

Invalidity of U.S. Patent No. 6,430,498
by
U.S. Patent No. 6,067,502 to Hayashida ("Hayashida")

U.S. Patent No. 6,430,498 (the "'498 Patent") was filed July 11, 2000 and issued August 6, 2002. The '498 Patent claims priority to JP11-197010, filed July 12, 1999. For the purposes of these invalidity contentions, Defendant applies the July 12, 1999 priority date for the '498 Application. However, Defendant reserves the right to contest Plaintiff's reliance on the July 12, 1999 priority date should the priority date become an issue in this proceeding.

The excerpts cited herein are exemplary. For any claim limitation, Defendant may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference's disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its infringement contentions; such use, however, does not imply that Defendant adopts or agrees with Plaintiff's constructions in any way.

Hayashida was filed August 21, 1997 and issued May 23, 2000. Hayashida therefore qualifies as prior art with regard to the '498 patent under 35 U.S.C. § 102(e) (pre-AIA).

JPH09-311625 to Ikeda ("Ikeda") published December 2, 1997 and therefore qualifies as prior art with regard to the '498 Patent under 35 U.S.C. § 102(b).¹

JPH10-197277 to Maruyama et al. ("Maruyama") published on July 31, 1998 and therefore qualifies as prior art with regard to the '498 Patent under 35 U.S.C. § 102(a).

JPH08-285613 to Akiyama et al. ("Akiyama") published on November 1, 1996. Akiyama therefore qualifies as prior art with regard to the '498 patent under 35 U.S.C. § 102(b) (pre-AIA).

¹ Defendant relies on a machine translation of this foreign reference, but will supplement these contentions upon receipt of a certified English translation.

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U.S. Patent No. 6,525,768 to Obradovich ("Obradovich") was filed on October 21, 1999 and issued February 25, 2003. Obradovich claims the benefit of Provisional Application 60/105/050 and therefore qualifies as prior art to the '498 Patent under 35 U.S.C. § 102(e).

JPH05-264711 ("the '711 Patent") published on October 12, 1993 and therefore qualifies as prior art with regard to the '498 patent under 35 U.S.C. § 102(b).²

Upon information and belief, the Cyberguide system was made publicly available at least as early as September of 1996. The features and functionalities of the NavTalk product are described in A Mobile Context-Aware Tour Guide by Abowd et al. ("Abowd"). Because the Cyberguide product itself was known and used by others prior to the '498 Patent's priority date, it constitutes prior art under 35 U.S.C. § 102(a) (pre-AIA). Defendant reserves the right to supplement its theories with additional discovered details describing the features and functionalities of the Cyberguide product that were known or used by others prior to the '498 Patent's priority date. Additionally, because Abowd published on September 23, 1996, it independently constitutes prior art under 35 U.S.C. § 102(b).

Upon information and belief, the Garmin NavTalk (the "NavTalk") was made publicly available in January of 1999. The features and functionalities of the NavTalk product are described in the NavTalk Owner's Manual and Reference Guide (Rev. A). Because the NavTalk product itself was known and used by others prior to the '498 Patent's priority date, it constitutes prior art under 35 U.S.C. § 102(a) (pre-AIA). Defendant reserves the right to supplement its theories with additional discovered details describing the features and functionalities of the NavTalk product that were known or used by others prior to the '498 Patent's priority date. Additionally, because the NavTalk Owner's Manual and Reference Guide is a printed publication that was publicly available prior to the '498 Patent's priority date, it independently constitutes prior art under 35 U.S.C. § 102(a) (pre-AIA).

Upon information and belief, the Seiko Epson Locatio (the "Locatio") was made publicly available in June of 1999. Therefore, the Locatio qualifies as prior art with regard to the '498 patent under 35 U.S.C. § 102(a) (pre-AIA).

U.S. Patent No. 5,781,150 to Norris ("Norris") was filed on October 13, 1995 and issued on July 14, 1998 and therefore qualifies as prior art with regard to the '498 patent under at least 35 U.S.C. § 102(e) and (a).

Hayashida anticipates Claim 1, 3, 5, 7, 8 under 35 U.S.C. § 102.

Hayashida (or Hayashida in view of the Cyberguide/Want) renders Claim 1, 3, 5, 7, and 8 obvious under 35 U.S.C. § 103.

² Defendant relies on a machine translation of this foreign reference, but will supplement these contentions upon receipt of a certified English translation.

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Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Akiyama/the '711 Patent renders Claims 1 and 3 obvious under 35 U.S.C. § 103.

Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Maruyama/Ikeda/the '711 Patent renders Claim 3 obvious under 35 U.S.C. § 103.

Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Akiyama/the '711 Patent in further view of Maruyama/Ikeda/the '711 Patent renders Claim 3 obvious under 35 U.S.C. § 103.

Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Norris/the NavTalk, the Locatio/Maruyama/the Cyberguide/Obradovich renders Claims 4, 9, 10, 11, and 13 obvious under 35 U.S.C. § 103.

Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Akiyama/the '711 Patent in further view of Norris/the NavTalk, the Locatio/Maruyama/the Cyberguide/Obradovich renders Claim 4 obvious under 35 U.S.C. § 103.

Hayashida (or Hayashida in view of the Cyberguide/Want) in view of Norris/the NavTalk, the Locatio/Maruyama/the Cyberguide/Obradovich in further view of Maruyama/Ikeda/the '711 Patent renders Claims 11 and 13 obvious under 35 U.S.C. § 103.

U.S. Patent No. 6,430,498	Hayashida
Claim 1	
1[P]. A portable terminal with the function of walking navigation, comprising:	<p>Hayashida discloses a portable terminal with the function of walking navigation.</p> <p><i>This invention is related to a map display device to guiding and searching a movement route of a vehicle based on a map information, especially this invention is relate with the improvement of the display of the map information.</i></p> <p><i>Hayashida at 1:5-8.</i></p> <p><i>Then this navigation processing can be also executed by this computer device, if the device which can detect the present position by GPS reception device 25 and this information memory part 37 are connected with the carrying-type computer device. Moreover this invention can be applied as the vehicle except the car and the navigation device of the shipping, the aircraft and the map</i></p>

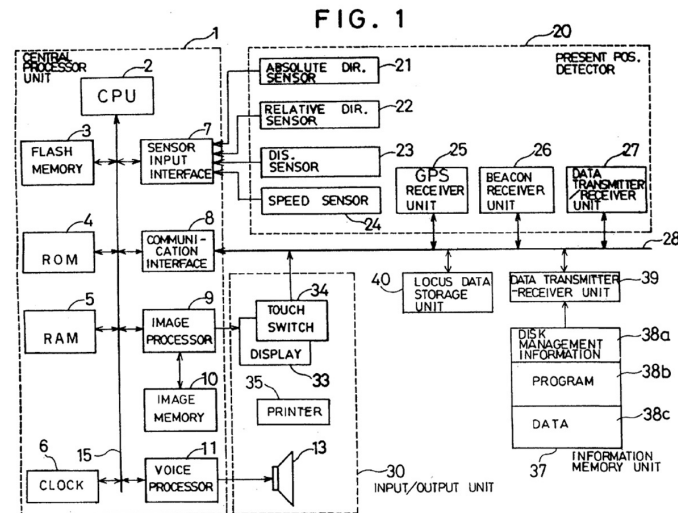
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	<p><i>which is used for the navigation may be a chart and a submarine map and so on in addition to the road map. Moreover again this invention may be applied to the carrying-type navigation device in addition to the navigation device which is attached to the movement bodies such as the car. In other words, this invention may be applied to the small navigation device which can be accompanied by the human and which is used in a cycling, a travel, a mountaineering, a hike, a fishing or so on.</i></p> <p><i>Hayashida at 76:5-20.</i></p>
<p>[1(a)] a device for getting location information denoting a present place of said portable terminal; and</p>	<p>To the extent this limitation is governed by 35 U.S.C. § 112(6), and based on Defendant's understanding of Plaintiff's infringement contentions, Hayashida discloses a device (i.e., CPU 2 and present position detector 20, including GPS receiver unit 25 and beacon receiver unit 26) that performs the claimed function of getting location information denoting a present place of said portable terminal.</p> <p><i>FIG. 1 illustrates the overall circuitry of the navigation device. A central processor 1 controls the operation of the whole navigation device. The central processor 1 is comprised with a CPU 2, a flush memory 3, a RAM 5, a ROM 4, a sensor input interface 7, a communication interface 8, an image (picture) processor 9, a image (picture) memory 10, a voice processor 11 and a clock (clock generator) 6. The CPU 2 and the devices through up to the clock 6 are connected together through a CPU local bus 15, and the data are exchanged among these devices.</i></p> <p><i>Hayashida at 2:46-55.</i></p> <p><i>The sensor input interface 7 comprises an A/D converter circuit or a buffer circuit. The sensor input interface 7 receives analog or digital sensor data from the sensors 21 to 24 of a present position detector 20. The present position detector 20 includes an absolute direction sensor 21, a relative direction sensor 22, a distance sensor 23 and a vehicle speed sensor 24.</i></p> <p><i>Hayashida at 7:24-30.</i></p>

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	<p><i>An I/O data bus 28 is connected to the communication interface 8 of the central processor 1. To the I/O data bus 28 are connected the GPS receiver unit 25, the beacon receiver unit 26 and the data transmitter/receiver unit 27 of the present position detector 20. To the I/O data bus 28 are further connected a touch switch 34 and a printer 35 of the input/output unit 30, and an information memory unit 37. That is, a variety of data are exchanged between the external accessory equipment and the CPU local bus 15 through the communication interface 8.</i></p> <p><i>The present position detector 20 outputs data for detecting the present position of the car. In other words, the absolute direction sensor 21 detects the absolute direction. The relative direction sensor 22 detects the relative direction with respect to the absolute direction. Furthermore, the distance sensor 23 detects the distance travelled. The vehicle speed sensor 24 detects the running speed of the car. The GPS receiver unit 25 receives GPS (Global Positioning System) signals to detect position data such as longitude and latitude of the car. The GPS signals are microwaves transmitted from a plurality of satellites orbiting round the earth.</i></p> <p><i>Similarly the beacon receiver unit 26 receives beacon from a data offering system such as VICS (Vehicle Information and Communication System) or the like, and the received data and the corrected data of GPS are output to the I/O data bus 28.</i></p> <p><i>The data transmitter/receiver unit 27 exchanges a variety of information related to the present position or the road conditions near the car relative to the bi-directional present position information offering system or the ATIS (advanced traffic information service), etc. by utilizing a cellular phone, FM multiplex signals or a telephone circuit. These information are used as a detecting information of the car position or a support information of movement. The beacon receiver unit 26 and the data transmitter/receiver unit 27 may not be provided. As for this data sending and the data transmitter/receiver unit 27, a</i></p>
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radio receiver, a television receiver, a carrying telephone, a pager or the other radio communication machine are used.
Hayashida at 7:50-8:21.



Id. at Fig. 1.

FIG. 3 illustrates some of a group of data stored in the RAM 5. The present position data MP represent the present position of the vehicle and are detected by a present position detector 20. The absolute direction data ZD represents the south-north direction relying upon the terrestrial magnetism and are found based upon the data from an absolute direction sensor 21. The relative direction angle data Dθ represent an angle of the direction in which the vehicle is traveling with respect to the absolute position data ZD and are found based upon the data from a relative direction sensor 22.

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	<p><i>The traveled distance data ML represent a distance traveled by the vehicle and are found based on the data from a distance sensor 23. The present position data PI are related to the present position and are input from a beacon receiver 26 or the data transmitter-receiver 27. The VICS data VD and ATIS data AD are input from the beacon receiver 26 or the data transmitter-receiver 27. The VICS data VD are used for correcting an error in the position of the vehicle detected by a GPS receiver 25. The ATIS data AD are used for determining traffic regulations and traffic jamming in the areas.</i></p> <p><i>Hayashida at 10:55-11:8.</i></p> <p><i>Then a processing for detecting the present position (step SA2) and the subsequent processing are executed. The processing for detecting the present position (step SA2) detects the geographical coordinates (latitude, longitude, altitude, etc.) of an overland moving body, i.e., of a vehicle mounting the navigation device. That is, a GPS receiver 25 receives signals from a plurality of satellites orbiting around the earth, detects coordinate positions of the satellites, times at which the electromagnetic waves are emitted from the satellites and the time at which the electromagnetic waves are received by the GPS receiver 25, and calculates the distances to the satellites. The coordinate position of the vehicle is calculated from the distances to the satellites, to detect the present position of the vehicle. The thus found geographical coordinate data of the vehicle are stored in the RAM 5 as present position data MP. The present position data MP are often corrected by the data input through a beacon receiver 26 or the data transmitter/receiver 27.</i></p> <p><i>Hayashida at 13:16-33; see also id. at Fig. 5.</i></p> <p>Alternatively, to the extent required by the claims, it would have been obvious to a PHOSITA to modify Hayashida's device for getting location information denoting a present place of said portable terminal to utilize an infrared ray sensor in addition to GPS receiver and antenna and CPU to perform the function of getting location information denoting a present place of said portable terminal as suggested by the Cyberguide. <i>See</i> corresponding claim limitation of Exhibit A11. A PHOSITA would have been motivated to modify Hayashida with the teachings of the Cyberguide in order to allow the device to function indoors as well as outdoors. At least because Hayashida</p>
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	<p>already includes beacon receiver hardware to support such functionality, the proposed combination is the application of a known technique to improve a similar device in the same way and would not have required undue experimentation and would have yielded predictable results.</p> <p>Alternatively, to the extent required by the claims, it would have been obvious to a PHOSITA to modify Hayashida's device for getting location information denoting a present place of said portable terminal to utilize an IR beacon in addition to GPS receiver and antenna and CPU to perform the function of getting location information denoting a present place of said portable terminal as suggested by Want.</p> <p><i>A location information system uses a positioning system, such as the civilian Navstar Global Positioning System (GPS), in combination with a distributed network. The location information system includes a radio transceiver for communicating to the distributed network and a GPS receiving system. The GPS receiving system receives a signal from the GPS and converts it into a coordinate entry. The coordinate entry is transmitted to the distributed network for retrieval of corresponding location specific information. The location specific information may reside on a web page. The coordinate entry may be incorporated into the web page address that supports the coordinate entry or linked to an existing web page associated with the coordinate entry. The web page and associated information is displayed. Bar code labels, infrared beacons and other labeling systems may also be used in the location information system in place of or in addition to the GPS receiving system to supply location identification information.</i></p> <p>Want at Abstract.</p> <p><i>FIG. 1 shows one embodiment of a location information system 100. As seen in FIG. 1, the location information system 100 includes a computer or personal digital assistant (PDA) 110, a GPS receiver 120 and a radio transmitter/receiver, e.g., transceiver 130. The GPS receiver 120 receives signals from three or more GPS transmitters 200 and converts the signals to a specific latitude and longitude (and in some cases altitude) coordinate entry, as described above. The GPS receiver 120 provides the coordinate entry to the</i></p>
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	<p><i>computer 110 and the transceiver 130 transmits the coordinate entry, preferably via a radio network, to a predetermined node 300 or other node on a distributed network 305. Alternatively, the coordinate entry is transmitted to the distributed network 305 over a wired connection to the computer 110 (not shown).</i></p> <p><i>Information associated with the coordinate entry defining a specific location is then transmitted to the computer 110 via the transceiver 130 (i.e., by either a radio network or other wireless or wire communication link) and displayed on the display 140. Information about various locations is organized and stored on the distributed network 305 and is preferably organized as "web pages." The web pages or pointers to them are preferably stored on the predetermined node 300 of the distributed network 305. However, the web pages may also be stored at various other nodes on the distributed network 305 and may be associated with one or more coordinate entries corresponding to physical locations. The web pages may have, for example, an already existing URL, e.g., a proprietary pre-existing URL. Alternatively, coordinate information may be incorporated into an existing URL to form a unique URL. Further, the coordinate entry may also be the entire URL of the web pages. A client, either local or remote, may access the web pages preferably via a server on the predetermined node 300 of the distributed network 305.</i></p> <p>Want at 4:3-35</p> <p><i>The radio transceiver 130 of the location information system 100 is preferably a cellular modem radio. The radio transceiver 130 may work with a Ricochet™ Wireless Network system manufactured by Metricom, Inc. The Ricochet™ Wireless Network is a wide-area wireless system using spread-spectrum packet switching data technology operating in the 902-928 MHz RF spectrum. The radio transceiver 130 may also comprise other systems, such as a cellular digital packet data (CDPD) type radio transceiver.</i></p> <p>Want at 5:29-37</p>
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	<p><i>It should be appreciated that the GPS receivers 120 need to receive signals from the GPS transmitters 200. Thus, if the signals are blocked, the GPS receiver 120 may not be able to determine the coordinate entry. In order to avoid this problem, other techniques for providing a coordinate entry may be used by the location information system 100. These techniques may include, for example, printed ID labels (e.g., bar codes, vericodes, and other similar labels), infrared beacons or RF tags).</i></p> <p><i>FIG. 4 shows an embodiment of the location information system 100 using bar code labels to obtain location information. Other coding systems, such as the Vericode system, two-dimensional bar coding system and the like, are also contemplated for use with the present invention. In the embodiment of FIG. 4, a bar code label 212 may be placed on or in a building 210 or other location of interest. In preferred embodiments, the bar code label 212 encodes either the same longitudinal and latitudinal information that would be obtained from the GPS system or may directly encode a unique URL. The computer 110 also has, in place of or in addition to the GPS receiver 120, a bar code scanner 160 for scanning and decoding the bar code label 212. The bar code scanner 160 can be provided on a tether. The bar code scanner 160 reads the coordinate entry or unique URL from the bar code label 212. The coordinate entry or unique URL is transmitted to the distributed network 305 via the transceiver 130 and provided to the predetermined node 300, or to another node of the distributed network 305, and processes the location specific identification information as described above. The computer 110 downloads the web page(s) associated with the coordinate entry or unique URL for displaying on the display 140.</i></p> <p><i>FIG. 5 shows an embodiment of the location information system 100 using as the location information source infrared beacons. Infrared beacons 220 may be used in a manner similar to the bar code labeling system described above. However, the infrared beacons 220 may be read from a much greater distance, and preferably approximately at least 25 feet. The IrDa standard can also be used, but a range of only approximately one meter may be obtained due to the limitations of such a system. The infrared beacons 220 are preferably placed</i></p>
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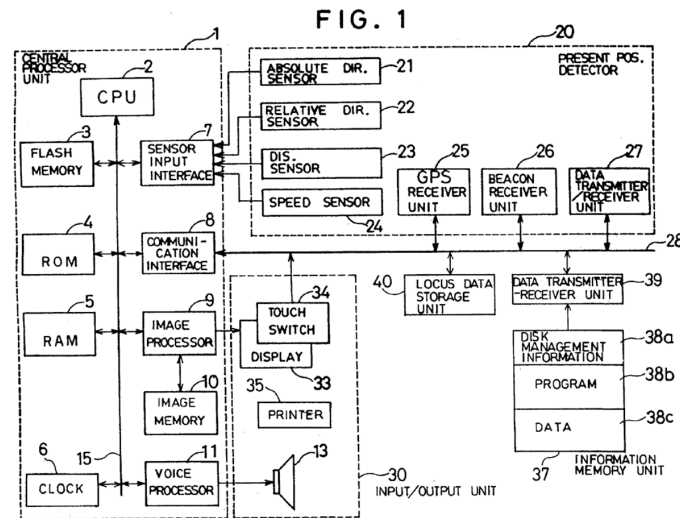
	<p><i>on or in a building 210 or other location of interest. An IrDa or other interface 170, which is well known in the art, is provided on the computer 110 for sensing the infrared beacons 220. The infrared beacons 220 transmit either the coordinate entry or the unique URL that would otherwise be obtained from the bar code label 212. The information received from the infrared beacons 220 is used in the same manner as the information received from the bar codes 212. Additionally, radio frequency beacons could be used in place of the infrared beacons 220 to further extend the read distance. When using radio frequency beacons, the interface 170 is designed for the particular frequency and modulation techniques, well known in the art, used by the particular radio frequency beacons.</i></p> <p>Want at 6:15-7:3</p> <p><i>The control routine starts at step S100. At step S110, the GPS receiver 120 receives signals from the GPS transmitters 200. Then, at step S120, a coordinate entry associated with the GPS signal is downloaded to the computer 110 by the GPS receiver 120. Next, at step S130, the coordinate entry is transmitted to the distributed network 305 via the transceiver 130.</i></p> <p>Want at 7:44-51</p> <p><i>In preferred embodiments, the bar code labels and infrared beacons may also use the method as disclosed in FIG. 7. That is, the bar code labels and infrared beacons may provide the location information system 100 with signals that are converted to coordinate entries. Also, the infrared beacons may be substituted with radio beacons, as described above.</i></p> <p><i>As shown in FIGS. 1-6, the location information system 100 is preferably implemented on a programmed general purpose computer. However, the location information system can also be implemented on a special purpose computer, a programmed microprocessor or microcontroller and peripheral integrated circuit elements, an ASIC or other integrated circuit, a hardwired electronic or logic circuit such as a discrete element circuit, a programmable logic device such as a PLD, PLA, FPGA or PAL, or the like. In general, any</i></p>
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	<p><i>device on which a finite state machine capable of implementing the flowcharts shown in FIGS. 7 and 8 can be used to implement the location information system 100. Further, it should be appreciated that the transceiver 130 connecting the predetermined node 300 and/or the distributed network 305 to the computer 110 can be a wired link to a network (not shown) as well as the illustrated wireless link. The predetermined node 300 and/or the distributed network 305 can be a local area network, a wide area network, an intranet, the Internet, or any other distributed processing and/or storage network. It may also be used with protocols such as the World Wide Web or any other protocol system. It is also appreciated from the above description that the predetermined node 300 and/or distributed network 305 can be either a local or remote node depending on a particular application.</i></p> <p>Want at 9:13-42; see also Figs. 1-6.</p> <p>A PHOSITA would have been motivated to modify Hayashida with the teachings of Want in order to provide more accurate position information to a user, especially in situations where a GPS signal may be weak, such as indoors. And because Want can be implemented on any general purpose or special purpose computer, such a modification is straightforward, requiring no undue experimentation and yielding predictable results.</p>
[1(b)] a device for getting direction information denoting an orientation of said portable terminal, wherein	<p>To the extent this limitation is governed by 35 U.S.C. § 112(6), and based on Defendant's understanding of Plaintiff's infringement contentions, Hayashida discloses a device (i.e., present position detector 20, including absolute direction sensor 21 (terrestrial magnetism sensor) and relative direction sensor 22 (gyroscope), and CPU 2) that performs the claimed function of getting direction information denoting an orientation of said portable terminal. A PHOSITA would have understood geomagnetic sensor as taught by Hayashida to refer to a compass.</p> <p><i>FIG. 1 illustrates the overall circuitry of the navigation device. A central processor 1 controls the operation of the whole navigation device. The central processor 1 is comprised with a CPU 2, a flush memory 3, a RAM 5, a ROM 4, a sensor input interface 7, a communication interface 8, an image (picture) processor 9, a image (picture) memory 10, a voice processor 11 and a clock (clock generator) 6. The CPU 2 and the devices through up to the clock 6 are</i></p>

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	<p><i>connected together through a CPU local bus 15, and the data are exchanged among these devices.</i> <i>Hayashida at 2:46-55.</i></p> <p><i>The sensor input interface 7 comprises an A/D converter circuit or a buffer circuit. The sensor input interface 7 receives analog or digital sensor data from the sensors 21 to 24 of a present position detector 20. The present position detector 20 includes an absolute direction sensor 21, a relative direction sensor 22, a distance sensor 23 and a vehicle speed sensor 24.</i></p> <p><i>The absolute direction sensor 21 is, for example, a terrestrial magnetism sensor and detects terrestrial magnetism. The absolute direction sensor 21 outputs data indicating a south-and-north direction which serves as the absolute direction. The relative direction sensor 22 is, for example, a steering angle sensor and detects the steering angle of the wheel based upon a gyroscope such as optical fiber gyroscope or piezo-electric vibration gyroscope. The relative direction sensor 22 outputs a relative angle of a direction of progress of the car with respect to the absolute direction detected by the absolute direction sensor 21.</i> <i>Hayashida at 7:24-42.</i></p>
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Id. at Fig. 1.

The present position detector 20 outputs data for detecting the present position of the car. In other words, the absolute direction sensor 21 detects the absolute direction. The relative direction sensor 22 detects the relative direction with respect to the absolute direction. Furthermore, the distance sensor 23 detects the distance travelled. The vehicle speed sensor 24 detects the running speed of the car. The GPS receiver unit 25 receives GPS (Global Positioning System) signals to detect position data such as longitude and latitude of the car. The GPS signals are microwaves transmitted from a plurality of satellites orbiting round the earth.

Hayashida at 7:60-8:3.

FIG. 3 illustrates some of a group of data stored in the RAM 5. The present position data MP represent the present position of the vehicle and are detected

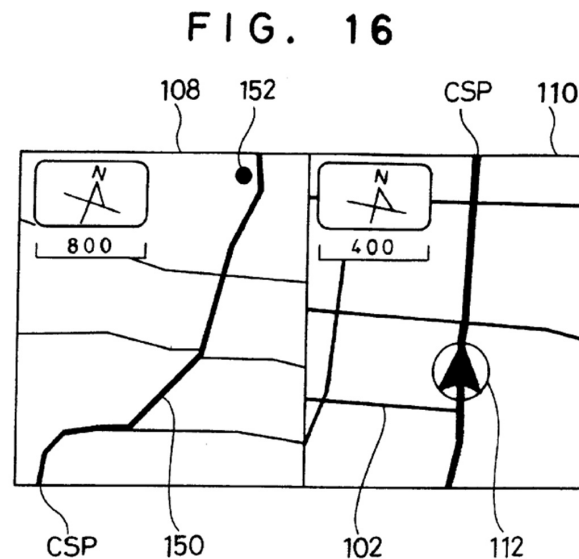
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	<p>by a present position detector 20. The absolute direction data ZD represents the south-north direction relying upon the terrestrial magnetism and are found based upon the data from an absolute direction sensor 21. The relative direction angle data $D\theta$ represent an angle of the direction in which the vehicle is traveling with respect to the absolute position data ZD and are found based upon the data from a relative direction sensor 22.</p> <p>Hayashida at 10:55-64.</p> <p>In the processing for detecting the present position (step SA2), furthermore the absolute direction data ZD, relative direction angle data $D\theta$ and the traveled distance data ML are simultaneously found by using an absolute direction sensor 21, a relative direction sensor 22 and a distance sensor 23. The absolute direction data ZD, relative direction angle data $D\theta$ and traveled distance data ML are operated to determine the position of the vehicle. The thus determined position of the vehicle is collated with map data stored in a data 38c of the information memory unit 37, and the present position on the map screen is corrected and is indicated more correctly. Therefore, the present position of the vehicle is correctly indicated even when the GPS signals are not received such as traveling through a tunnel.</p> <p>Hayashida at 13:34-47; see also <i>id.</i> at Fig. 5.</p>
[1(c)(i)] a direction and a distance of a destination from said present place are denoted with an orientation and a length of a line that is distinguished between starting and ending points	<p>Hayashida discloses a direction and a distance of a destination from said present place are denoted with an orientation of a line (i.e., a heads up display) and a length of a line (i.e., whole route, route segments, or return route) that is distinguished between starting (i.e., current position) and ending points (destination marker 152 or confluence marker 262).</p> <p>(1) When a single screen (a 1st screen) is divided (step SC4), a map of head up or a map at north up is shown in one of the screens (a 2nd screen) which were divided (Steps SC20, SC22). A present position of a car and distance to a direction, a destination of a destination etc. are shown in the other which divided screen (a 3rd screen) (step SC24). This is a simple map where necessary and minimum information is displayed. After this, an other guidance/display processing is executed (step SC18).</p>

Hayashida at 5:66-6:7; *see also id.* at 3:9-16; 6:8-16.

FIG. 16 shows the 2nd screen 108 where the guide route from crossing point CSP to destination 152 is displayed by the display processing of this whole route (fore). In this way, in the display processing of the whole route (fore), a whole guide route in front of the crossing point CSP which is a end of the guide route of the 3rd screen is shown in the 2nd screen.

Hayashida at 21:57-63; *see also id.* at 21:7-56.

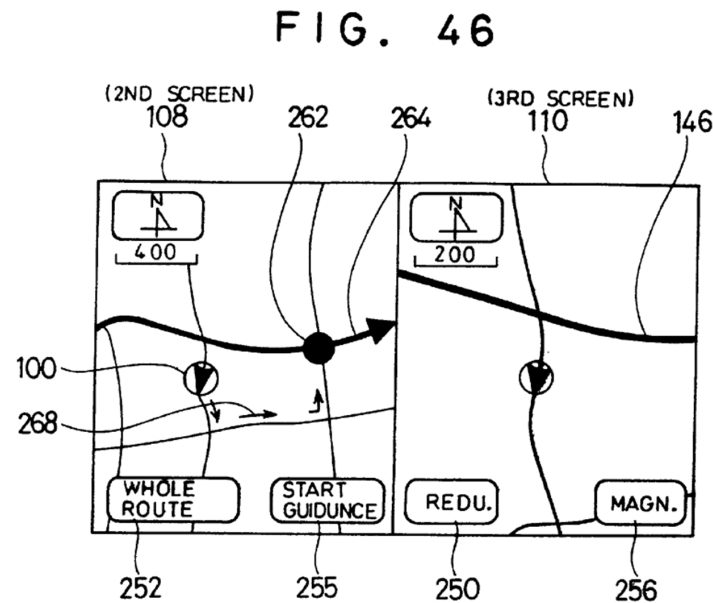


Hayashida at Fig. 16; *see also id.* at Figs. 6-15, 14.

FIG. 17 shows the simple map which is displayed in the screen of display 33. A symbol 120 which designates the absolute direction (a north of a terrestrial magnetism), a symbol 126 which designates the present position of the car, an arrow 122 which designates a direction to the destination, and characters 124

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	<p><i>which designates a distance to the destination are shown in screen 104. Such a simple map may be shown in either of the 1st, the 2nd and/or the 3rd screen.</i></p> <p><i>Furthermore, this simple map isn't limited to the one of FIG. 17, e.g. a traveling direction of the car may be always point up in the screen 104. In this case, a symbol 120 which designates the absolute direction is turned on screen 104 according to relative azimuth data $D \theta$.</i></p> <p><i>Hayashida at 22:32-44; see also id. at 21:64-22:31, Fig. 17.</i></p> <p><i>FIG. 46 shows the application example of the display of the 2nd screen. For example, the return route is shown by arrow 268. Further when the return route isn't displayed in the 2nd screen, only the confluence which the return route and the previous route cross may be shown by mark 262. Further the confluence may be also shown by mark 262 when the return route is displayed. Moreover, the direction of the destination in the previous guide route may be shown by a direction mark 264 of the destination.</i></p> <p><i>Hayashida at 49:3-11.</i></p>
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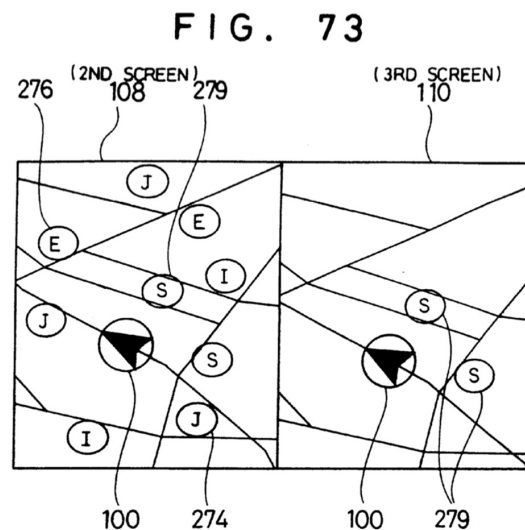


Id. at Fig. 46; see also *id.* at Figs. 38 and 39.

Next the processing to display the direction mark 264 of the destination which shows the direction of the destination in the computed intersection point CP is executed. For example, this processing is executed as follows. The character pattern data of the arrow which is used for the direction mark of the destination is stored in the information memory unit 37 or the ROM 4. Then the character pattern of the arrow is turned to show the above direction of the destination according to the above intersection point data CP. This character pattern data is sent to image processor 9 and is changed into the image data. Therefore the direction mark of the destination 264 is shown in the coordinate which is designated by the intersection point data CP. Actually as the tip of the arrow agree with the coordinate of the intersection point data CP, A deviation to the

intersection point data CP is provided for the coordinate of the direction mark of the destination.
Hayashida at 49:44-60.

Further when the specification of the brand (the sales article) of the gasoline station is executed in step SX18 of FIG. 49, as shown in FIG. 73, the map of all the facilities which correspond to the genre which is chosen in the step SX12 may be shown in 2nd screen 108. In this processing, all gasoline stations which are in the specific area are shown in the 2nd screen. Moreover only the gasoline station which treats the specific brand (the sales article) which is specified in the step SX18 is shown at the map of the 3rd screen.
Hayashida at 54:4-12.



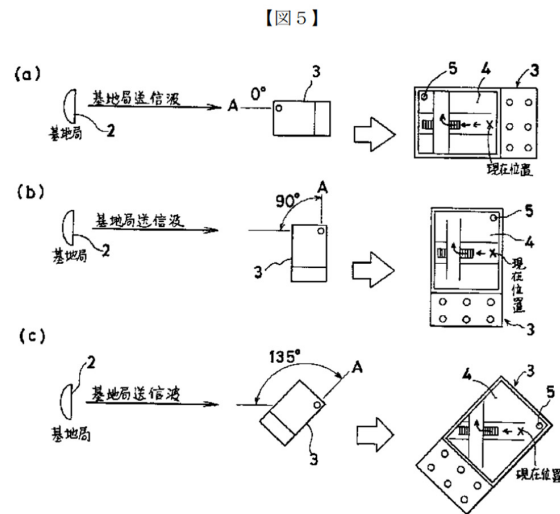
Id. at Fig. 73; see also *id.* at Figs. 51 and 52.

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	<p><i>In the above facility setting processing, the facilities may be retrieved in the whole area of the map information based on the guide route and the retrieving may be executed only in the specific area which is described later. In case of along guide route, the person who is traveling a route can drop in the requested facilities without deviating far from the route. Further if facilities within the requested range from the standard point (the present place, the destination or the cursor position and so on) are chosen and shown, the required information and the required retrieving result are provided quickly and clearly to the user. Further when an extracting result of the facilities is displayed in the screen, if various information of distance and position relation between each of the facilities and the guide route or distance from each of the facilities to the destination and so on is together shown, the position of the required facilities to the guide route can be grasped clearly.</i></p> <p>Hayashida at 58:27-43.</p> <p>Alternatively, it would have been obvious to a PHOSITA to modify Hayashida with the teachings of Akiyama to denote a direction and a distance of a destination from said present place with an orientation and a length of a line (i.e., dotted line distinguishing traveled route from route to be traveled) that is distinguished between starting and ending points. See corresponding claim limitation of Exhibit A2.</p> <p>Alternatively, it would have been obvious to a PHOSITA to modify Hayashida with the teachings of the '711 Patent to denote a direction and a distance of a destination from said present place with an orientation and a length of a line that is distinguished between starting and ending points.</p> <p><i>As described above, by detecting the direction of the base station 2 by the antenna 7, it is possible to obtain an angle formed by a predetermined standby position of the antenna 7 and the base station detection position. For example, as shown in FIG. 5, the reception direction at the predetermined standby position of the antenna 7 with respect to the main body of the display device 3 is defined as a reference direction A, and It can be detected. For example, in</i></p>
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	<p><i>FIG. 5A, the relative angle is 0 degrees, in FIG. 5B, the relative angle is 90 degrees, and in FIG. 5C, the relative angle is 135 degrees.</i></p> <p><i>Then, the display state of the guide map displayed on the display unit 4 of the display device 3 is corrected using the relative angle obtained as described above, and the outline thereof will be described below. For example, when the relative angle is 0 degree, the guide map data is displayed as it is without correction (refer to FIG. 5A), and when the relative angle is 90 degree, the direction in which the relative angle deviates Guide map data is corrected and displayed so that the display of the guide map is rotated 90 degrees (see FIG. 5 (b)), and in the case where the relative angle is 135 degrees, the direction in which the relative angle is generated is 135 degrees The guide map data is corrected and displayed so that the display of the guide map is in a rotated state (see FIG. 5C).</i></p> <p><i>Thus, the display unit 4 of the display device 3 displays a guide map for the base station 2 regardless of the direction in which the person holding the display device 3 holds the display device 3. The content is displayed in a fixed direction. That is, in the embodiment shown in FIG. 5, the display unit 4 of the display apparatus 3 is substantially horizontal so that the angle between the main beam radiation direction of the base station transmission wave and the reference direction A in the display apparatus 3 is zero. When holding in the direction and displaying on the display unit 4 of the display device 3 without correcting the guide map data, a line connecting the base station 2 and the display device 3 in the real environment is a pseudo guide map displayed on the display unit 4 Since the guide map data supplied from the base station 2 to the display device 3 is set in advance so as to be parallel to the reference direction A in the environment, the display device 3 is receiving a predetermined reference direction A By correcting the guide map data by an angle substantially on the horizontal plane that the transmission wave from the base station 2 of Ray device 3 than it is possible to relatively equal and guide map pseudo environment displayed on the display unit 4 of the real environment and the display device 3 of the area located.</i></p>
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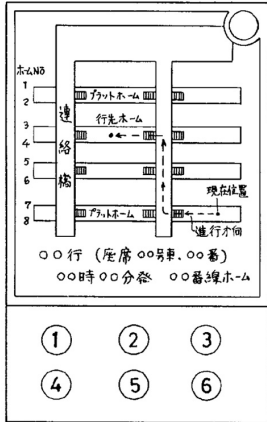
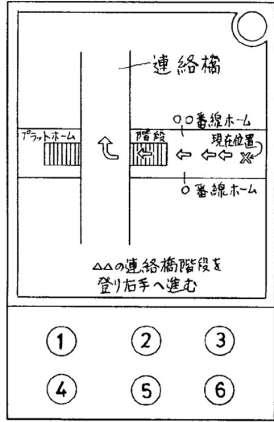
'711 Patent at [0021]-[0023].



'711 Patent at Fig. 5.

8 and 9 illustrate a specific example of the enlargement function of the display content added to the display device 3. For example, when the guide map as shown in FIG. 8A is displayed, when the enlargement function is activated, as shown in FIG. 8B, the specific area as the target from the current position to the destination is expanded. Is displayed. Further, as shown in FIG. 9, the display unit 4 is configured of a matrix (for example, A to E in the horizontal direction and 1 to 5 in the vertical direction) formed of small sections having the same aspect ratio as the display unit 4; By designating any two small blocks located diagonally, the enlarged display can be performed such that the specified small section is located at a corner. For example, in FIG. 9A, which is a guide map display state in a standard size, when the small section 1A and

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	<p>the small section 4D are designated and enlarged, the display unit 4 of the display device 3 displays as shown in FIG. When the small area 2B and the small area 3C are designated and enlarged, the enlarged display as shown in FIG. 9C is made on the display unit 4 of the display device 3. In this way, it is possible to magnify and display an arbitrary portion desired by the person carrying the display device 3.</p> <p>'711 Patent at [0037].</p> <p style="text-align: center;">【図8】</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>(a)</p>  </div> <div style="text-align: center;"> <p>(b)</p>  </div> </div> <p>'711 Patent at Figs. 8a and 8b.</p> <p>A PHOSITA would have been motivated to modify Hayashida with the symbol teachings of the above-cited references in order to assist the user with navigation. Such a modification is the application of a known display technique to improve a similar portable navigation device in the same way and would not have required undue experimentation and would have yielded predictable results.</p>
[1(c)(ii)] to supply route guidance information as said	Hayashida discloses supplying route guidance information as said walking navigation information.

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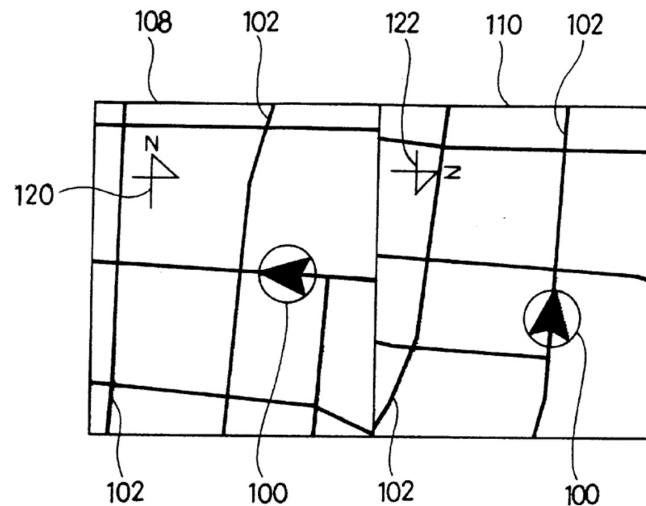
<p>walking navigation information.</p>	<p><i>This guide/display processing is the processing to report the information to make travel the car along the guide route. In other words, a guide route is searched and this searched guide route is shown in display 33. This guide route is displayed for the car to become always a screen center and an information about points which should turn right or left in the guide route is reported at any time. In this guide/display processing, various information is reported and is shown at any time for the car to travel a guide route smoothly.</i></p> <p>Hayashida at 14:56-65.</p> <p><i>Then this navigation processing can be also executed by this computer device, if the device which can detect the present position by GPS reception device 25 and this information memory part 37 are connected with the carrying-type computer device. Moreover this invention can be applied as the vehicle except the car and the navigation device of the shipping, the aircraft and the map which is used for the navigation may be a chart and a submarine map and so on in addition to the road map. Moreover again this invention may be applied to the carrying-type navigation device in addition to the navigation device which is attached to the movement bodies such as the car. In other words, this invention may be applied to the small navigation device which can be accompanied by the human and which is used in a cycling, a travel, a mountaineering, a hike, a fishing or so on.</i></p> <p>Hayashida at 76:5-20.</p>
<p>Claim 3</p>	
<p>3. A portable terminal with the function of walking navigation according to claim 1, wherein said device for getting direction information gets orientation information of a display of said portable terminal.</p>	<p>Because the display of the device described by Hayashida is fixed-mounted, Hayashida necessarily obtains the orientation of its display when it obtains the orientation of its device. <i>See limitation [1(b)].</i></p> <p><i>FIG. 20 shows a divided screen of this 2nd embodiment. A head up map is shown in the 1st screen before the division as shown in FIG. 9. When instructing to divide the screen, the north up map is displayed in the 2nd screen 108, in this 2nd screen 108, a symbol 120 which shows an absolute azimuth points up and</i></p>

a symbol 100 which shows the direction of the traveling by the car points to the left.

Also the head up map is displayed in the 3rd screen 110 and a symbol 100 which designates the direction of the traveling by the car points up in the 3rd screen and a symbol 122 which designates a northern direction points to the right in the 3rd screen.

Hayashida at 24:9-20.

FIG. 20



Hayashida at Fig. 20; see also *id.* at Figs. 19 and 21.

Therefore guidance information with a higher importance is displayed with priority at a divided screen near a driver and supplementary guide route information is shown in a divided screen near a assistant's seat. Furthermore,

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	<p><i>a map at a north up may be shown in addition to the map of the head up in the 1st, the 2nd and/or the 3rd screen of the above embodiment. In the head up, a direction of a traveling by the car always points up in the screen map and in the north up, a north of a absolute direction always points up in the screen map.</i></p> <p><i>Hayashida at 22:22-31.</i></p> <p>Alternatively, it would have been obvious to a PHOSITA to modify the direction-getting device of Hayashida to get orientation information of a display of said portable terminal as taught by Maruyama. <i>See</i> corresponding claim limitation of Exhibit A5.</p> <p>Alternatively, it would have been obvious to a PHOSITA to modify Hayashida's device for getting direction information to get orientation information of a display of said portable terminal as taught by Ikeda.</p> <p><i>Therefore, as the display device, the state detection means for detecting the state of the posture and / or movement of the display device main body, the display means, and the predetermined image can be displayed on the display means, and detection from the state detection means A display control unit capable of changing a display state of a displayed image is provided based on the information. As a display method, the state of the apparatus body having the display unit with respect to the posture and / or movement is detected, and the display state of the image displayed on the display unit is the state of the detected apparatus body with respect to the posture and / or movement. Change accordingly.</i></p> <p><i>That is, according to the present invention, by changing the display contents in accordance with the state of the apparatus body such as the posture and movement, the display corresponding to the actual orientation, the display according to the posture of the apparatus, and the three-dimensional display. It is possible to switch between a static display and a flat display.</i></p> <p><i>Ikeda at [0006]-[0007].</i></p>
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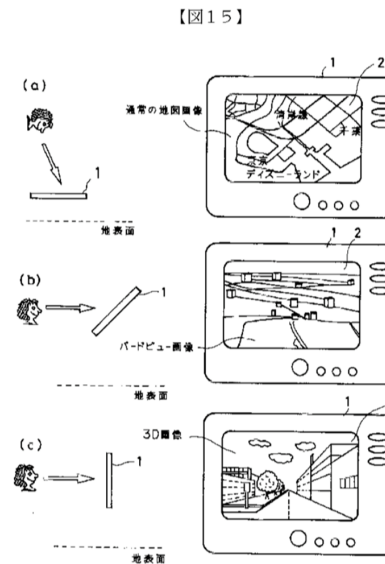
	<p><i>The sensor unit 17 is provided with a sensor necessary to detect the posture state or movement state of the main body of the electronic map device 1. Detection information from the sensor unit 17 is supplied to the CPU 10. Transmission of data and control signals among the above-described units is performed via the bus 19. The various operation information from the operation unit 4 shown in FIG.</i></p> <p>Ikeda at [0016]</p> <p><i>Position / Movement Detection by Sensor Here, the position / movement detection of the main body of the electronic map device 1 in the sensor unit 17 will be described. The sensor unit 17 is provided with a tilt sensor function that detects the tilt state of the main body, an azimuth sensor function that detects an absolute azimuth (east, north, south, east), and a movement sensor function that detects movement (movement direction and movement amount) of the main body. It is equipped with various necessary sensors for this.</i></p> <p>Ikeda at [0018].</p> <p><i>FIG. 3 shows an example of an inclined state of the electronic map device 1 main body. FIGS. 3A, 3B and 3C show a state in which the main body of the electronic map device 1 is rotated in the vertical direction of the screen about an axis from the left of the screen to the right of the screen. That is, FIG. 3 (a) shows that the electronic map device 1 is substantially horizontal, and FIGS. 3 (b) and 3 (c) show the posture in which the screen is lifted upward by gravity. Although not shown, it is of course possible that the lower part of the screen is lifted upward by gravity. 3A, 3D and 3E show a state in which the main body of the electronic map device 1 is rotated in the left and right direction of the screen about the axis from the top of the screen to the bottom of the screen. That is, FIGS. 3 (d) and 3 (e) show the posture in which the left side of the screen is lifted gravitationally upward from FIG. 3 (a) in the horizontal state. Although not shown, the right side of the screen may be lifted upward by gravity.</i></p> <p>Ikeda at [0020].</p>
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	<p><i>FIG. 5 shows the movement situation of the electronic map device 1 main body. For example, a state where the user holds the electronic map device 1 horizontally and moves it in a circle in front of the body is shown by the arrows in FIG. The moved state is shown by each arrow in FIG. 5 (b). In this example, when the electronic map device 1 is moved as described above, it is detected in which direction and how far the screen is moved with reference to the top, bottom, left, and right of the screen. At least one sensor capable of detecting movement, such as each speed sensor and geomagnetic sensor, is mounted. In addition to the case where movement as shown in FIGS. 5 (a) and 5 (b) is performed with the electronic map device 1 being horizontal to the ground surface, the movement status is vertical or oblique to the ground surface. In some cases, the movement as shown in FIGS. 5 (a) and 5 (b) may be performed.</i></p> <p>Ikeda at [0023].</p> <p><i>That is, in the display orientation designation mode, the electronic map device 1 is designated in any orientation (even when any of the screen top, screen bottom, screen right, and screen left is above the gravity). The direction is on the map, and the display is made so that the gravity top coincides with the map. The directions that can be specified by the user are the current direction of travel and the direction in which the user is facing, as well as the absolute orientations such as east, west, south, and north. In addition, when the user does not perform setting, for example, automatic setting may be performed such that north is on the map as the reference direction.</i></p> <p>Ikeda at [0028].</p> <p><i>If the data necessary for the process of combining the bird view image and the 3D image is not prepared for that area (not included in the CD-ROM 20), the process from step F104 to perform normal planar map display Go to F105. Then, according to the attitude of the main body of the electronic map device 1 detected in step F101, the display image data is generated such that the map image with the specified direction upward (on the map) coincides with the gravity upper Then, the display image data is supplied to the display driver 13</i></p>
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	<p><i>and the display on the display unit 2 is executed. An image of this case is shown in FIG.</i></p> <p>Ikeda at [0031].</p> <p><i>Then, in step F208, the map image is displayed in a state in which the upper, lower, left, and right of the detected gravity upper screen are made to coincide with the direction viewed through the electronic map device body 1. For example, it is assumed that the user holds the electronic map device 1 by hand when the user faces north, and holds the electronic map device 1 diagonally or vertically as gravity on the screen. In this case, the direction viewed through the electronic map device body 1 is, in other words, the direction in which the user is facing, that is, north. Therefore, a map image whose north on the screen as shown in FIG. 11A is displayed. As a result, from the viewpoint of the user, for example, even if the electronic map device 1 is oblique or vertical, a map in a state in which the electronic map device 1 is in agreement with the actual direction is displayed.</i></p> <p><i>For example, if the user turns to the east while holding it vertically, the display image will be changed to a map image whose screen is on the east. That is, even if the electronic map device 1 is vertical or oblique, it is possible to always see the map in which the actual direction is reflected.</i></p> <p>Ikeda at [0052]-[0053]</p> <p><i>When the user wants to scroll the displayed map image, the user moves the main unit of the electronic map device 1 in an arbitrary direction (the direction in which the map is to be scrolled) while pressing the scroll button. For example, as shown in FIG. 5, the user holds the electronic map device 1 and moves it so as to swing in the front, rear, left and right directions, or moves so as to draw a circle.</i></p> <p>Ikeda at [0060]; see also <i>id.</i> at Fig. 5.</p> <p><i>The control operation by the CPU 10 when the virtual display mode is selected is shown in FIG. In this case, when a map image of a certain area is displayed,</i></p>
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	<p><i>the CPU 10 constantly monitors the posture detection information (tilt state) from the sensor unit 17 in step F401. Then, in step F402, it is determined whether the posture of the electronic map device 1 is in the horizontal / vertical / diagonal state as shown in FIG.</i></p> <p>Ikeda at [0066].</p> <p><i>8. A variety of map displays can be realized by synthetically executing the operations of the various modes described above. For example, it is possible to combine the operations of the display orientation designation mode and the vicinity map display mode. In this case, the designated direction is always displayed as gravity upper, and the map of the surrounding area is scrolled by moving the main body of the electronic map device 1 while pressing the scroll button in that state. In the example described in FIG. 7, the operation of the virtual display mode such as 3D display and bird view display is additionally performed, but even when such display is performed, the scroll button is pressed. The screen may be switched by moving in the state. In this case, a stereoscopic scene is scrolled according to the moving direction.</i></p> <p><i>In addition, it is useful to combine the operation of the real direction reflection mode and the vicinity map display mode. That is, while the map display is performed in the direction state that finally matches the real direction, the map of the surrounding area is scrolled and displayed by moving the main unit of the electronic map device 1 while pressing the scroll button. It is.</i></p> <p>Ikeda at [0072]-[0073].</p>
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Ikeda at Fig. 15; *see also id.* at Figs. 8, 9, 11, and 13.

Alternatively, it would have been obvious to a PHOSITA to modify Hayashida's device for getting direction information to get orientation information of a display of said portable terminal as taught by the '711 Patent.

As described above, by detecting the direction of the base station 2 by the antenna 7, it is possible to obtain an angle formed by a predetermined standby position of the antenna 7 and the base station detection position. For example, as shown in FIG. 5, the reception direction at the predetermined standby position of the antenna 7 with respect to the main body of the display device 3 is defined as a reference direction A, and It can be detected. For example, in FIG. 5A, the relative angle is 0 degrees, in FIG. 5B, the relative angle is 90 degrees, and in FIG. 5C, the relative angle is 135 degrees.

	<p><i>Then, the display state of the guide map displayed on the display unit 4 of the display device 3 is corrected using the relative angle obtained as described above, and the outline thereof will be described below. For example, when the relative angle is 0 degree, the guide map data is displayed as it is without correction (refer to FIG. 5A), and when the relative angle is 90 degree, the direction in which the relative angle deviates Guide map data is corrected and displayed so that the display of the guide map is rotated 90 degrees (see FIG. 5 (b)), and in the case where the relative angle is 135 degrees, the direction in which the relative angle is generated is 135 degrees The guide map data is corrected and displayed so that the display of the guide map is in a rotated state (see FIG. 5C).</i></p> <p><i>Thus, the display unit 4 of the display device 3 displays a guide map for the base station 2 regardless of the direction in which the person holding the display device 3 holds the display device 3. The content is displayed in a fixed direction. That is, in the embodiment shown in FIG. 5, the display unit 4 of the display apparatus 3 is substantially horizontal so that the angle between the main beam radiation direction of the base station transmission wave and the reference direction A in the display apparatus 3 is zero. When holding in the direction and displaying on the display unit 4 of the display device 3 without correcting the guide map data, a line connecting the base station 2 and the display device 3 in the real environment is a pseudo guide map displayed on the display unit 4 Since the guide map data supplied from the base station 2 to the display device 3 is set in advance so as to be parallel to the reference direction A in the environment, the display device 3 is receiving a predetermined reference direction A By correcting the guide map data by an angle substantially on the horizontal plane that the transmission wave from the base station 2 of Ray device 3 than it is possible to relatively equal and guide map pseudo environment displayed on the display unit 4 of the real environment and the display device 3 of the area located.</i></p> <p>'711 Patent at [0021]-[0023].</p>
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	<p style="text-align: center;">【图 5】</p> <p>'711 Patent at Fig. 5.</p> <p>A PHOSITA would have been motivated to modify Hayashida with the above cited references to provide accurate guidance reflective of the direction that a user has oriented the device and its display. Such a combination is the application of a known technique to improve a similar device in the same way and would not have required undue experimentation and would have yielded predictable results.</p>
<p><i>Claim 4</i></p> <p>4. A portable terminal with the function of walking navigation according to claim 1, wherein [4(a)] location of a user is of said portable terminal is determined</p>	<p>Hayashida teaches location of a user is of said portable terminal is determined according to said location information and said direction information.</p> <p><i>The sensor input interface 7 comprises an A/D converter circuit or a buffer circuit. The sensor input interface 7 receives analog or digital sensor data from the sensors 21 to 24 of a present position detector 20. The present position</i></p>

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<p>according to said location information and said direction information, and</p>	<p><i>detector 20 includes an absolute direction sensor 21, a relative direction sensor 22, a distance sensor 23 and a vehicle speed sensor 24.</i> <i>Hayashida at 7:24-30.</i></p> <p><i>The present position detector 20 outputs data for detecting the present position of the car. In other words, the absolute direction sensor 21 detects the absolute direction. The relative direction sensor 22 detects the relative direction with respect to the absolute direction. Furthermore, the distance sensor 23 detects the distance travelled. The vehicle speed sensor 24 detects the running speed of the car. The GPS receiver unit 25 receives GPS (Global Positioning System) signals to detect position data such as longitude and latitude of the car. The GPS signals are microwaves transmitted from a plurality of satellites orbiting round the earth.</i></p> <p><i>Similarly the beacon receiver unit 26 receives beacon from a data offering system such as VICS (Vehicle Information and Communication System) or the like, and the received data and the corrected data of GPS are output to the I/O data bus 28.</i></p> <p><i>The data transmitter/receiver unit 27 exchanges a variety of information related to the present position or the road conditions near the car relative to the bi-directional present position information offering system or the ATIS (advanced traffic information service), etc. by utilizing a cellular phone, FM multiplex signals or a telephone circuit. These information are used as a detecting information of the car position or a support information of movement. The beacon receiver unit 26 and the data transmitter/receiver unit 27 may not be provided. As for this data sending and the data transmitter/receiver unit 27, a radio receiver, a television receiver, a carrying telephone, a pager or the other radio communication machine are used.</i> <i>Hayashida at 7:50-8:21.</i></p> <p><i>FIG. 3 illustrates some of a group of data stored in the RAM 5. The present position data MP represent the present position of the vehicle and are detected</i></p>
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	<p>by a present position detector 20. The absolute direction data ZD represents the south-north direction relying upon the terrestrial magnetism and are found based upon the data from an absolute direction sensor 21. The relative direction angle data $D\theta$ represent an angle of the direction in which the vehicle is traveling with respect to the absolute position data ZD and are found based upon the data from a relative direction sensor 22.</p> <p>The traveled distance data ML represent a distance traveled by the vehicle and are found based on the data from a distance sensor 23. The present position data PI are related to the present position and are input from a beacon receiver 26 or the data transmitter-receiver 27. The VICS data VD and ATIS data AD are input from the beacon receiver 26 or the data transmitter-receiver 27. The VICS data VD are used for correcting an error in the position of the vehicle detected by a GPS receiver 25. The ATIS data AD are used for determining traffic regulations and traffic jamming in the areas.</p> <p>Hayashida at 10:55-11:8.</p> <p>Then a processing for detecting the present position (step SA2) and the subsequent processing are executed. The processing for detecting the present position (step SA2) detects the geographical coordinates (latitude, longitude, altitude, etc.) of an overland moving body, i.e., of a vehicle mounting the navigation device. That is, a GPS receiver 25 receives signals from a plurality of satellites orbiting around the earth, detects coordinate positions of the satellites, times at which the electromagnetic waves are emitted from the satellites and the time at which the electromagnetic waves are received by the GPS receiver 25, and calculates the distances to the satellites. The coordinate position of the vehicle is calculated from the distances to the satellites, to detect the present position of the vehicle. The thus found geographical coordinate data of the vehicle are stored in the RAM 5 as present position data MP. The present position data MP are often corrected by the data input through a beacon receiver 26 or the data transmitter/receiver 27.</p>
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	<p><i>In the processing for detecting the present position (step SA2), furthermore the absolute direction data ZD, relative direction angle data $D\theta$ and the traveled distance data ML are simultaneously found by using an absolute direction sensor 21, a relative direction sensor 22 and a distance sensor 23. The absolute direction data ZD, relative direction angle data $D\theta$ and traveled distance data ML are operated to determine the position of the vehicle. The thus determined position of the vehicle is collated with map data stored in a data 38c of the information memory unit 37, and the present position on the map screen is corrected and is indicated more correctly. Therefore, the present position of the vehicle is correctly indicated even when the GPS signals are not received such as traveling through a tunnel.</i></p> <p><i>Hayashida at 13:15-47.</i></p>
[4(b)] wherein location of partner of the user is determined according to a location information from the partner's portable terminal.	<p>It would have been obvious to PHOSITA to modify Hayashida to determine the location of partner of the user according to a location information from the partner's portable terminal as taught by Norris. <i>See</i> corresponding claim limitation of Exhibit A8.</p> <p>It would have been obvious to PHOSITA to modify Hayashida to determine the location of partner of the user according to a location information from the partner's portable terminal as taught by the NavTalk. <i>See</i> corresponding claim limitation of Exhibit A17.</p> <p>It would have been obvious to PHOSITA to modify Hayashida to determine the location of partner of the user according to a location information from the partner's portable terminal as taught by the Locatio. <i>See</i> corresponding claim limitation of Exhibit A14.</p> <p>It would have been obvious to PHOSITA to modify Hayashida to determine the location of partner of the user according to a location information from the partner's portable terminal as taught by Maruyama. <i>See</i> corresponding claim limitation of Exhibit A5.</p> <p>It would have been obvious to PHOSITA to modify Hayashida to determine the location of partner of the user according to a location information from the partner's portable terminal as taught by the Cyberguide. <i>See</i> corresponding claim limitation of Exhibit A11.</p>

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	<p>It would have been obvious to PHOSITA to modify Hayashida to determine the location of partner of the user according to a location information from the partner's portable terminal as taught by Obradovich.</p> <p><i>A location tagged data provision and display system. A personal communication device (PCD) with electromagnetic communication capability has a GPS receiver and a display. The PCD requests maps and location tagged data from data providers and other for display on the PCD. The data providers respond to requests by using searching and sorting schemes to interrogate data bases and then automatically transmitting data responsive to the requests to the requesting PCD.</i></p> <p>Obradovich at Abstract.</p> <p><i>The system also utilizes a system of non-subscribers communicating to each other in a similar fashion, without the use of base stations. In addition, the non-subscribers could send personal data bases with maps included, GPS information, and other information of non-related data or graphics from publishers of any such data base. In this embodiment the device would act as a transceiver, sending and receiving dynamic moving waypoint information in digital formats, including maps of various sizes and embodiments.</i></p> <p><i>The PCD can display a singular or a plurality of images and displays, project an image on to a screen or viewing surface, store or communicate data (depicted as a line, graphic, icon, etc.) to and/or receive latitude and longitude data from third parties. Additionally, the device can send/receive latitude- and longitude-encoded maps and other data to/from a third party, send/receive standard or non-standard phone and fax communications (AM, FM, spread spectrum, microwave, laser or light beam in free or fiber optic, line of sight, reflected, satellite, secure or non-secure, or any type of communications between two points that the application or state-of-the-art may allow), perform computer functions from existing application software and operating systems, receive standard or non-standard beeper messages, interface with a</i></p>
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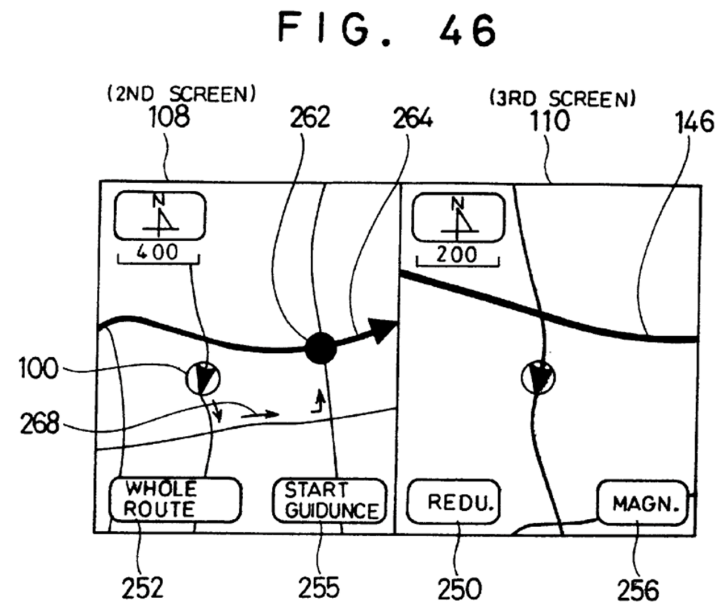
	<p><i>conventional computer and provide an interface to a heads-up display, an external viewing device or any projection system.</i></p> <p>Obradovich at 4:1-27.</p> <p><i>FIG. 11 illustrates the Third Party page accessed from the GPS menu page. The Third Party page provides an interface to communications with a third party through touch points in the sub-menu display 151. In the display shown, a user can receive a third party's data and GPS encoded map for viewing on the device or save it for future usage. The user can also dynamically track the third party by periodically having the third party send updates via normal communication links. The third party location can be displayed on maps dynamically sent by map publishers, maps already on-board (furnished at some earlier date), or on maps sent by the third party. The PCD plots and interpolates the GPS data sent by the third party and places an icon 951 (GPS latitude and longitude coordinate pair) on the displayed map using spatial query analysis techniques performed by an application module. The information received from the third party may be other than maps or GPS encoded information, but may be information of any type. The data is received from the third party using phone 400 and radio communication links 500. A PREFERENCES touch point 274 enables entry of items such as phone numbers for automatic call back and time interval for automatic transmission of information. If the radio, a satellite phone, or other frequency based communications link is utilized, the PREFERENCES touch point allows entry of frequencies for use for automatic transmission of information. A split screen displays the user's location on a map on the left side of display 272 and, after contact with a third party via a communication link, the third party's map and location on the right side of display 273. If the third party's location is sufficiently close to the user's location, or if the user's displayed map covers a sufficiently large area, both the user's and third party's location can be shown on the same map without resort to a split screen display.</i></p> <p>Obradovich at 11:53-12:19.</p>
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	A PHOSITA would have been motivated to modify Hayashida with the teachings of the above-cited references to increase the versatility of the portable terminal, allowing users to navigate to other users who serve as destinations. Because Hayashida already suggests utilizing a central server to obtain information, such a modification would not have required undue experimentation and would have yielded predictable results.
<i>Claim 5</i>	
5. A portable terminal with the function of walking navigation, comprising:	See Claim 1[P].
[5(a)] a device for getting location information denoting a present place of said portable terminal; and	See claim limitation [1(a)].
[5(b)] a device for getting direction information denoting an orientation of said portable terminal,	See claim limitation [1(b)].
[5(c)(i)] wherein a local route around said present place is shown with a bent line and a direction of movement is shown with an arrow on said bent line	<p>Hayashida teaches showing a local route around said present place with a bent line and a direction of movement is shown with an arrow (e.g., symbol 100 and/or mark 264 and or mark 268) on said bent line.</p> <p><i>On the other hand, "display processing of whole route (fore)" of the subroutine is executed (step SB22), if a display mode of fore route isn't selected (step SB16) and a display mode of a whole route is selected (step SB20). The selection of the display mode of the whole route is executed by a operation of a specific switch which is set on touch switch 34. When the display mode of whole route isn't selected, "other guide/display processing" of step SB8 is executed.</i></p>

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	<p><i>In the above "whole route (fore) display processing", a guide route to the destination which is connected with a upper end of a guide route in the 3rd screen is shown in the 2nd screen. Furthermore this subroutine "display processing of whole route (fore)" is described later in detail. After this, "other guide/display processing" of step SB8 is executed and the flow returns to "the overall processing" of FIG. 5.</i></p> <p><i>Hayashida at 16:5-11..</i></p> <p><i>FIG. 15 shows the subroutine of the display processing of whole route (fore) at FIG. 6. In this processing, all remaining guide route to a destination which continues to crossing point CSP at a end of the guide route which is displayed in the 3rd screen is shown in the 2nd screen. Moreover a display reduced scale can be changed and a wider road map which includes the remaining guide route can be shown in the display processing of whole route (fore).</i></p> <p><i>Hayashida at 21:7-14.</i></p> <p><i>FIG. 46 shows the application example of the display of the 2nd screen. For example, the return route is shown by arrow 268. Further when the return route isn't displayed in the 2nd screen, only the confluence which the return route and the previous route cross may be shown by mark 262. Further the confluence may be also shown by mark 262 when the return route is displayed. Moreover, the direction of the destination in the previous guide route may be shown by a direction mark 264 of the destination.</i></p> <p><i>Hayashida at 49:3-11.</i></p>
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Id. at Fig. 46; see also *id.* at Figs. 38 and 39.

Next the processing to display the direction mark 264 of the destination which shows the direction of the destination in the computed intersection point CP is executed. For example, this processing is executed as follows. The character pattern data of the arrow which is used for the direction mark of the destination is stored in the information memory unit 37 or the ROM 4. Then the character pattern of the arrow is turned to show the above direction of the destination according to the above intersection point data CP. This character pattern data is sent to image processor 9 and is changed into the image data. Therefore the direction mark of the destination 264 is shown in the coordinate which is designated by the intersection point data CP. Actually as the tip of the arrow agree with the coordinate of the intersection point data CP, A deviation to the

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	<p><i>intersection point data CP is provided for the coordinate of the direction mark of the destination.</i> Hayashida at 49:44-60.</p> <p><i>(8) In addition to the above matter, the map which is the displayed in the 3rd screen may be the map information which shows around the car, the start point, the destination, the dropping in place or the chosen optional part. Then the map which connects with one azimuth of all the azimuths of the map which is displayed in this 3rd screen may be displayed in the 2nd screen. In other words, a map around the destination (the dropping in place, the specification place or so on) is displayed in the 3rd screen. Moreover the map which is connected with the map of this 3rd screen and contains the guide route which connects from the start point to the destination may be displayed in the 2nd screen.</i> Hayashida at 74:41-52..</p>
[5(c)(ii)] to supply route guidance information as said walking navigation information.	See claim limitation [1(c)(ii)].
<i>Claim 7</i>	
7. The portable terminal with said function of walking navigation according to claim 5, wherein said device for getting direction information gets orientation information of a display of said portable terminal.	See Claim 3.
<i>Claim 8</i>	

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<p>8. The portable terminal with said function of walking navigation according to claim 5, wherein neighborhood guidance information is retrieved in a direction form said present place so as to supply said neighborhood guidance information as said walking navigation information.</p>	<p>Hayashida teaches neighborhood guidance information is retrieved in a direction form said present place so as to supply said neighborhood guidance information as said walking navigation information.</p> <p><i>To solve the above problem, in this invention, a screen which displays a map is divided into more than one, according to a traveling condition of the car, a simple map which shows geographical relation between a present position of the car and a destination is shown in a 1st screen, detailed map information is shown in a 2nd screen. Therefore a seeing person can know a direction of the destination immediately and can also know detailed geographical information around the present position of the car at the same time.</i></p> <p><i>Also when the car approaches a right or left turning point, a geographical information of the right or left turning point on the identified route is shown in the 1st screen. Moreover at this time, a detailed map is displayed in the 2nd screen. At this detailed map, a information quantity which is displayed according to a traveling condition of the car is adjusted. Therefore the user can know a direction which the car should progress and a geographical information around the car..</i></p> <p><i>Hayashida at 1:58-2:9.</i></p> <p><i>In the above facility setting processing, the facilities may be retrieved in the whole area of the map information based on the guide route and the retrieving may be executed only in the specific area which is described later. In case of along guide route, the person who is traveling a route can drop in the requested facilities without deviating far from the route. Further if facilities within the requested range from the standard point (the present place, the destination or the cursor position and so on) are chosen and shown, the required information and the required retrieving result are provided quickly and clearly to the user. Further when an extracting result of the facilities is displayed in the screen, if various information of distance and position relation between each of the facilities and the guide route or distance from each of the facilities to the</i></p>
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	<p><i>destination and so on is together shown, the position of the required facilities to the guide route can be grasped clearly.</i> <i>Hayashida at 58:27-43.</i></p> <p><i>To solve the above problem, in this invention, the screen which displays a map is divided into more than one, when the car deviates off the guide route, the new searched route is displayed in the 1st screen and the guide route which is searched previously is shown in the 2nd screen. In the map which is displayed in this 2nd screen, a information quantity which is displayed according to a traveling condition of the car is adjusted. Therefore a direction which the car should progress and a geographical information around the car can be known together.</i></p> <p><i>Also a guide route and a map around the present position of the car are displayed in the 1st screen and the map and the destination which connects with the guide route of the 1st screen are shown in the above 2nd screen. According to a traveling position of the car, a direction of a right or left turn in the guide route, a direction of the destination or information about the destination and so on are alternately shown in this 1st screen.</i> <i>Hayashida at 16:66-3:16.</i></p> <p><i>FIG. 2 is a diagram illustrating the contents of data files stored in the data 38c of the information memory unit 37. A map data file F1 stores the map data such as road maps of the whole of the country, road maps of a district, and house maps. Each road of the main turnpike, an expressway and a backlane and so on and aiming one (facilities and so on) on the ground are shown in a road map. A diagram which shows an outward form of a building on the ground and so on and a road name and so on are shown in a house map. For example, as for a backlane, road width is narrow below a specific value, or is a municipal road and a driveway except a national highway or a local road, isn't used by processing of searching route of FIG. 5 which is mentioned later.</i> <i>Hayashida at 10:2-14.</i></p>
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	<p><i>In the processing for guiding and displaying the route (step SA5), the guide route identified by the above-mentioned processing for searching a route (step SA4) is shown on the display 33 with the present position of the vehicle as a center. The guide route is displayed on the map in a manner that it can be easily discriminated. For example, the guide route and the road other than the guide route are indicated in different colors, so that the two can be discriminated from each other. Furthermore, guide information is sounded by voice from a speaker 13 or is shown on the display 33 at all times, so that the vehicle is allowed to travel favorably along the guide route. The image data of the guide route are the road map data around the present position or are the house map data around the present position stored in the data 38c of the information memory unit 37.</i></p> <p><i>Hayashida at 14:1-14.</i></p> <p><i>(8) In addition to the above matter, the map which is the displayed in the 3rd screen may be the map information which shows around the car, the start point, the destination, the dropping in place or the chosen optional part. Then the map which connects with one azimuth of all the azimuths of the map which is displayed in this 3rd screen may be displayed in the 2nd screen. In other words, a map around the destination (the dropping in place, the specification place or so on) is displayed in the 3rd screen. Moreover the map which is connected with the map of this 3rd screen and contains the guide route which connects from the start point to the destination may be displayed in the 2nd screen.</i></p> <p><i>Hayashida at 74:41-52.</i></p> <p><i>In other words, the information of the retrieving condition of the destination or dropping in facilities and the route search condition and so on is sent from the navigation device of this invention to the information management center. In the information management center, the retrieving of the required facilities and the search of the route to the destination are executed based on this condition. Then information about the retrieving, extraction and search result is transmitted to the navigation device from the information management center with the map information and so on. In the navigation device, based on this</i></p>
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	<p><i>received retrieving, the extraction and the search result, retrieving facilities are displayed in the display 33. In this way, the retrieving, the extraction, the search of each of facilities are possible based on the details and latest information in each of the facilities around the present position of the car.</i> Hayashida at 75:24-58.</p> <p><i>FIG. 49 shows the flow chart of the setting processing of nearest facilities of the 7th embodiment of this invention. The setting processing of nearest facilities is executed with the destination-setting processing or the other processing of the FIG. 5. In the nearest facility processing, the retrieving and the choosing of dropping in facilities except the last destination are executed. This facilities are on the neighborhood of the present position of the car or the way of the guide route. The dropping in facilities are as follows. For example, it is gasoline stations for the fuel replenishment, restaurant, banks, post offices or supermarkets for the purchase and so on. In other words, it is facilities except the last destination and it is various facilities to finish a necessary occupation in the daily life.</i> Hayashida at 51:43-56.</p> <p><i>Also the street in the area is specified in extraction of the facilities of the above embodiment. In other words, the facilities at the specific street and neighborhood in the area are extracted but this may be done as follows. For example, the famous facilities in the specific area, e.g. the facilities which are within the fixed distance from every station of the bus, the streetcar, the subway and so on may be extracted. Moreover agency, an intersection name, commemoration facilities in the prefecture, towns and villages and so on, e.g. Tokyo Tower, Olympia Park, Imperial Palace, a castle, Washington Monument and so on are included in the famous facilities.</i> Hayashida at 69:40-51.</p> <p><i>Moreover names of central roads (name of national highway and prefecture road, etc.) which composes the guide route and names of main intersections (intersection having a name) may be shown. These road name and intersection</i></p>
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	<p><i>name, etc. can be shown in the list form, when the icon key of "route information" which is displayed on the screen is pushed. In this case, the detailed information (road name and so on) of each guide route which is displayed in the 2nd and the 3rd screen, for example, the distance and the required time of the guide route to the destination and VICS information, etc. are shown. By this, more information which contributes to choose the route is displayed variously and therefore the comparison and the examination of each route become easy.</i></p> <p><i>Hayashida at 35:9-22.</i></p> <p><i>Moreover the transmitted information is taken from the outside system of VICS and ATIS etc. and this information may be made a extracting condition of the dropping in facilities. For example, when a parking lot around the destination is extracted as the dropping in facilities and so on, the following processing is executed. By the outside information to be spent by VICS and ATIS etc., the fullness or the empty condition of each parking lot or the congestion situation of the road in the this facility neighborhood is added to the extracting condition of the facilities. In other words, the extracting condition by the information which is sent from outside for example VISC or ATIS etc. may be added in the setting of the destination or the dropping in place. This can prohibit the choosing of the facilities which neighbor a full parking lot or a traffic jam (crowded) road. In other words, the mistake of the facility choosing is made more little. Furthermore, when the car is traveling by more than constant speed, the begin order of the setting processing of the nearest facilities and destination-setting processing isn't permitted.</i></p> <p><i>Hayashida at 47:55-64.</i></p>
Claim 9	
9. The portable terminal with said function of walking navigation according to claim 5, wherein [9(a)(i)] location of a user is of said portable	See claim limitation [4(a)].

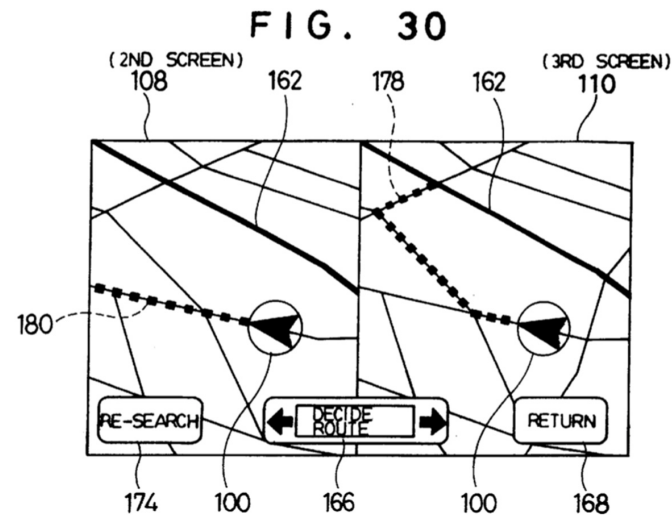
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terminal is determined according to said location information and said direction information, and wherein	
[9(b)] location of partner of the user is determined according to a location from the partner's portable terminal.	See claim limitation [4(b)].
<i>Claim 10</i>	
10. A portable terminal with the function of walking navigation, comprising:	See Claim 1[P].
[10(a)] a device for getting location information denoting a present place of said portable terminal; and	See claim limitation [1(a)].
[10(b)] a device for getting direction information denoting an orientation of said portable terminal,	See claim limitation [1(b)].
[10(c)] wherein location of a user is of said portable terminal is determined according to said location information and said direction information,	See Claim limitation [4(a)].

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<p>[10(d)] wherein location of a partner of the user is determined according to a location information from the partner's portable terminal, and</p>	<p>See Claim limitation [4(b)].</p>
<p>[10(e)(i)] wherein a full route from said starting point to said destination is shown with a bent line that is distinguished between starting and ending points and said present place is shown with a symbol on said line</p>	<p>Hayashida teaches that a full route from said starting point to said destination is shown with a bent line that is distinguished between starting and ending points (e.g., destination 152) and said present place is shown with a symbol on said line (symbol 100).</p> <p><i>Moreover the route which is displayed in the 2nd screen or the 3rd screen may be fixed, for example, the previous route immediately before another route is re-searched may be always shown in the 3rd screen. The reduced scale of the map which is displayed in the 2nd screen and the 3rd screen isn't especially limited. In order to display the whole route from the present position of the car to the destination in each whole divided screen, the reduced scale may be automatically adjusted. Or using the reduced scale before the screen division, the map of each divided screen may be shown.</i></p> <p><i>Hayashida at 30:39-48.</i></p> <p><i>FIG. 16 shows the 2nd screen 108 where the guide route from crossing point CSP to destination 152 is displayed by the display processing of this whole route (fore). In this way, in the display processing of the whole route (fore), a whole guide route in front of the crossing point CSP which is a end of the guide route of the 3rd screen is shown in the 2nd screen.</i></p> <p><i>Hayashida at 21:57-63.</i></p> <p><i>Further, the guide/display processing of FIG. 27 is repeated until the car reaches the end point of guide route. Furthermore, the reduced scale of the map which is displayed in the 2nd screen and the 3rd screen isn't especially limited at this embodiment, when another re-searched route is displayed, the whole route may be shown on the screen. Or with the reduced scale of the map which</i></p>

was displayed in the 1st screen before the division, the map of the 2nd screen and the 3rd screen may be shown.
Hayashida at 32:36-44.

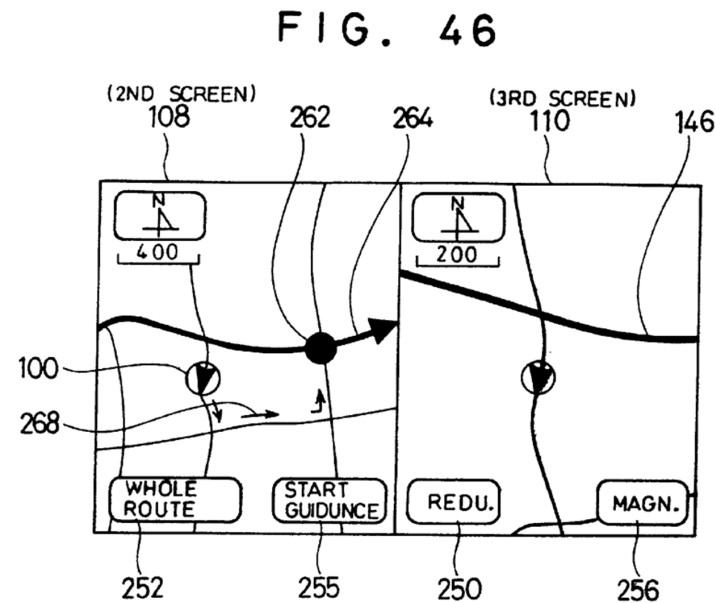


Hayashida at Fig. 30; *see also id.* at Figs. 16, 24, 25, 27, 29-33, 42, and 44- 46.

FIG. 40 shows the condition of the display 33 immediately after the car deviates from the guide route 146 which is searched first. Symbol 100 designates the present position and the traveling direction of the car. The screen of display 33 before this division is a 1st screen. Icons 250, 256 and 252 with the letter "reduction", "magnification" and "whole route" and so on are shown in the lower part of the 1st screen. When the icon 250 of "reduction" is touched by the operator, the reduced scale of the map which is displayed in the 1st screen is made small and a wide area map is shown.
Hayashida at 37:10-26 .

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	<p><i>When the car isn't traveling the re-searched route, it also includes when the whole route isn't re-searched at all. Therefore if the car isn't traveling the re-searched new route, the whole route to the end point of guide route from the present position of the car is re-searched (step SR20). Then, the re-searched new whole route is shown in the 3rd screen. Furthermore, the previous guide route which the car deviates from may be together shown in this 3rd screen. The display reduced scale of this 3rd screen is may be the same as the reduced scale of the 1st screen before the division. When the new whole route is displayed, the reduced scale is adjusted and the whole route may be shown in the screen. When this newer whole route is displayed, like FIGS. 32 and 33 of the 5th embodiment the peculiar information in the newly searched route also may be together shown. In other words, the information of the distance with the full length of the route from the present position of the car to the destination, the expected traveling required time, the name of the principal road, the name of the principal intersection and so on may be together shown. The peculiar information in this new route may be shown in the list form by the choosing of a operator.</i></p> <p><i>Hayashida at 40:15-36.</i></p> <p><i>FIG. 46 shows the application example of the display of the 2nd screen. For example, the return route is shown by arrow 268. Further when the return route isn't displayed in the 2nd screen, only the confluence which the return route and the previous route cross may be shown by mark 262. Further the confluence may be also shown by mark 262 when the return route is displayed. Moreover, the direction of the destination in the previous guide route may be shown by a direction mark 264 of the destination.</i></p> <p><i>Hayashida at 49:3-11.</i></p>
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Id. at Fig. 46; see also *id.* at Figs. 38 and 39.

Next the processing to display the direction mark 264 of the destination which shows the direction of the destination in the computed intersection point CP is executed. For example, this processing is executed as follows. The character pattern data of the arrow which is used for the direction mark of the destination is stored in the information memory unit 37 or the ROM 4. Then the character pattern of the arrow is turned to show the above direction of the destination according to the above intersection point data CP. This character pattern data is sent to image processor 9 and is changed into the image data. Therefore the direction mark of the destination 264 is shown in the coordinate which is designated by the intersection point data CP. Actually as the tip of the arrow agree with the coordinate of the intersection point data CP, A deviation to the

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	<p><i>intersection point data CP is provided for the coordinate of the direction mark of the destination.</i> Hayashida at 49:44-60.</p> <p><i>The operation by the operator according to the icon may be also distinguished in the steps SB4, SB10, SE4, SE12, SG10 and SG4 in addition to the above matter. This icon is "whole route display" in the step SG10, "fore route display" in the step SE12, "reduced scale change" in the step SG4 and SE4, "screen division" in the step SB10 and "division cancellation" in the step SB4.</i> Hayashida at 72:15-21.</p> <p><i>In addition to the above, in every divided screen, the icon of "details", "outline", "intersection", "direction of map", "screen division", "reduced scale change", "fore route display", "whole route display" and so on may be displayed, a switch according to this icon may be operated by the operator and the display contents may be individually switched every divided screen.</i> Hayashida at 73:4-10.</p> <p><i>When an area map is displayed in the 3rd screen 110 of display 33, each of facilities are displayed in the specified area using the figure symbol which was memorized in the flash memory 3 (step SX96). The facility list data 70 of FIG. 62 is used in the display of these facilities. A specific symbol is displayed in the geographical coordinate of each of the facilities. For example, this symbol is a star, a circle, a triangle, a square, a fork, a glass, a bag, a flag and a house and so on. Further only when the area map which was most expanded is displayed into the 3rd screen of display 33, this facilities may be displayed.</i> Hayashida at 64:32-42.</p> <p><i>FIG. 46 shows the application example of the display of the 2nd screen. For example, the return route is shown by arrow 268. Further when the return route isn't displayed in the 2nd screen, only the confluence which the return route and the previous route cross may be shown by mark 262. Further the confluence may be also shown by mark 262 when the return route is displayed. Moreover,</i></p>
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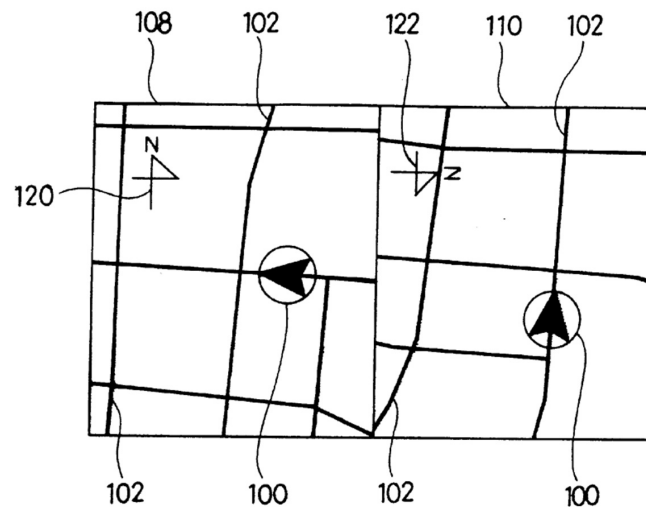
	<p><i>the direction of the destination in the previous guide route may be shown by a direction mark 264 of the destination.</i></p> <p>Hayashida at 49:3-11</p> <p><i>(8) In addition to the above matter, the map which is the displayed in the 3rd screen may be the map information which shows around the car, the start point, the destination, the dropping in place or the chosen optional part. Then the map which connects with one azimuth of all the azimuths of the map which is displayed in this 3rd screen may be displayed in the 2nd screen. In other words, a map around the destination (the dropping in place, the specification place or so on) is displayed in the 3rd screen. Moreover the map which is connected with the map of this 3rd screen and contains the guide route which connects from the start point to the destination may be displayed in the 2nd screen.</i></p> <p>Hayashida at 74:41-52.</p>
[10(e)(ii)] to supply said route guidance information as said walking navigation information.	See claim limitation [1(c)(ii)].
<i>Claim 11</i>	
11. The portable terminal with said function of walking navigation according to claim 10, wherein said device for getting direction information gets information in a direction pointed by the tip of said portable terminal.	<p>Hayashida teaches said device for getting direction information gets information in a direction pointed by the tip of said portable terminal.</p> <p><i>Therefore guidance information with a higher importance is displayed with priority at a divided screen near a driver and supplementary guide route information is shown in a divided screen near a assistant's seat. Furthermore, a map at a north up may be shown in addition to the map of the head up in the 1st, the 2nd and/or the 3rd screen of the above embodiment. In the head up, a direction of a traveling by the car always points up in the screen map and in the north up, a north of a absolute direction always points up in the screen map.</i></p> <p>Hayashida at 22:22-31.</p>

FIG. 20 shows a divided screen of this 2nd embodiment. A head up map is shown in the 1st screen before the division as shown in FIG. 9. When instructing to divide the screen, the north up map is displayed in the 2nd screen 108, in this 2nd screen 108, a symbol 120 which shows an absolute azimuth points up and a symbol 100 which shows the direction of the traveling by the car points to the left.

Also the head up map is displayed in the 3rd screen 110 and a symbol 100 which designates the direction of the traveling by the car points up in the 3rd screen and a symbol 122 which designates a northern direction points to the right in the 3rd screen.

Hayashida at 24:9-20.

FIG. 20



Hayashida at Fig. 20; see also *id.* at Figs. 19 and 21.

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	<p>Alternatively, it would have been obvious to a PHOSITA to modify Hayashida device for getting direction information to get information in a direction pointed by the tip of said portable terminal as taught by Maruyama. <i>See</i> corresponding claim limitation of Exhibit A5.</p> <p>Alternatively, it would have been obvious to a PHOSITA to modify Hayashida device for getting direction information to get information in a direction pointed by the tip of said portable terminal as taught by Ikeda.</p> <p><i>Therefore, as the display device, the state detection means for detecting the state of the posture and / or movement of the display device main body, the display means, and the predetermined image can be displayed on the display means, and detection from the state detection means A display control unit capable of changing a display state of a displayed image is provided based on the information. As a display method, the state of the apparatus body having the display unit with respect to the posture and / or movement is detected, and the display state of the image displayed on the display unit is the state of the detected apparatus body with respect to the posture and / or movement. Change accordingly.</i></p> <p><i>Further, as the map display device, map information storage means for storing map information is provided, and the display control means causes the display means to display a map image based on the map information read from the map information storage means and The display mode or the map display area of the displayed map image can be changed on the basis of the detection information of. As a map display method, when the state of the posture and / or movement of the device body having a display unit is detected and a map image based on predetermined map information is displayed on the display unit, the display mode or map of the map image The display area is changed according to the detected posture and / or movement of the device body.</i></p> <p><i>That is, according to the present invention, by changing the display contents in accordance with the state of the apparatus body such as the posture and</i></p>
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	<p><i>movement, the display corresponding to the actual orientation, the display according to the posture of the apparatus, and the three-dimensional display. It is possible to switch between a static display and a flat display.</i> Ikeda at [0005]-[0007].</p> <p><i>The sensor unit 17 is provided with a sensor necessary to detect the posture state or movement state of the main body of the electronic map device 1. Detection information from the sensor unit 17 is supplied to the CPU 10. Transmission of data and control signals among the above-described units is performed via the bus 19. The various operation information from the operation unit 4 shown in FIG.</i> Ikeda at [0016]</p> <p><i>FIG. 3 shows an example of an inclined state of the electronic map device 1 main body. FIGS. 3A, 3B and 3C show a state in which the main body of the electronic map device 1 is rotated in the vertical direction of the screen about an axis from the left of the screen to the right of the screen. That is, FIG. 3 (a) shows that the electronic map device 1 is substantially horizontal, and FIGS. 3 (b) and 3 (c) show the posture in which the screen is lifted upward by gravity. Although not shown, it is of course possible that the lower part of the screen is lifted upward by gravity. 3A, 3D and 3E show a state in which the main body of the electronic map device 1 is rotated in the left and right direction of the screen about the axis from the top of the screen to the bottom of the screen. That is, FIGS. 3 (d) and 3 (e) show the posture in which the left side of the screen is lifted gravitationally upward from FIG. 3 (a) in the horizontal state. Although not shown, the right side of the screen may be lifted upward by gravity.</i> Ikeda at [0020].</p> <p><i>FIG. 5 shows the movement situation of the electronic map device 1 main body. For example, a state where the user holds the electronic map device 1 horizontally and moves it in a circle in front of the body is shown by the arrows in FIG. The moved state is shown by each arrow in FIG. 5 (b). In this example, when the electronic map device 1 is moved as described above, it is detected in</i></p>
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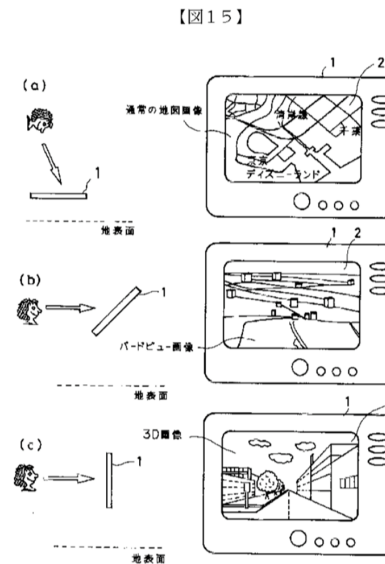
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	<p><i>which direction and how far the screen is moved with reference to the top, bottom, left, and right of the screen. At least one sensor capable of detecting movement, such as each speed sensor and geomagnetic sensor, is mounted. In addition to the case where movement as shown in FIGS. 5 (a) and 5 (b) is performed with the electronic map device 1 being horizontal to the ground surface, the movement status is vertical or oblique to the ground surface. In some cases, the movement as shown in FIGS. 5 (a) and 5 (b) may be performed.</i> Ikeda at [0023].</p> <p><i>That is, in the display orientation designation mode, the electronic map device 1 is designated in any orientation (even when any of the screen top, screen bottom, screen right, and screen left is above the gravity). The direction is on the map, and the display is made so that the gravity top coincides with the map. The directions that can be specified by the user are the current direction of travel and the direction in which the user is facing, as well as the absolute orientations such as east, west, south, and north. In addition, when the user does not perform setting, for example, automatic setting may be performed such that north is on the map as the reference direction.</i> Ikeda at [0028].</p> <p><i>If the data necessary for the process of combining the bird view image and the 3D image is not prepared for that area (not included in the CD-ROM 20), the process from step F104 to perform normal planar map display Go to F105. Then, according to the attitude of the main body of the electronic map device 1 detected in step F101, the display image data is generated such that the map image with the specified direction upward (on the map) coincides with the gravity upper. Then, the display image data is supplied to the display driver 13 and the display on the display unit 2 is executed. An image of this case is shown in FIG.</i> Ikeda at [0031].</p> <p><i>Then, in step F208, the map image is displayed in a state in which the upper, lower, left, and right of the detected gravity upper screen are made to coincide</i></p>
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	<p><i>with the direction viewed through the electronic map device body 1. For example, it is assumed that the user holds the electronic map device 1 by hand when the user faces north, and holds the electronic map device 1 diagonally or vertically as gravity on the screen. In this case, the direction viewed through the electronic map device body 1 is, in other words, the direction in which the user is facing, that is, north. Therefore, a map image whose north on the screen as shown in FIG. 11A is displayed. As a result, from the viewpoint of the user, for example, even if the electronic map device 1 is oblique or vertical, a map in a state in which the electronic map device 1 is in agreement with the actual direction is displayed.</i></p> <p><i>For example, if the user turns to the east while holding it vertically, the display image will be changed to a map image whose screen is on the east. That is, even if the electronic map device 1 is vertical or oblique, it is possible to always see the map in which the actual direction is reflected.</i></p> <p>Ikeda at [0052]-[0053]</p> <p><i>When the user wants to scroll the displayed map image, the user moves the main unit of the electronic map device 1 in an arbitrary direction (the direction in which the map is to be scrolled) while pressing the scroll button. For example, as shown in FIG. 5, the user holds the electronic map device 1 and moves it so as to swing in the front, rear, left and right directions, or moves so as to draw a circle.</i></p> <p>Ikeda at [0060]</p> <p><i>The control operation by the CPU 10 when the virtual display mode is selected is shown in FIG. In this case, when a map image of a certain area is displayed, the CPU 10 constantly monitors the posture detection information (tilt state) from the sensor unit 17 in step F401. Then, in step F402, it is determined whether the posture of the electronic map device 1 is in the horizontal / vertical / diagonal state as shown in FIG.</i></p> <p>Ikeda at [0066].</p>
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	<p><i>8. A variety of map displays can be realized by synthetically executing the operations of the various modes described above. For example, it is possible to combine the operations of the display orientation designation mode and the vicinity map display mode. In this case, the designated direction is always displayed as gravity upper, and the map of the surrounding area is scrolled by moving the main body of the electronic map device 1 while pressing the scroll button in that state. In the example described in FIG. 7, the operation of the virtual display mode such as 3D display and bird view display is additionally performed, but even when such display is performed, the scroll button is pressed. The screen may be switched by moving in the state. In this case, a stereoscopic scene is scrolled according to the moving direction.</i></p> <p><i>In addition, it is useful to combine the operation of the real direction reflection mode and the vicinity map display mode. That is, while the map display is performed in the direction state that finally matches the real direction, the map of the surrounding area is scrolled and displayed by moving the main unit of the electronic map device 1 while pressing the scroll button. It is.</i></p> <p>Ikeda at [0072]-[0073].</p>
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Ikeda at Fig. 15; *see also id.* at Figs. 8, 9, 11, 13, and 14.

Alternatively, it would have been obvious to a PHOSITA to modify Hayashida device for getting direction information to get information in a direction pointed by the tip of said portable terminal as taught by the '711 Patent.

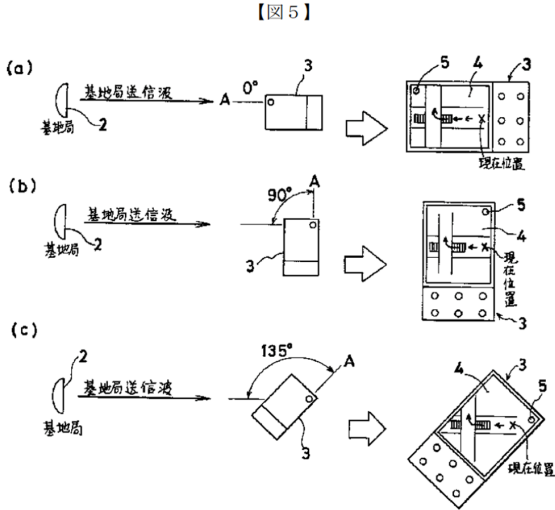
As described above, by detecting the direction of the base station 2 by the antenna 7, it is possible to obtain an angle formed by a predetermined standby position of the antenna 7 and the base station detection position. For example, as shown in FIG. 5, the reception direction at the predetermined standby position of the antenna 7 with respect to the main body of the display device 3 is defined as a reference direction A, and It can be detected. For example, in FIG. 5A, the relative angle is 0 degrees, in FIG. 5B, the relative angle is 90 degrees, and in FIG. 5C, the relative angle is 135 degrees.

Then, the display state of the guide map displayed on the display unit 4 of the display device 3 is corrected using the relative angle obtained as described above, and the outline thereof will be described below. For example, when the relative angle is 0 degree, the guide map data is displayed as it is without correction (refer to FIG. 5A), and when the relative angle is 90 degree, the direction in which the relative angle deviates Guide map data is corrected and displayed so that the display of the guide map is rotated 90 degrees (see FIG. 5 (b)), and in the case where the relative angle is 135 degrees, the direction in which the relative angle is generated is 135 degrees The guide map data is corrected and displayed so that the display of the guide map is in a rotated state (see FIG. 5C).

Thus, the display unit 4 of the display device 3 displays a guide map for the base station 2 regardless of the direction in which the person holding the display device 3 holds the display device 3. The content is displayed in a fixed direction. That is, in the embodiment shown in FIG. 5, the display unit 4 of the display apparatus 3 is substantially horizontal so that the angle between the main beam radiation direction of the base station transmission wave and the reference direction A in the display apparatus 3 is zero. When holding in the direction and displaying on the display unit 4 of the display device 3 without correcting the guide map data, a line connecting the base station 2 and the display device 3 in the real environment is a pseudo guide map displayed on the display unit 4 Since the guide map data supplied from the base station 2 to the display device 3 is set in advance so as to be parallel to the reference direction A in the environment, the display device 3 is receiving a predetermined reference direction A By correcting the guide map data by an angle substantially on the horizontal plane that the transmission wave from the base station 2 of Ray device 3 than it is possible to relatively equal and guide map pseudo environment displayed on the display unit 4 of the real environment and the display device 3 of the area located.

'711 Patent at [0021]-[0023].

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	<p style="text-align: center;">【图 5】</p>  <p>(a) 基地局送信源 → A 0° → 3 → 5 4 3 现在位置</p> <p>(b) 基地局送信源 → 90° → 3 → 5 4 3 现在位置</p> <p>(c) 基地局送信源 → 135° → 3 → 5 4 3 现在位置</p> <p>'711 Patent at Fig. 5.</p> <p>A PHOSITA would have been motivated to modify Hayashida with teachings of the above-cited references in order because the direction that a portable terminal is pointed is reflective of the direction that a user is oriented. Such a combination is the application of a known technique to improve a similar device in the same way and would not have required undue experimentation and would have yielded predictable results.</p>
Claim 13	
<p>13. The portable terminal with said function of walking navigation according to claim 10, wherein said device for getting direction information gets orientation information of</p>	<p>See Claim 3.</p>

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a display of said portable terminal.	
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