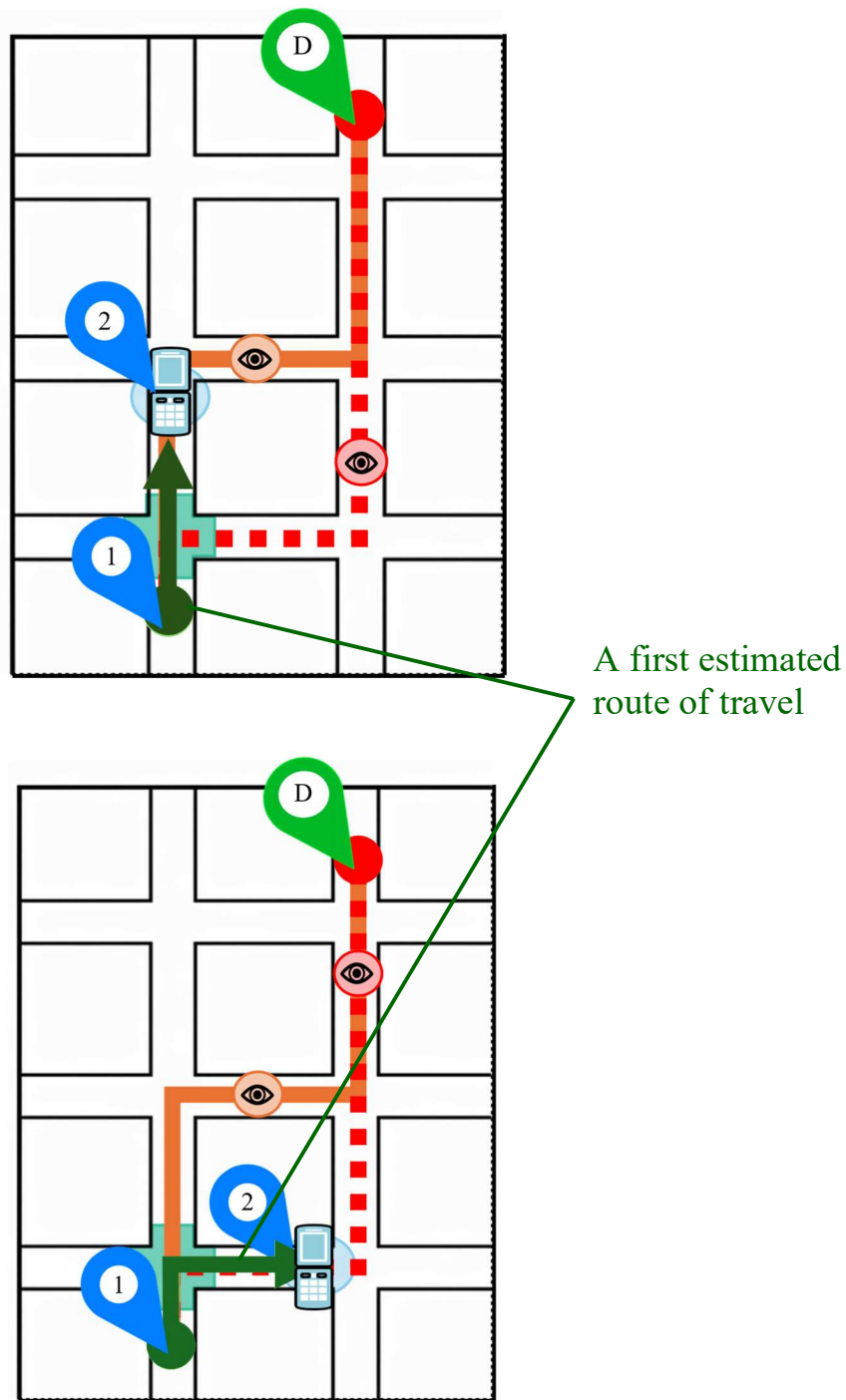


Yamashita, Fig. 18 (annotated).

Yamashita’s Itraj generated in S1802, determined and used as described above and depicted in Figure 18 is the claimed estimated route of travel because it is an automatically calculated “*route* specified by the trail information Itraj”

between a user's first location (current position/starting point) and second location (subsequent position) along the map and roadway network reflecting the route the user has traveled so far. EX1003, ¶137.

Figures A(5.1) and A(5.2) illustrate Yamashita's calculation of Itraj (estimated route) depending on which route the user has traveled. EX1003, ¶138.



Figs. A(5.1) and A(5.2), respectively.

As explained above, Yamashita's Itraj (first estimated route) is based on the first location update, second location update, and map data because it determines

the “route specified by the trail information Itraj” between the first location and the second location in relation to the cartographic data. EX1003, ¶¶55, 139. If Patent Owner disputes that Yamashita’s Itraj expressly determines trail data encompassing the first starting location of S204, it would have been obvious to include the S204 location because Yamashita instructs that Itraj indicates “the trail the user has moved so far.” Yamashita, ¶153; EX1003, ¶139. A POSITA would have understood that a trail is more than one location and, that to complete the first route comparison in S1803, the first iteration of S1801-S1802 would have required more than one data point to compare “the trail the user has moved so far” against the possible routes. EX1003, ¶¶53-55, 121-22, 139. A POSITA would have understood that Yamashita discloses this element, or a POSITA would have found it obvious to include S204 in Itraj because doing so would have merely involved combining prior art elements—i.e., the previously mapped starting location and the collection of mapped location updates—according to known methods—i.e., creation of Itraj—to yield the predictable result of producing movement information in the form of a route. *Id.*

A POSITA would have been further motivated with a reasonable expectation of success to do so because it would have provided a more complete picture and more accurate estimation of the “trail the user has moved so far.” *Id.* Establishing a trail from starting location S204 would have been a simple programming

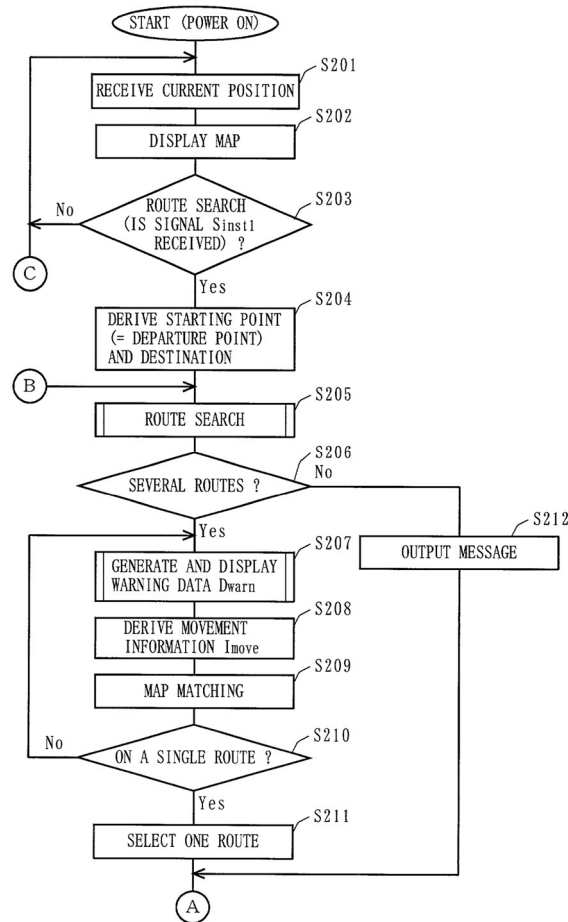
modification that merely involves storing and using a known position, no different from collecting additional S1801 positions. EX1003, ¶139.

Yamashita teaches [1h] for a second, independent and alternative reason depicted in Figure 2. EX1003, ¶140. S207 through S209 illustrate a subset of Yamashita's iterative process steps that involve automatic calculation of an estimated route. Yamashita, ¶¶112-14.

S207 is the same as explained above, causing the current position and multiple possible routes to be displayed on the map. In S208, the CPU “instructs the locator 9 to transfer the position information Icp, i.e., movement information Imove. In response, the locator 9 generates the position information Icp indicating where the user currently is, and transfers it to the CPU 1.” Yamashita, ¶113. This current location corresponds to a second location update like S1801 explained for [1g]. EX1003, ¶140. The CPU “then performs map matching by using the cartographic data Dcart on the RAM 3 and the received position information Icp so as to calculate the user's current position on the road network on the map (step S209).” Yamashita, ¶114. The map-matched movement information is then iteratively compared against the possible routes to determine whether the user is on one route (S210). Yamashita, ¶¶115-16. Because Yamashita describes the Icp in S208 as “movement information” and notes how this process enables Anavi to “automatically perform[] route selection *by monitoring the user's (i.e., the*

vehicle's) actual movement,” a POSITA would have understood that this Icp is more than a mere location update and includes information about how and where the device moved. EX1003, ¶140. A POSITA would have understood that Yamashita's iterative process of Figure 2 also corresponds to the claimed automatic calculation of a first estimated route because the iteratively map-matched “movement information” depicts how the Anavi traveled from a first location to a second location based on the cartographic data. EX1003, ¶¶54-56, 140.

FIG. 2



Yamashita, Fig. 2.

10. [1i] (vi) determine whether the first estimated route of travel includes the first roadway intersection, whether the first possible route of travel includes the second location, and whether the second possible route of travel includes the second location,

[1i] requires determining whether the user's estimated route includes the intersection common to both possible routes, and then testing whether the user's second location is on the first or second possible route—in short, determining if the

user is on the first or second possible route, which can only be determined after passing the common intersection. Yamashita first teaches [1i] because the CPU “then determines whether or not the user’s trail substantially coincides with only one route, i.e., optimum or next-optimum route (step S1803).” Yamashita, ¶¶154-57, Fig. 18; EX1003, ¶¶141-45.

As explained for [1h], Yamashita calculates an estimated route of travel that “indicates the trail the user has moved so far” between a first location and a second location at a later time. Yamashita, ¶153; EX1003, ¶¶130-40. Yamashita’s Itraj data reflects when a user has passed through a junction intersection because it is used to determine whether the user’s path “coincides with only either of the optimum route specified by the route data Droute 11 or the next-optimum route specified by the route data Droute 12.” Yamashita, ¶¶153-54; EX1003, ¶142. The CPU “determines whether or not the user’s trail substantially coincides with **only** one route,” by comparing “the trail information Itraj” with the data representing the optimum and next optimum routes (Droute11 and Droute12, respectively) to “determine[] if the route specified by the trail information Itraj **coincides with only either** of the optimum route ... or the next optimum route.” Yamashita, ¶154 (emphasis added). If the two possible routes coincide until the first intersection, as Yamashita discloses, the trail would pass through the first intersection to determine

whether the user's trail coincides with only a single possible route. EX1003, ¶¶119, 121, 142.

Yamashita also discloses the process for when the estimated route does not pass through the first intersection—it repeats the process (as explained for [1h]). Yamashita describes that “[i]f not in step S1802, the CPU 1 determines that the user is not being on one route so that the procedure returns to step S207 to continually display several routes for the user.” Yamashita, ¶155; EX1003, ¶143.

Figure A(6) below illustrates Yamashita's process for this limitation. EX1003, ¶144.

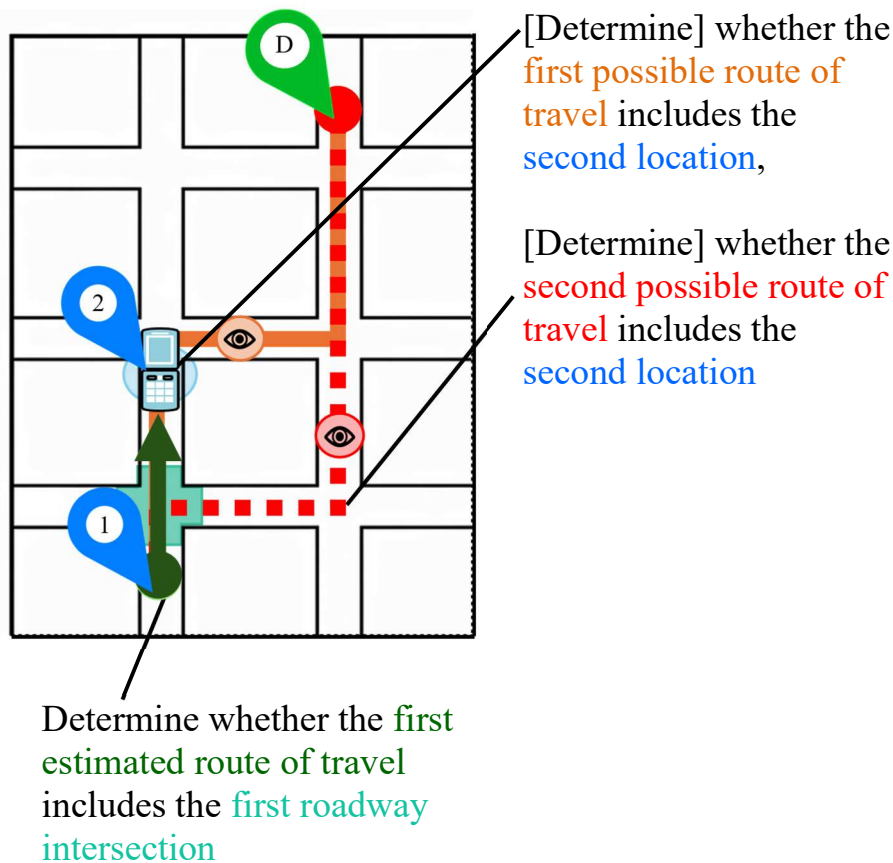


Fig. A(6).

Further to the analysis in [1h], Yamashita also teaches [1i] for a second, independent and alternative reason depicted in Figure 2. EX1003, ¶145.

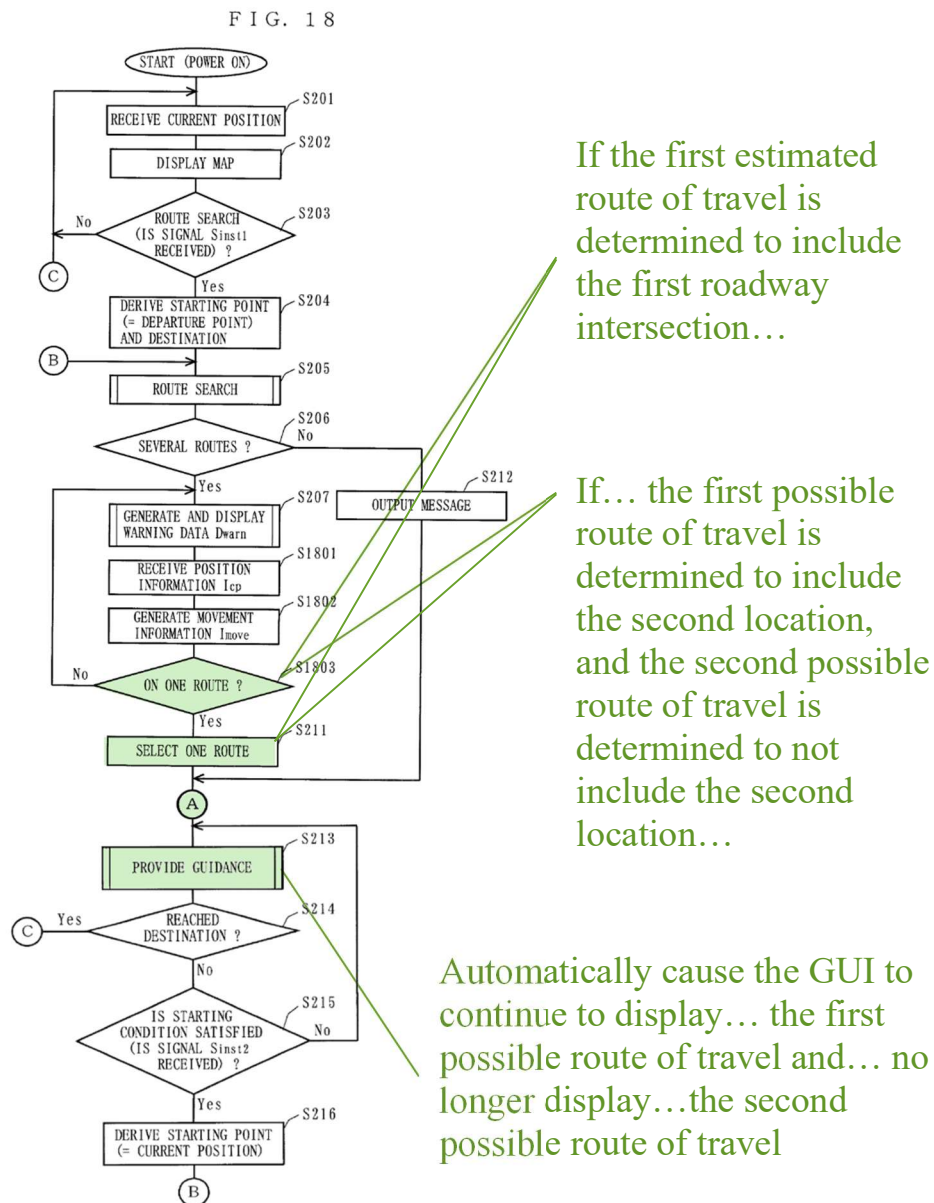
Yamashita's S210 "determines on which of the optimum and next-optimum route the user currently is" like the decision process in step S1803 by comparing the map-matched Icp (representing movement information from a first location to a second location) against the possible routes. Yamashita, ¶¶115-18, 154-156. This step also assesses whether the user is "at the junction of the several routes," demonstrating that Yamashita's determination in S210 involves assessing whether

the Icp (representing movement information) includes the first roadway intersection. Yamashita, ¶¶115-18; EX1003, ¶145.

11. [1j] (vii) if the first estimated route of travel is determined to include the first roadway intersection, the first possible route of travel is determined to include the second location, and the second possible route of travel is determined to not include the second location, automatically cause the GUI to continue to display the graphical representation of the map together with the graphical representation of the first possible route of travel and automatically cause the GUI to no longer display the graphical representation of the second possible route of travel,

[1j] conditionally requires that the GUI remove the second possible route from display if the user is traveling the first possible route (determined as whether the user has passed the first intersection and continued on the first possible route)—in short, the GUI will only display the possible route the user is on.

Yamashita teaches [1j] because it teaches that “[i]f yes in step S1802 [or S210], the CPU 1 determines that the user is now being on one route, and accordingly selects the route on which the user currently is (step S211)” and proceeds “to display the route from the user’s current position toward the destination overlaid on any corresponding road on the map.” Yamashita, ¶¶117-23, 156-57; EX1003, ¶¶146-48.



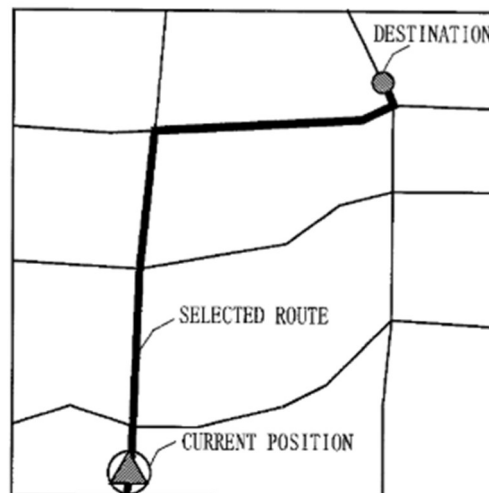
Yamashita, Fig. 18 and Fig. 3 (combined and annotated).

After Yamashita's CPU selects one route in S211, "the procedure goes to step S213 of Fig. 3, i.e., circled letter A" where "the CPU 1 guides the user's vehicle depending on which route data has been selected." Yamashita, ¶¶117, 119, 157. As part of guiding the user, the CPU generates "image data" using

cartographic data and the selected route to display “the user’s current position, the destination, and the route selected in step S211 overlaid all together on the map.”

Yamashita, ¶¶120-23. Only the selected route, i.e., the optimum route/first possible route, is displayed as depicted in Figure 12, and the next-optimum/second possible route is removed. *Id.* Yamashita teaches that this selection process occurs “automatically.” Yamashita, ¶¶129, 158; EX1003, ¶147.

F I G. 1 2



Yamashita, Fig. 12.

Figure A(7) below illustrates Yamashita’s process for this limitation where the first route is displayed on the GUI. EX1003, ¶148.

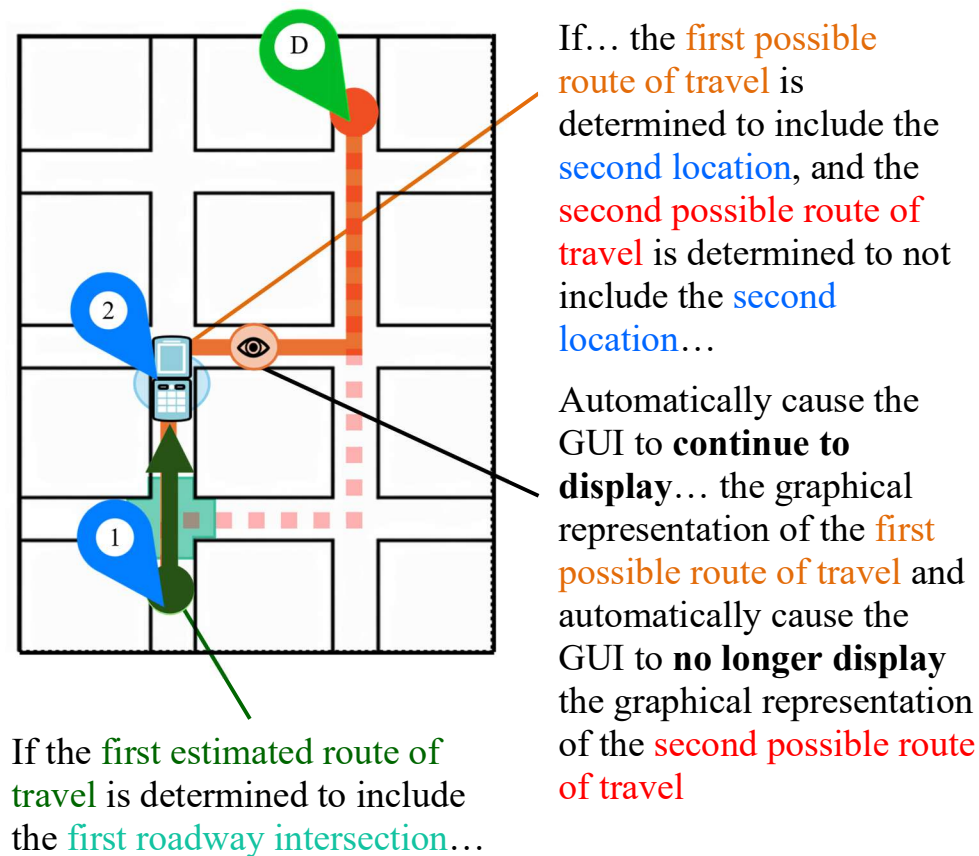


Fig. A(7).

12. [1k] (viii) if the first estimated route of travel is determined to include the first roadway intersection, the first possible route of travel is determined to not include the second location, and the second possible route of travel is determined to include the second location, automatically cause the GUI to continue to display the graphical representation of the map together with the graphical representation of the second possible route of travel and automatically cause the GUI to no longer display the graphical representation of the first possible route of travel,

[1k] conditionally requires the alternative of [1j], that the GUI removes the first possible route from display if the user has passed the first intersection and is

traveling the second possible route—in short, the GUI will only display the possible route the user is on. Yamashita teaches [1k] for the same reasons explained for [1j] because [1k] recites the alternative selection. Yamashita, ¶¶117-23, 129, 156-58; EX1003, ¶¶146-50. Yamashita teaches and renders obvious that, if the user proceeds along the next-optimum route (second possible route), that route is displayed and the optimum route is removed from the screen. Yamashita, ¶¶117-123, 129, 156-58; EX1003, ¶¶146-50.

Figure A(8) below illustrates Yamashita's process for this limitation where the second route is displayed on the GUI. EX1003, ¶150.

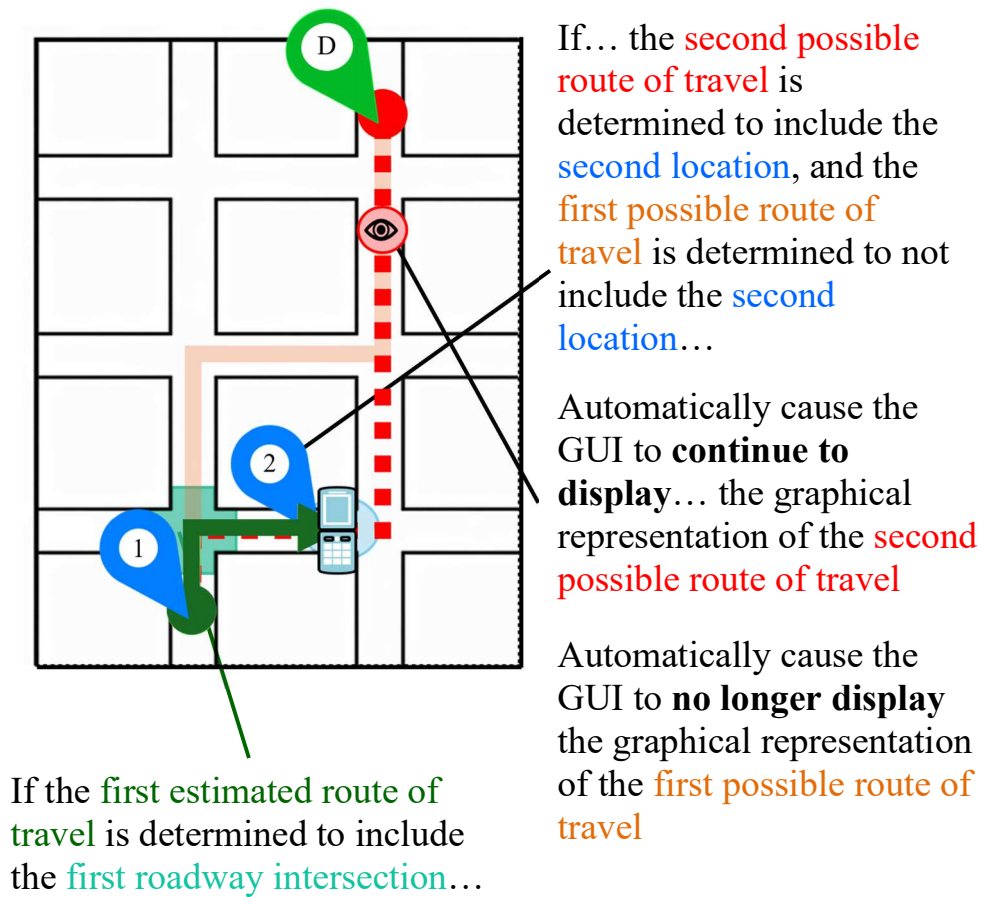


Fig. A(8).

13. [11] (ix) automatically calculate, using map data, the destination location and at least the second location update, a third possible route of travel of the mobile device from the second location towards the destination location and a fourth possible route of travel of the mobile device from the second location towards the destination location, the second possible route of travel including a second roadway intersection and the third route of travel including the first roadway intersection,

[11] requires calculating third and fourth possible routes (based on map data, destination, and second location), where the previously calculated second route

includes a second intersection and where the newly calculated third route includes the first intersection common to the prior first and second routes—in short, two new routes are calculated and the new third route returns to pass through the original first intersection. Yamashita alone or in combination with Irie teaches [11]. EX1003, ¶¶151-63.

Yamashita discloses that after one route is selected and guidance is provided in S213, if the user has not reached their destination (S214), the system determines whether a predetermined condition indicates the need to reroute (S215).

Yamashita, ¶¶117-126, 133, 155-158, Fig. 3; EX1003, ¶152. Yamashita's predetermined conditions for rerouting include “when the user's current position comes closer to an intersection, or when any traffic accident or jam is occurring on a route along which the user is guided in step S213.” Yamashita, ¶¶68, 125, 133.

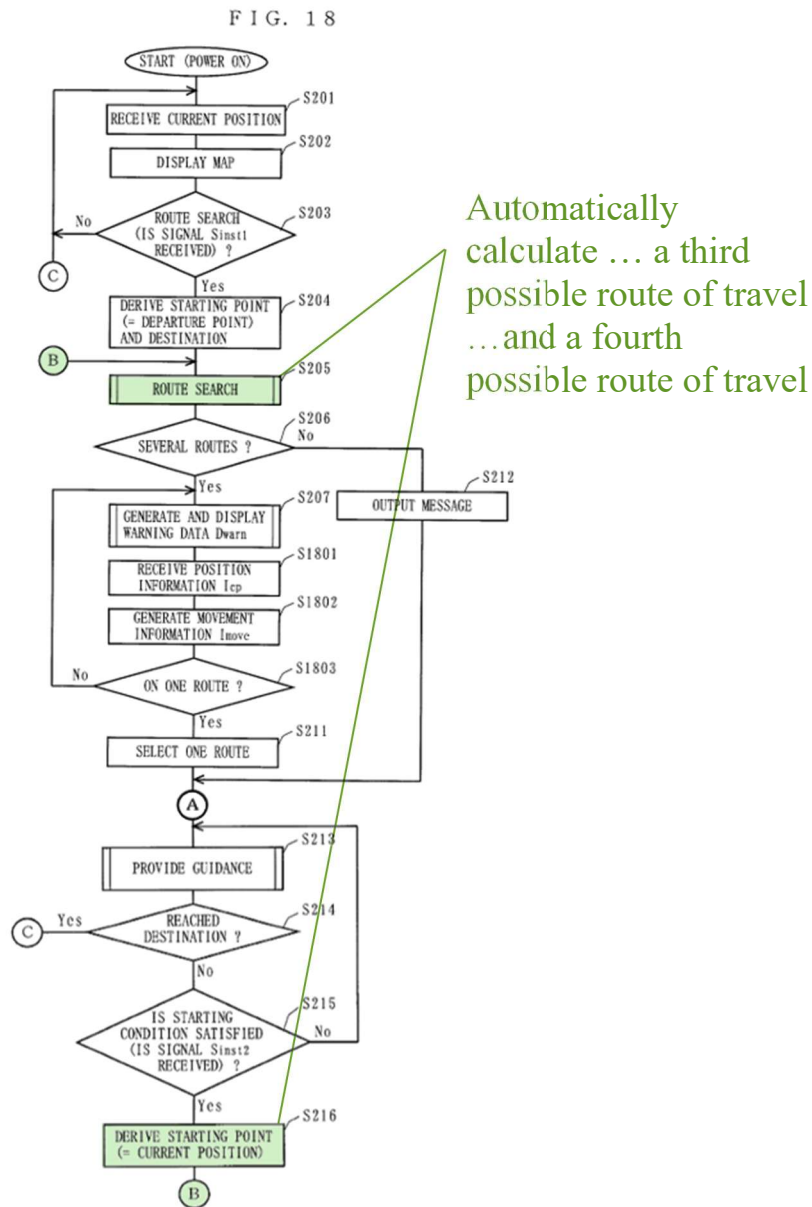
Once the CPU has determined that rerouting is necessary, the CPU “then derives the coordinates of the starting point for re-routing this time (step S216)” (second location) and then “the procedure returns to step S205 for re-routing,” using the current location as the new starting point (second location) to calculate new optimum (third possible route) and next-optimum (fourth possible route).

Yamashita, ¶¶126-131. Yamashita notes that the CPU “derives the coordinates of the starting point for re-routing” in S216 based on received position information, indicating that S216 is not limited to a new location. EX1005, ¶126. A POSITA

would have understood that the current position in S216 may be the same position as in the last updated location in S1801/S208 when, for example, the process proceeds so rapidly that the GPS receiver has not generated a new position signal. EX1003, ¶153 (explaining how GPS receivers produce signal and citing Durocher, 14:44-48 and EX1014, 73).

If Patent Owner disputes that S216 and S1801/S208 may be the same location, a POSITA alternatively would have found it obvious to use the same location in S216 as the last updated location in S1801/S208 or include it in the calculation. EX1003, ¶154. A POSITA would have been motivated to do so because it would have facilitated Yamashita's goal of providing users with new route options before the user goes off a first route. Yamashita, ¶16; EX1003, ¶154. By reusing the last updated location in S1801/S208 for rerouting in S216, Yamashita's system would have been able to provide the user with new routes faster because it would have reduced the amount of processing performed, improving efficiency. EX1003, ¶¶56, 154; EX1014, 67-73. A POSITA would have also recognized that there are circumstances in which a GPS receiver may not be able to calculate the user's current location. EX1003, ¶154; EX1014, 67-74. A GPS receiver may not receive sufficient satellite signals to calculate new coordinates. EX1013, 157-58; EX1003, ¶154. Under this circumstance, a POSITA would have found it beneficial to reuse the last known location update from

S1801/S208 for rerouting because it provides users with the most up-to-date route in the shortest possible time, facilitating dynamic navigation and avoiding traffic jams. EX1003, ¶¶54, 56, 154. A POSITA would have had a reasonable expectation of success in doing so because Yamashita discloses using the same location update multiple times (Yamashita, ¶¶113, 134), making the reuse of S1801/S208 no more than the application of known technique. EX1003, ¶154. Because Yamashita repeats the process for limitations [1d]-[11], Yamashita discloses or renders obvious automatically calculating a third and fourth possible route based on the current location (second location), the destination, and cartographic data (map data). Yamashita, ¶¶17, 193-98; EX1003, ¶¶151-54.



Yamashita, Fig.18 and Fig. 3 (combined and annotated).

As Yamashita discloses for the original route calculations, the new optimum (third possible) and next-optimum (fourth possible) routes are also automatically calculated using “any well known route search algorithm such as the Dijkstra’s algorithm” and suggested based on which is the most efficient (e.g., shortest

distance, fastest time, cheapest). Yamashita, ¶¶76-77, 127. Yamashita further provides that the cost of the next-optimum route may be increased during re-routing such that the process generates new routes to the destination which do not coincide with the previous route. Yamashita, ¶127. As explained for [1e], a POSITA would have understood that Yamashita discloses that the new optimum (third possible) and next-optimum (fourth possible) would diverge at a new junction (e.g., second intersection) to allow Anavi to later determine which route the user is traveling along after passing the common intersection. Yamashita, ¶¶76-77, 96, 127; EX1003, ¶¶119, 121, 155. Alternatively, a POSITA would have understood that when Yamashita performs its iterative process to calculate new routes, the second intersection would have been one of a finite amount of available intersections along the various routes for which Yamashita's process would have used in calculating new routes and selecting a point of divergence for those routes, and would have at least been obvious. EX1003, ¶¶56-57, 156.

Yamashita's original next-optimum route (i.e., the second possible route) includes a second intersection common with the third and fourth possible routes discussed above because, Yamashita's rerouting occurs as the user is traveling the next-optimum route/second route, so a POSITA would have understood that the second intersection would be present in the second route and the newly calculated third and fourth routes. Yamashita, ¶¶76-77, 96; EX1003, ¶¶155-56.

Yamashita's third possible route includes the first intersection when that is an optimal route based on current conditions. EX1003, ¶¶157-63. Yamashita discloses rerouting "when any traffic accident or jam is occurring on a route along which the user is guided in step S213." Yamashita, ¶¶125, 133. A POSITA would have understood that, if a traffic accident or jam is obstructing the current route, the optimum (third) route determined may require a user to traverse the first intersection again to avoid the obstruction. EX1003, ¶¶57, 157-59. That is, the optimum route may include a double-back or U-turn to avoid the obstruction on the current route (depicted as  below). Yamashita teaches that the routes are calculated using "any well known route search algorithm" (Yamashita, ¶76), and suggested based on which is the most efficient (e.g., shortest distance, fastest time, cheapest); hence, a POSITA would have understood that a third possible route exists where the user is rerouted through a previously traversed intersection when that is the most efficient route. EX1003, ¶¶57, 157-59; Irie, 1:10-17; *Unwired Planet, LLC v. Google Inc.*, 841 F.3d 995, 1002 (Fed. Cir. 2016) ("[C]ombinations of prior art that sometimes meet the claim elements are sufficient to show obviousness.")

Figure B(1) below illustrates Yamashita's process for this limitation, expanding the display of the map. EX1003, ¶159.

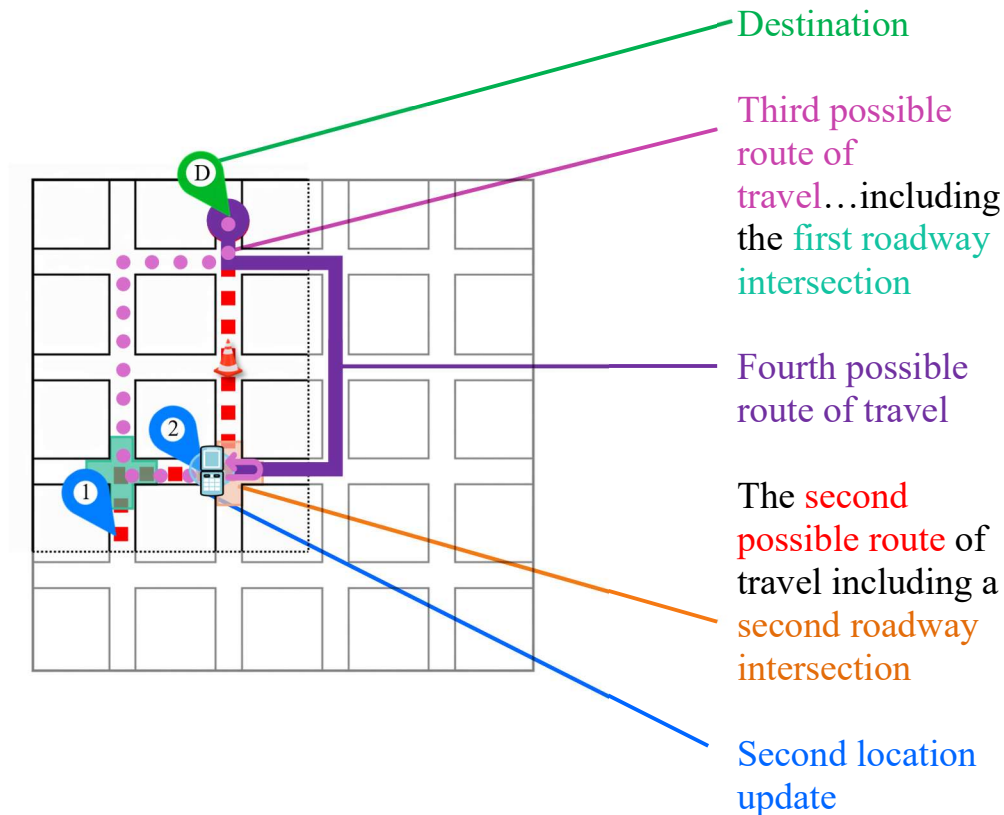


Fig. B(1).

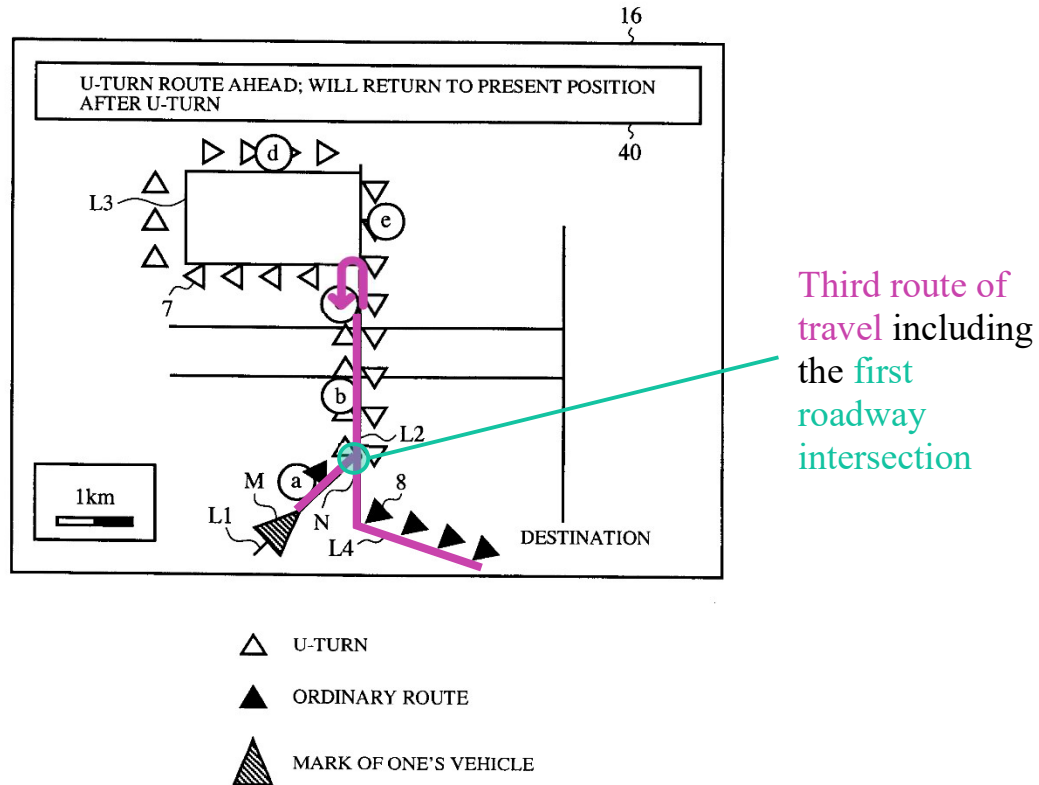
If Patent Owner disputes Yamashita’s teachings, Irie discloses calculating a route that involves a user taking a U-turn to return to a prior node (first intersection) because Irie discloses “performing a U-turn guide to indicate that the vehicle will return to the node by performing a U-turn on the closest link.” (Irie, claim 1, 1:63-2:5). EX1003, ¶160.

Irie discloses a “guide indication method in an onboard navigator” that specifically addresses the case in which a traveling vehicle needs to make a U-turn to pass through the same intersection twice. Irie, 1:10-17; EX1003, ¶160. This may

be the case when an intersection prohibits a turn in a certain direction. *Id.*, 4:23-43, 5:11-17. The method is invoked when a vehicle is following a route, such as that illustrated in Figure 2, where a user is routed through point N twice as part of a U-turn.⁶

⁶ In the context of both Yamashita and Irie, a U-turn could either be an immediate turn around (as depicted in the annotated figures) or a route that goes around a block to return to a common intersection, as also shown in Irie's Fig. 2. EX1003, ¶¶159, 161 (Figure B(1.2)).

FIG.2



Irie, Fig. 2

A POSITA would have been motivated to implement Irie's U-turn possibility in Yamashita's rerouting calculation because it furthers Yamashita's goals of providing the fastest, most efficient route. EX1003, ¶162; Yamashita, ¶77. A POSITA would have understood that a U-turn route may be the most efficient route under certain circumstances because it may avoid a traffic accident or jam, avoid a road closure, or prevent drivers from having to wait to take a left turn in a four-way intersection. EX1014, 111, 116-17, 124-25, 136-41; EX1015, 9; EX1003, ¶162.

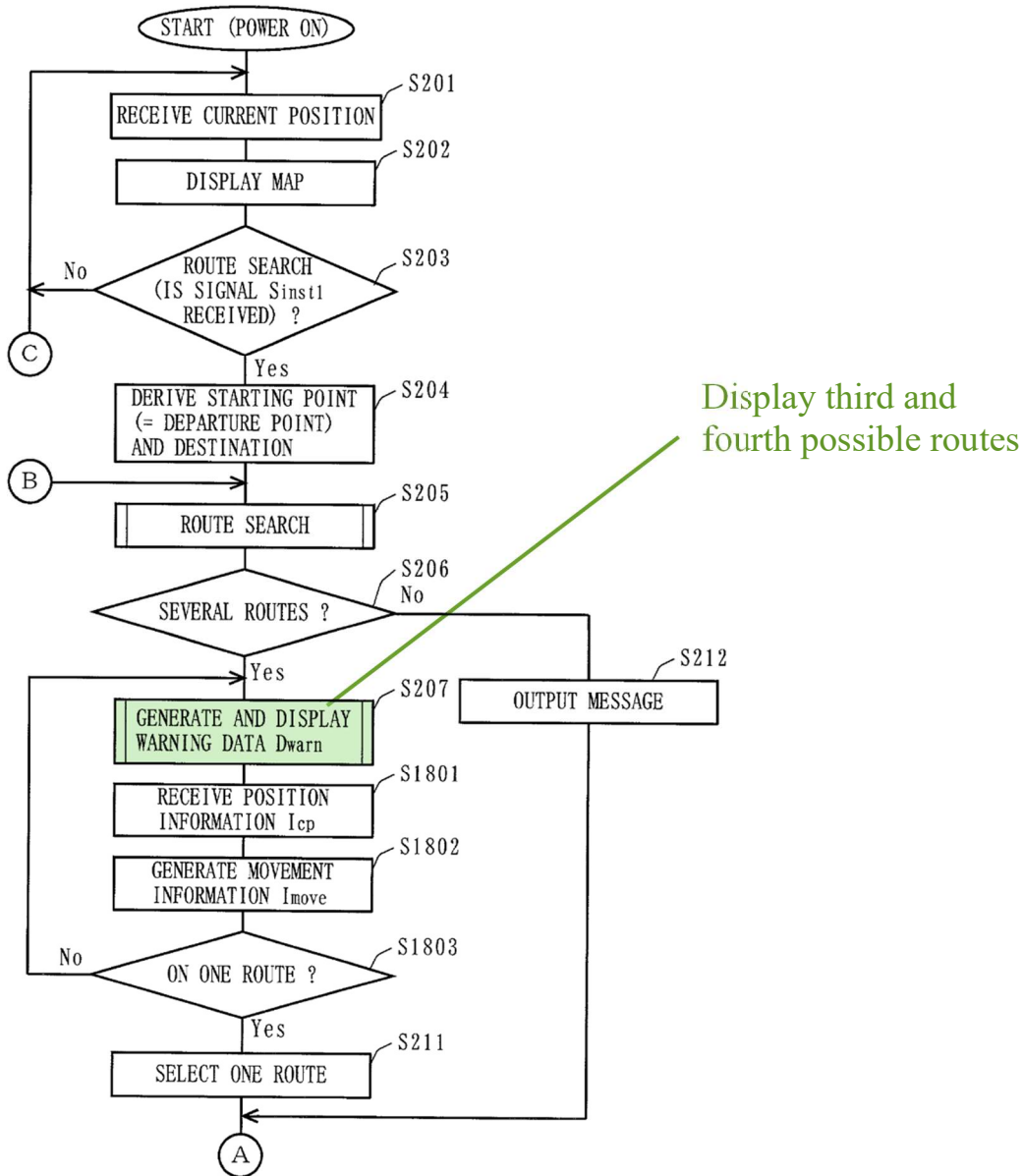
A POSITA would have had a reasonable expectation of success in implementing Irie's U-turn teaching as a third possible route in Yamashita's rerouting calculation because it would have merely involved the use of a known technique (i.e., Irie's use of a U-turn) to improve a similar method (Yamashita's rerouting) in the same way. EX1003, ¶¶162-163. Both Yamashita and Irie disclose similar navigation devices that display potential routes to guide a user on a route. Irie, 1:63-2:5; Yamashita, ¶¶18, 89, 100. A POSITA would have understood that implementing a U-turn route in Yamashita would have merely involved including such an option in a list of possible routes based on priorities that Yamashita already evaluates. EX1014, 111, 116-17, 124-25, 136-41; EX1015, 9; EX1003, ¶163; ¶¶120-21. This implementation would not have altered Yamashita's system in any way such that it would become inoperable or unusable for its intended purpose. EX1003, ¶163.

14. **[1m] (x) cause the GUI to display the graphical representation of the map together with a graphical representation of the third possible route of travel and a graphical representation of the fourth possible route of travel on segments of roadways of the graphical representation of the map,**

[1m] requires display of the third and fourth possible routes of travel on the GUI. Yamashita teaches [1m] because, as explained for [1f], the result of S207 is the generation of Dwarn that causes the display to show the optimum and next-

optimum routes overlaid on the map. Yamashita, ¶¶85-93, 102, 112-13; EX1003, ¶¶164-65. Because Yamashita instructs that its re-routing process repeats the process described above, a POSITA would have appreciated that the display of the new optimum and next-optimum routes would have been displayed instead of the originally calculated routes as explained for [1f]. EX1003, ¶164.

FIG. 18



Yamashita, Fig. 18 (annotated).

Figure B(2) below illustrates Yamashita's process for this limitation where the information is displayed on the GUI. EX1003, ¶165.

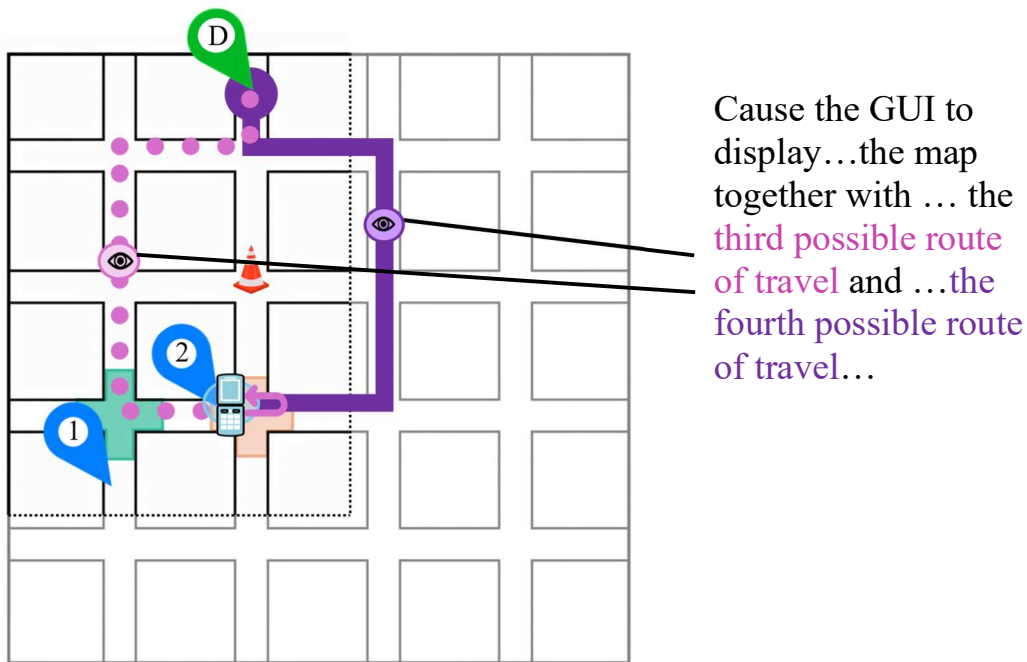


Fig. B(2).

15. [1n] (xi) receive a third location update generated by the positioning device of the mobile device, the third location update representing a third location of the mobile device at a third time after the second time,

[1n] requires determining a user's third location at a later third point in time.

Yamashita teaches [1n] because Yamashita is an iterative process and, as explained for [1g], after Yamashita displays its optimum and next-optimum route, CPU 1 again "receives the position information Icp from the locator 9 (step S1801)."

Yamashita, ¶¶94-95, 153; EX1003, ¶¶128-29, 166-67. Because Yamashita instructs that its re-routing process repeats the process described above, a POSITA would have understood that the current position information Icp received after the

calculation of new routes involves a third location update representing a third location of the mobile device at a third time after the second time. EX1003, ¶166.

Figure B(3) below depicts Yamashita's process for this limitation. EX1003, ¶167.

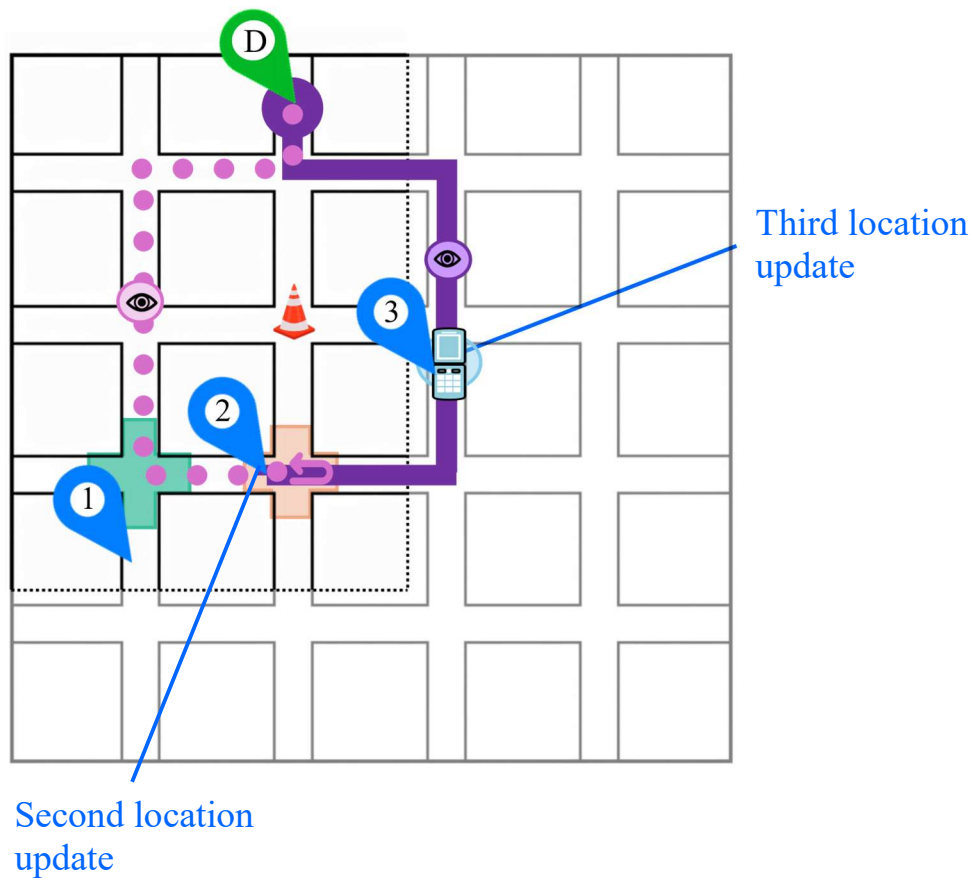
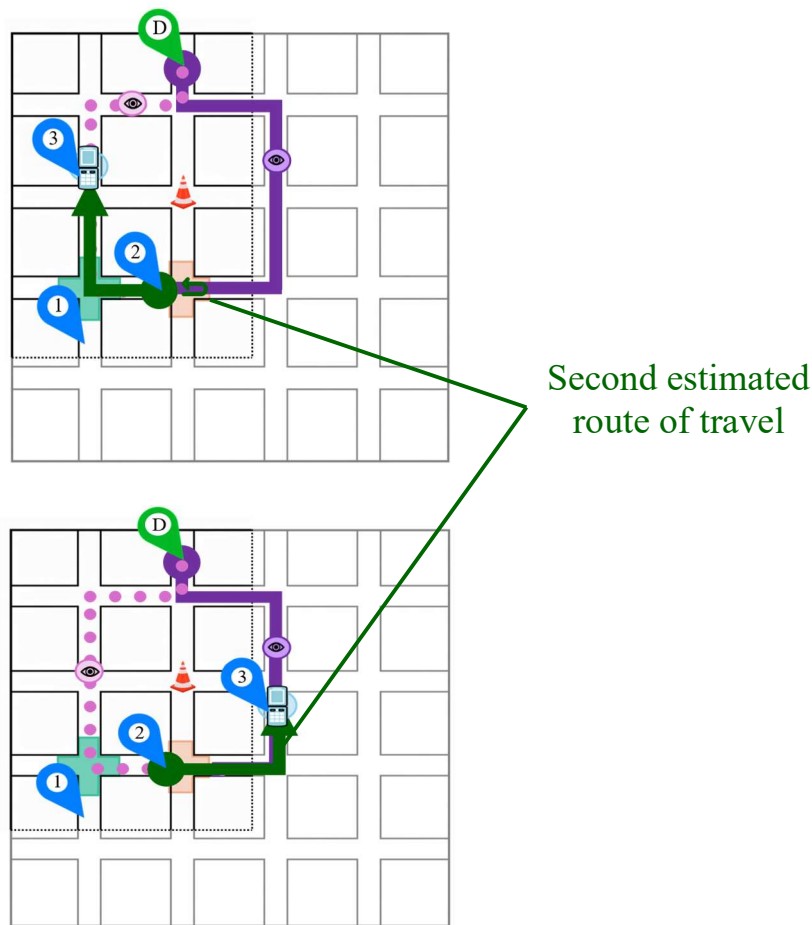


Fig. B(3).

16. [1o] (xii) automatically calculate, using the map data and at least the second location update and the third location update, a second estimated route of travel of the mobile device from the second location to the third location,

[1o] requires calculating a second estimated route of travel using the same process as in [1h] for the first estimated route of travel, except based on the second and third locations. Yamashita teaches [1o] because, as explained for [1h], Yamashita uses “movement information Imove” with “map matching” and/or “trail information Itraj” to “calculate the user’s current position on the road network.” Yamashita, ¶¶113-115, 153, Figs. 2, 18; EX1003, ¶¶168-69. Because Yamashita instructs that its re-routing process repeats the process described above, a POSITA would have appreciated that Yamashita’s subsequent iterations correspond to the second estimated route of travel of the mobile device from the second location to the third location for the same reasons explained in [1h] and the first estimated route. EX1003, ¶¶130-40, 168-69.

Figures B(4.1) and B(4.2) below depict Yamashita’s process for this limitation. EX1003, ¶169.



Figs. B(4.1) and B(4.2), respectively.

17. [1p] (xiii) determine whether the second estimated route of travel includes the second roadway intersection, whether the third possible route of travel includes the third location, and whether the fourth possible route of travel includes the third location,

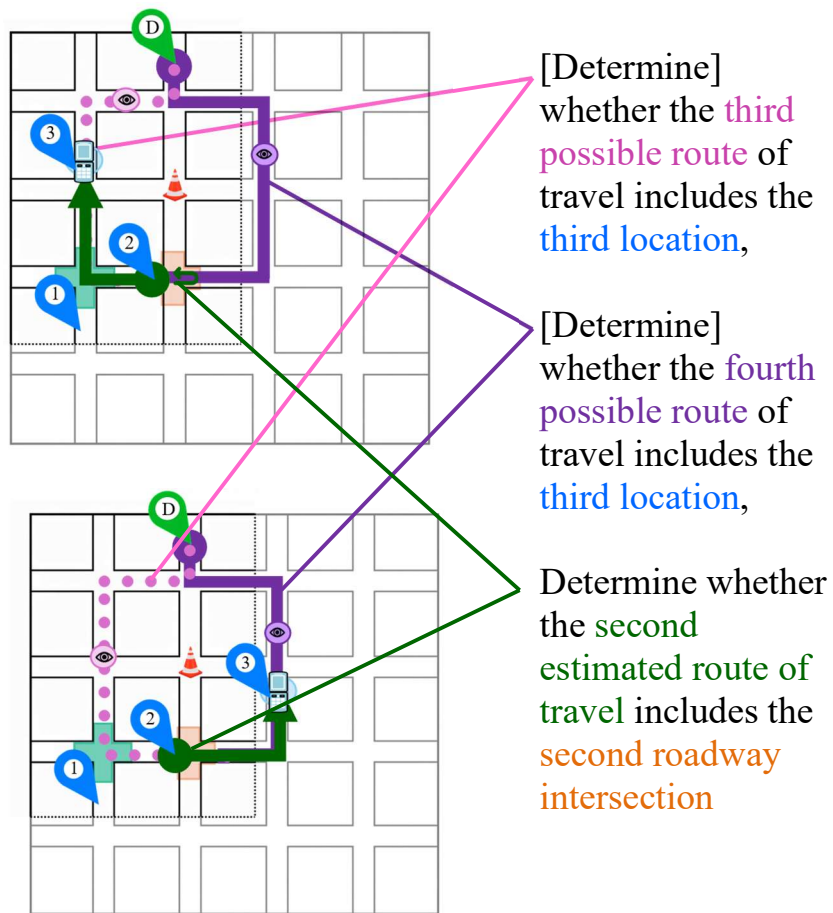
[1p] requires determining if the user is on the third or fourth possible route using a similar process as in [1i]. Yamashita teaches [1p] because, as explained for [1i], the CPU determines whether the trail information Itraj (second estimated route of travel), containing a collection of location updates, coincides with either of

the optimum or next optimum routes that diverge at a second junction intersection.

Yamashita, ¶¶153-58, 115-17; EX1003, ¶¶141-45, 170-72.

Because Yamashita instructs that its re-routing process repeats the process described above ([1d]-[1k]), a POSITA would have understood that a subsequent iteration of Yamashita's process ([1l]-[1o]) for the new optimum and next-optimum routes correspond to the second estimated route, second roadway intersection, and third/fourth possible routes for the same reasons explained for [1i]. EX1003, ¶171.

Figures B(5.1) and B(5.2) below depict Yamashita's process for this limitation dependent on the user's later location. EX1003, ¶172.



Figs. B(5.1) and B(5.2), respectively.

- 18. [1q] (xiv) if the second estimated route of travel is determined to include the second roadway intersection, the third possible route of travel is determined to include the third location, and the fourth possible route of travel is determined to not include the third location, automatically cause the GUI to continue to display the graphical representation of the map together with the graphical representation of the third possible route of travel and automatically cause the GUI to no longer display the graphical representation of the fourth possible route of travel,**

[1q] conditionally requires that the GUI remove the fourth possible route from display if the user is traveling the third possible route and has passed the second intersection—in short, the GUI will only display the possible route actually taken, using the same process as in [1j]. Yamashita teaches [1q] because, as explained for [1j], after the CPU compares the estimated route against the optimum and next-optimum routes, and determines which route the user is traveling, the CPU “allows the display device 7 to display the route from the user’s current position toward the destination overlaid on any corresponding road on the map.” Yamashita, ¶¶122, 153-58; EX1003, ¶¶146-48, 173-74. Because Yamashita instructs that its re-routing process repeats the process described above, a POSITA would have understood that Yamashita’s subsequent display will be of either the new optimum or next-optimum routes depending on which route is being traveled, as explained for [1j]. EX1003, ¶¶146-48, 173-74.

19. [1r] (xv) if the second estimated route of travel is determined to include the second roadway intersection, the third possible route of travel is determined to not include the third location, and the fourth possible route of travel is determined to include the third location, automatically cause the GUI to continue to display the graphical representation of the map together with the graphical representation of the fourth possible route of travel and automatically cause the GUI to no longer display the graphical representation of the third possible route of travel.

[1r] conditionally requires that the GUI remove the third possible route from display if the user is traveling the fourth possible route and has passed the second intersection—in short, the GUI will only display the possible route actually taken, using the same process as in [1k]. Yamashita teaches [1r] because, as discussed for [1k] (and [1j], [1q]), after the CPU compares the estimated route against the optimum and next-optimum routes, and determines which route the user is traveling, the CPU “allows the display device 7 to display the route from the user’s current position toward the destination overlaid on any corresponding road on the map.” Yamashita, ¶¶122, 153-58; EX1003, ¶¶149-50, 175-76. Because Yamashita instructs that its re-routing process repeats the process described above, a POSITA would have appreciated that Yamashita’s subsequent display will be of either the new optimum or next-optimum routes depending on which route is being traveled, as explained for [1k]. EX1003, ¶¶149-50, 175-76.

Figure B(7) below depicts Yamashita's process for this limitation where the fourth route is displayed on the GUI. EX1003, ¶176.

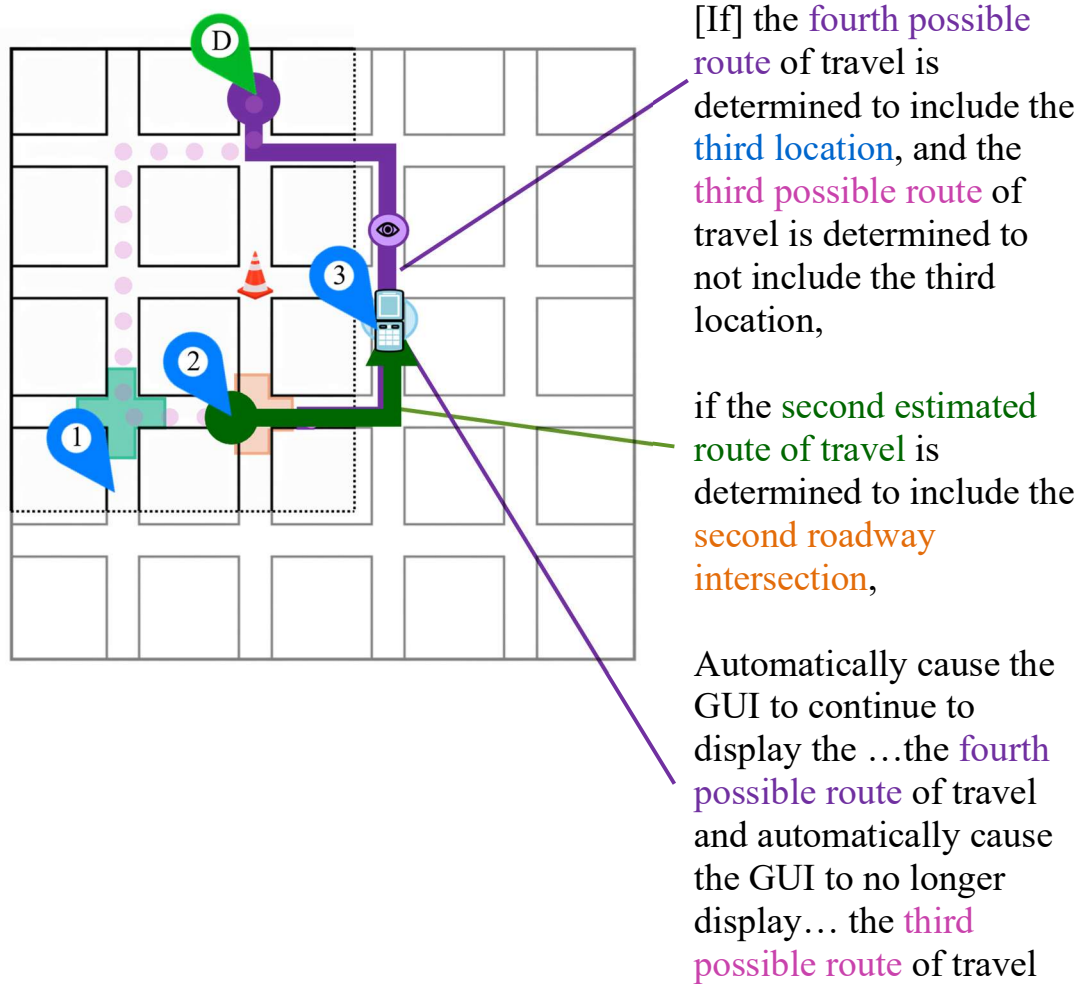


Fig. B(7).

B. Dependent Claims 2-6

- 1. Claim 2. The computer program product of claim 1, wherein first possible route of travel, the second possible route of travel, the third possible route of travel, and the fourth possible route of travel are calculated by the mobile device.**

Claim 2 requires the possible routes to be determined by the mobile device.

As explained for [1c], [1e] and [11], Anavi's (mobile device) CPU performs the "route search" in S205 and determines the various routes. Yamashita, ¶¶39, 58-59, 76, 159. EX1003, ¶¶110-11, 119-20, 152-55, 177.

- 2. Claim 3. The computer program product of claim 1, wherein first possible route of travel, the second possible route of travel, the third possible route of travel, and the fourth possible route of travel are calculated by the one or more servers.**

Claim 3 requires the possible routes be determined by a server. Yamashita in combination with Durocher renders obvious claim 3 because, as explained for [1e] and [11], Yamashita calculates various possible routes, Durocher performs route calculations on a server instead of the device, and a POSITA would have been motivated with a reasonable expectation of success to perform route calculations on the server. Durocher, 1:65-2:6, 2:60-66, 3:59-4:3, 4:12-25; EX1003, ¶¶119-20, 152-55, 178-82.

Like Yamashita, Durocher discloses a navigation system that includes a mobile terminal and a centralized server. Durocher, 2:60-66. In Durocher, the

mobile terminal determines the starting and destination points and then sends this information to the centralized server. Durocher, 3:3-10. Durocher's server "contains cartographic data and is capable of calculating itineraries." Durocher, 2:65-66. Once calculated, Durocher's server transmits the "best itinerary" and the "best alternative itinerar[ies]" for "several or each of the possible deviations" a driver may take "from its course." Durocher, 3:3-10, 3:59-65, 3:67-4:3. Durocher's terminal "contacts the centralized server automatically" and "ask[] the server for a new itinerary to reach the original destination." Durocher, 4:12-19. EX1003, ¶179.

A POSITA would have been motivated to calculate Yamashita's routes using Durocher's method of offloading route calculation from a local device to a remote server to increase the accuracy of the route determinations, increase the processing speed of the determinations, and reduce the cost of Yamashita's Anavi. EX1003, ¶¶52, 59, 180. As Durocher expressly teaches, suggests, and motivates, removing "program[s] of local calculation of itinerar[ies]" results in a "[lower] degree of capability required for processing and memory" on the terminal, and "reduces the cost of the mobile terminal." Durocher, 4:12-25, EX1003, ¶180. It also eliminates the need for the mobile terminal to store "cartographic data, which are essential for calculating itineraries" but which cause "disadvantages [such as] a difficult updating [sic] and an increase in the cost, size, and manageability of the navigational system." Durocher, 1:65-2:3. Using centrally stored cartographic data

would simplify Yamashita's system because it would be able to account for updated maps and traffic conditions in one place, allowing routes to be calculated using the most current and accurate map data. EX1003, ¶180. A POSITA would have understood that moving Yamashita's route calculation to the server would have enhanced the efficiency, enhanced the user experience, and reduced the cost by reducing necessary storage of Yamashita's Anavi. EX1003, ¶¶52, 59, 180.

A POSITA would have had a reasonable expectation of success in offloading the route calculation because it would have merely involved a simple substitution of one known element (local route calculations) for another (server-based route calculation) to obtain predictable results (routes to a destination). EX1003, ¶181. Yamashita and Durocher involve similar navigation devices, servers, and methods. Yamashita, ¶¶15-19, 68, 160; Durocher, 2:60-66, 3:3-10. Yamashita's system involves at least two servers (e.g., "a network server" that also stores Pnavi programming and a VCIS for distributing traffic conditions) and the Anavi includes a communication device configured to exchange data with the servers. Yamashita, ¶¶15-19, 68, 133, 160. Changing where the routes are calculated would not have involved more than minor modifications to the location of processing of data Yamashita already discloses, and these modifications were within a POSITA's skill set before 2002. EX1014, 239-64; EX1003, ¶¶52, 59, 181. While the change moves the location of the calculation, it would not have required

any modification that would have rendered Yamashita's system, devices, or underlying method inoperable. EX1003, ¶182. Performing the calculations on the server would have been one of very finite and conventional design choices (e.g., local vs server). Based on Durocher's teachings, a POSITA would have understood such a modification to merely apply a known technique to a system ready for improvement to yield predictable results. *Id.*

3. Claim 4. The computer program product of claim 1, wherein first estimated route of travel and the second estimated route of travel are calculated by the mobile device.

Claim 4 requires the mobile device to calculate the estimated routes.

Yamashita teaches claim 4, as explained for [1h] and [1o], because Yamashita's calculations, including the generation of trail data Itraj, in its method are performed on Anavi (mobile device). Yamashita, ¶¶22-23, 68, 113-14, 153, 159; EX1003, ¶¶130-40, 168-69, 183.

4. Claim 5. The computer program product of claim 1, wherein first estimated route of travel and the second estimated route of travel are calculated by the one or more servers.

Claim 5 requires that a server calculate first and second estimated routes of travel. Yamashita in combination with Durocher renders obvious claim 5 because, as explained for [1h] and [1o], Yamashita discloses calculating estimated routes, and, as explained for claim 3 Durocher discloses performing route calculations on

a server instead of on the device. Durocher, 1:65-2:3, 3:3-10, 4:12-25; EX1003, ¶¶130-40, 168-69, 184-86. The combination discloses determining Yamashita's estimated routes at a server, as taught by Durocher.

As explained for [1h] and [1o], Yamashita's calculation of estimated routes involves trail data Itraj that is a collection of locations indicating the route traveled. Yamashita, ¶¶113-14, 152-55. Durocher discloses transferring such coordinate position updates to a remote server: "[the terminal may] transfer its position to the server on a regular basis, [and] ... these positions can be stored by the server." Durocher, 7:12-17.

A POSITA further would have been motivated with a reasonable expectation of success to move Yamashita's route estimation calculations to the server to realize the same benefits explained for claim 3. EX1003, ¶¶178-82, 186.

5. **Claim 6. The computer program product of claim 1, wherein the first estimated route of travel is an actual route traveled by the mobile device from the first location to the second location along a known network of road paths and the second estimated route of travel is an actual route traveled by the mobile device from the second location to the third location along the known network of road paths.**

Claim 6 requires that the estimated routes be actual routes along known roads. Yamashita teaches claim 6 because its disclosed first and second estimated routes of travel as explained for [1h] and [1o], "indicate[] the trail the user has moved so far" (Yamashita, ¶153) and is mapped against "road network data [that]

is known” (Yamashita, ¶¶63, 154). EX1003, ¶¶130-140, 168-69, 187. A POSITA would have understood that Yamashita’s Itraj data corresponds to the user’s actual route of travel along a known road network. EX1003, ¶187.

C. Independent Claim 9 and Dependent Claims 10-14

Independent claim 9 is identical to independent claim 1 except that it recites a method instead of a computer program product. As explained for claim 1, Yamashita teaches a method performed by executing the computer program. Claim 9’s preamble is also limiting. EX1003, ¶188. The remainder of claim 9 is nearly identical to claim 1 and taught by the prior art for the reasons explained for claim 1:

Claim 9 Limitation	Relevant Explanation
[9pre]	[1pre], Section VII.A.1
[9a]	[1a], Section VII.A.2
[9b]	[1b], Section VII.A.3
[9c]	[1c], Section VII.A.4
[9d]	[1d], Section VII.A.5
[9e]	[1e], Section VII.A.6
[9f]	[1f], Section VII.A.7
[9g]	[1g], Section VII.A.8
[9h]	[1h], Section VII.A.9

Claim 9 Limitation	Relevant Explanation
[9i]	[1i], Section VII.A.10
[9j]	[1j], Section VII.A.11
[9k]	[1k], Section VII.A.12
[9l]	[1l], Section VII.A.13
[9m]	[1m], Section VII.A.14
[9n]	[1n], Section VII.A.15
[9o]	[1o], Section VII.A.16
[9p]	[1p], Section VII.A.17
[9q]	[1q], Section VII.A.18
[9r]	[1r], Section VII.A.19

Dependent claims 10-14 are identical to dependent claims 2-6, except that they depend from claim 9 instead of claim 1. Claims 10-14 are taught by the prior art for the same reasons explained for claims 2-6 as the following chart shows:

Claim	Relevant Explanation
10	2, Section VII.B.1
11	3, Section VII.B.2
12	4, Section VII.B.3
13	5, Section VII.B.4
14	6, Section VII.B.5

VIII. Ground 2: Yamashita, Durocher, Irie, and Dickerson Render Obvious Claims 7 and 15

1. Claim 7

- a. [7pre] The computer program product of claim 1, wherein the mobile device corresponds to a preferred service provider and wherein the non-transitory computer readable medium further includes computer instructions that when executed by the at least one processor of the computing system cause the computing system to:**

[7pre] requires that the mobile device corresponds to a preferred service provider. A POSITA would have understood that claim 7's reference to a "computing system" refers to the "navigation system" in claim 1. EX1003, ¶190. Claim 7 recites "wherein the mobile device," "the non-transitory computer readable medium," and "the at least one processor." EX1001, claim 7. These terms all find their antecedent basis from claim 1's preamble. Claim 1 does not recite a "computing system" with these components but does recite a "navigation system" with them, so here, "computing system" refers to the "navigation system." EX1003, ¶¶190-97.

If claim 7's preamble is limiting, Dickerson discloses using navigation devices, like Anavi of Yamashita, by ride-sharing service providers configured through a centralized assignment system. EX1007, ¶191. Dickerson discloses "an automated transit system" where a "central assigning system" connects passenger

and ride-sharing driver devices, such that “volunteering to drive allows dynamic ‘car-pool’ assignment.” Dickerson, ¶¶3, 7, 19, 27-28, 32, 94-96.

A POSITA would have found it obvious to integrate Dickerson’s central assigning system into Yamashita’s server, such that Yamashita’s Anavi is usable to accept rides and navigate drivers in a rideshare implementation. EX1003, ¶¶192-97. Dickerson discloses “an automated transit system” that “provide[s] real-time command and control of passengers and vehicles.” Dickerson, ¶¶3, 32. Dickerson’s system includes passengers, drivers/vehicles, and a central assigning system that matches a passenger with a specific driver. Dickerson, ¶¶19-21, 102. The “system equips the passengers and vehicles with wireless communication devices that transmits information to, and receives information from, the central assigning system.” Dickerson, ¶21. Passenger and ride-sharing driver devices are “essentially the same” but “the software capabilities are slightly different.” Dickerson, ¶39; *id.* ¶¶27, 39, 81, 94, 100. When used for “[r]ide-sharing drivers,” the device is programmed with a “[o]ne-button request to ... volunteer to drive in the immediate future.” Dickerson, ¶¶39-40, 76-81, 94-96. Dickerson’s central assigning system “matches a passenger’s parameters with current transit parameters.” Dickerson, ¶¶19, 43, 100, 102.

A POSITA would have found it obvious to implement Dickerson’s ride-sharing central assignment server in Yamashita’s navigation system by simply

modifying the software of Yamashita's Anavi to communicate a volunteer request with Dickerson's central assigning server to assign rides. EX1003, ¶¶190-97.

First, a POSITA would have been motivated to use Dickerson's central assigning server in Yamashita's navigation system because it would have provided the ability to use the Anavi mobile devices within the ride-sharing industry and enabled drivers (and riders) to navigate using Yamashita's navigation methods while optimizing trips by centrally configuring the assignments. EX1014, 256; EX1003, ¶¶60-61, 194. A POSITA would have understood Yamashita's adaptive navigation would benefit the ride-sharing industry because it would have allowed drivers and service providers to increase profitability by timely and efficiently pairing drivers with riders, allowing drivers to perform more trips. *Id.* The combination would also have increased passenger satisfaction because it would have ensured that the driver gets to the passenger in the quickest way possible (using Dickerson's central assignment server) and gets the passenger to their ultimate location in the quickest way possible or based on other specified criteria Yamashita discloses (using Yamashita's navigation methods). EX1014, 254; EX1003, ¶¶194-95.

Second, a POSITA would have been motivated to supplement Yamashita's Pnavi programming on Anavi with Dickerson's one-button volunteer request because it would have eliminated the need for multiple devices. EX1003, ¶¶196-

97. Both Yamashita and Dickerson suggest integrating communication devices with navigation devices simplifies the overall system. Dickerson, ¶¶21, 39-40, 71, 75-82; Yamashita, ¶¶58, 68, 133-34, 159-60; EX1003, ¶¶94-95, 196-97. Allowing a driver to accept a ride by selecting one button minimizes distractions. EX1014, 156; EX1003, ¶¶107, 196-97. The driver would not need to answer a phone to accept a ride from a dispatcher, nor would the driver need to navigate through complex menus to accept the ride. EX1003, ¶196.

A POSITA would have had a reasonable expectation of success in implementing Dickerson's ride-sharing central assignment server in Yamashita's navigation system because it merely would have involved the use of a known technique (Dickerson's central assigning system) in a known system and method (Yamashita's navigation) to yield predictable results of a ride-sharing system with improved route navigation. EX1003, ¶197. Like Yamashita, Dickerson relates to routing and navigation devices and methods. Dickerson, ¶¶19, 43, 100, 102. Implementing Yamashita's navigation system to use Dickerson's assigning server would have involved simple modifications or additions to the Yamashita's system, including implementing a server to take on assigning duties and programming Anavi devices to accept, process, and execute a driving assignment. EX1014, 254; EX1003, ¶197. Both Dickerson and Yamashita's systems have similar components, making them compatible. Yamashita, ¶¶58, 67; Dickerson, ¶¶3, 27-

28, 38, 43, 73; EX1003, ¶197. Because Yamashita's Anavi is already configured to communicate with servers, the modification would not have required any changes that would render the system and method inoperable or unsuited for its original purpose. EX1003, ¶¶94-95, 197.

- b. [7a] designate, based on a determined distance between the preferred service provider and the destination location, a determined estimated time of arrival at the destination location of the preferred service provider, and a vehicle type of the preferred service provider, one of a plurality of available service providers as the preferred service provider to provide a service for a customer.**

[7a] requires that the navigation system assign a service provider based on 1) distance between the provider and the destination, 2) estimated arrival at a destination, and 3) vehicle type of the provider. Dickerson discloses assigning a driver (preferred service provider) to a rider based on distance from a rider (i.e., where the driver's destination is the rider's pick-up location), estimated time of arrival at the destination, and vehicle type. Dickerson, ¶¶19, 39, 42, 96, 102; EX1003, ¶¶198-201.

As explained for [7pre], Dickerson discloses "a central assigning system capable of matching a passenger's trip request with current transit parameters to determine vehicle assignment and routes that reduce passenger trip and wait times." Dickerson, ¶19; EX1003, ¶¶191-92, 199. Considerations include "vehicle

availability, ... vehicle location, driver availability, vehicle status, driver status, and the like. Additional exemplary passenger parameters include ... preferred type of vehicle, time of day of travel, duration of travel.” Dickerson, ¶102. The system “will match a user’s request with existing services located at or near the user’s pickup sites.” Dickerson, ¶102; *id.*, ¶42 (“The scheduling processor can further inform the passenger of the type of vehicle, the exact destination site (if not fixed by the request), the expected time of arrival, the cost of the trip (if not fixed and requested as part of the passenger profile), and the expected total time of travel.”). After the passenger accepts the recommended driver, the “assigning system communicates with the driver and assigns him or her to arrange the trip based on the same considerations as discussed earlier.” Dickerson, ¶39. Dickerson assigns a driver based on at least the distance between the driver and the destination (i.e., the pick-up location), the expected time of arrival, and the driver’s vehicle type. EX1003, ¶¶191-92, 199.

Dickerson teaches that a driver may only receive an assignment after the driver has informed the system that they are available. Dickerson, ¶96 (“This volunteering to drive allows dynamic ‘car-pool’ assignment.”). A POSITA would have understood that Dickerson’s teachings correspond to the claimed “computer instructions” that “cause the computing [i.e., navigation] system to: designate...” because the one-button volunteering signal informs the assigning system of its

availability, which causes the driver to be included in the list of potential service providers. EX1003, ¶200.

A POSITA would have found it obvious to implement Dickerson's ride-sharing central assignment server in Yamashita's navigation system for the reasons explained in [7pre]. EX1003, ¶¶193-97, 201.

2. Claim 15

Claim 15 is similar to claim 7 but depends from claim 9 (reciting a method) rather than claim 1 (reciting a computer program product). Claim 15 is rendered obvious for the reasons explained for claim 7. EX1003, ¶202; ¶¶190-201.

a. [15pre]

Dickerson discloses a mobile device that is a preferred service provider as explained for [7pre]. EX1003, ¶203; ¶¶190-97.

b. [15a]

[15a] is identical to [7a], and Dickerson discloses it for the reasons explained for [7a]. EX1003, ¶204; ¶¶198-201.

IX. Sotera Stipulation

Consistent with *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 (PTAB Dec. 1, 2020), Petitioner hereby stipulates that, if the Board institutes *inter partes* review in this proceeding, IPR2026-00418, Petitioner will not pursue in the related litigation, *Bluestone Ventures, Inc. v. Google LLC*, No. 7-

25-cv-00569 (W.D. Tex.), an invalidity defense based on any ground that was raised or reasonably could have been raised in this *inter partes* review before the Board with respect to the challenged claims of U.S. Patent No. 11,473,925.

EX1016. Thus, there will be no “overlap between issues raised in the petition and in the parallel proceeding.” *Apple v. Fintiv*, IPR2020-00019, Paper 11 at 6 (PTAB Mar. 20, 2020).

To be clear, this stipulation does not extend to scenarios where the USPTO institutes but later vacates institution of IPR2026-00418, or otherwise terminates the IPR proceeding without issuing an appealable Final Written Decision, as those scenarios would no longer involve an instituted inter partes review. Thus, if IPR2026-00418 is not instituted, is instituted but later de-instituted, or otherwise terminates without an appealable Final Written Decision, Petitioner reserves the right to pursue in the *Bluestone Ventures, Inc. v. Google LLC* Litigation any ground that was raised or reasonably could have been raised in the IPR. EX1016.

X. Mandatory Notices

A. Real Parties-in-Interest

Google LLC⁷ is the real party-in-interest.

B. Related Matters

The '925 patent is or has been involved in the following proceedings:

Name	Number	Forum	Filed
<i>Bluestone Ventures, Inc. v. Google LLC</i>	7-25-cv-00569	W.D. Tex.	December 12, 2025

C. Lead and Back-Up Counsel

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⁷ Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

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D. Service Information

Please address all correspondence to counsel at the address above. Petitioner consents to electronic service at the above e-mail addresses and at Google-Bluestone@finnegan.com.

XI. Grounds for Standing

Petitioner certifies that the '925 patent is available for IPR and that Petitioner is not barred or estopped from requesting this IPR.

XII. Conclusion

Petitioner has established a reasonable likelihood of success and requests the Board institute review and cancel the Challenged Claims.

Date: July 30, 2026

By: /Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Lead Counsel

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. § 42.24(d), I, Erika H. Arner, certify that the **Petition for *Inter Partes* Review** contains 13,974 words, excluding those portions identified in 37 C.F.R. § 42.24(c), as measured by the word-processing system used to prepare this paper.

Dated: July 30, 2026

/Erika H. Arner/
Erika H. Arner (Reg. No. 57,540)
Lead Counsel

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(a), the undersigned certifies that on July 30, 2026, a copy of the foregoing Petition for *Inter Partes* Review, the associated power of attorney, and Exhibits 1001-1016 were served by FedEx Priority Overnight on the correspondence address of record indicated in the Patent Office's Patent Center website for U.S. Patent No. 11,473,925:

Jongkook Park
13975 Tanners House Way
Centerville, VA 20121

Dated: July 30, 2026

/Lisa C. Hines/
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