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(54) NAVIGATION DEVICE AND METHOD USING A LOCATION MESSAGE

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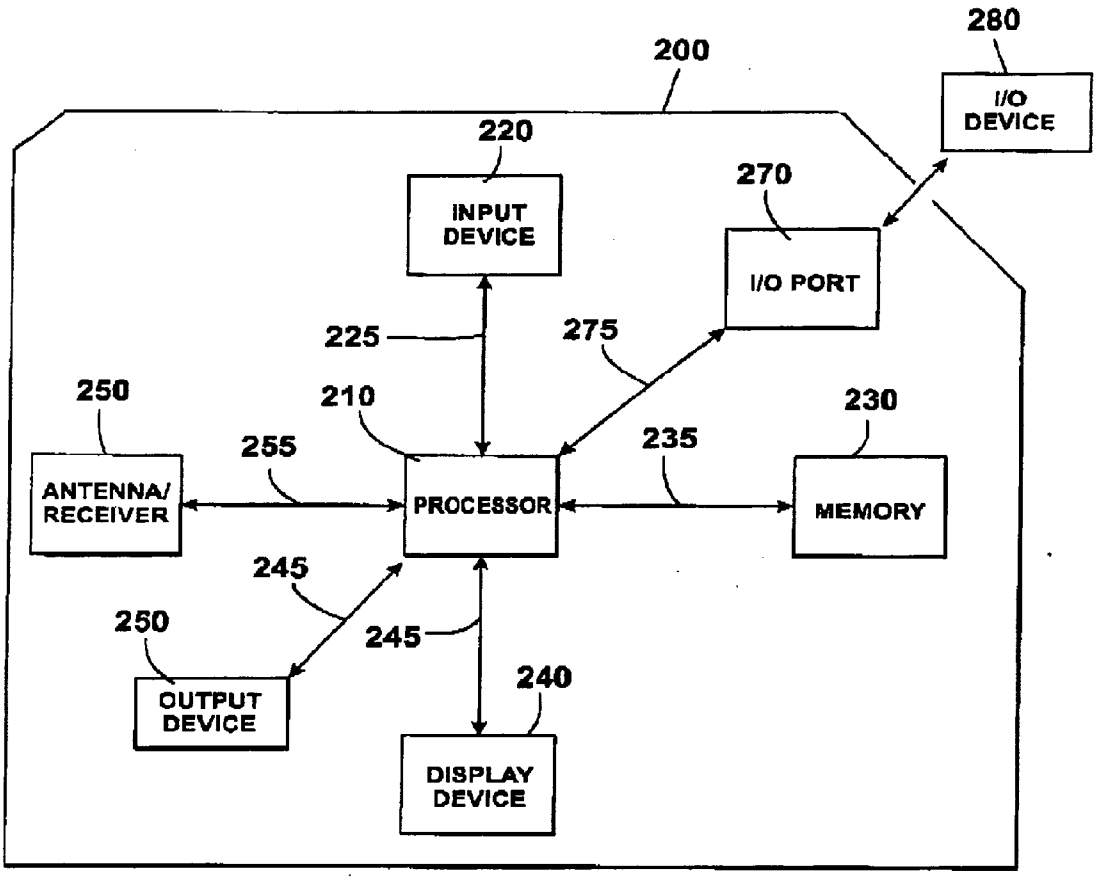
(57) **ABSTRACT**

A method and a navigation device are disclosed for sharing at least one location message with at least one other device. The navigation device includes an input device to receive a command to send at least one location message, the at least one location message including a segment indicating a location and a transmitter to send the at least one location message. The method includes receiving a command to send at least one location message including a segment indicating a location, and sending the at least one location message from a navigation device.



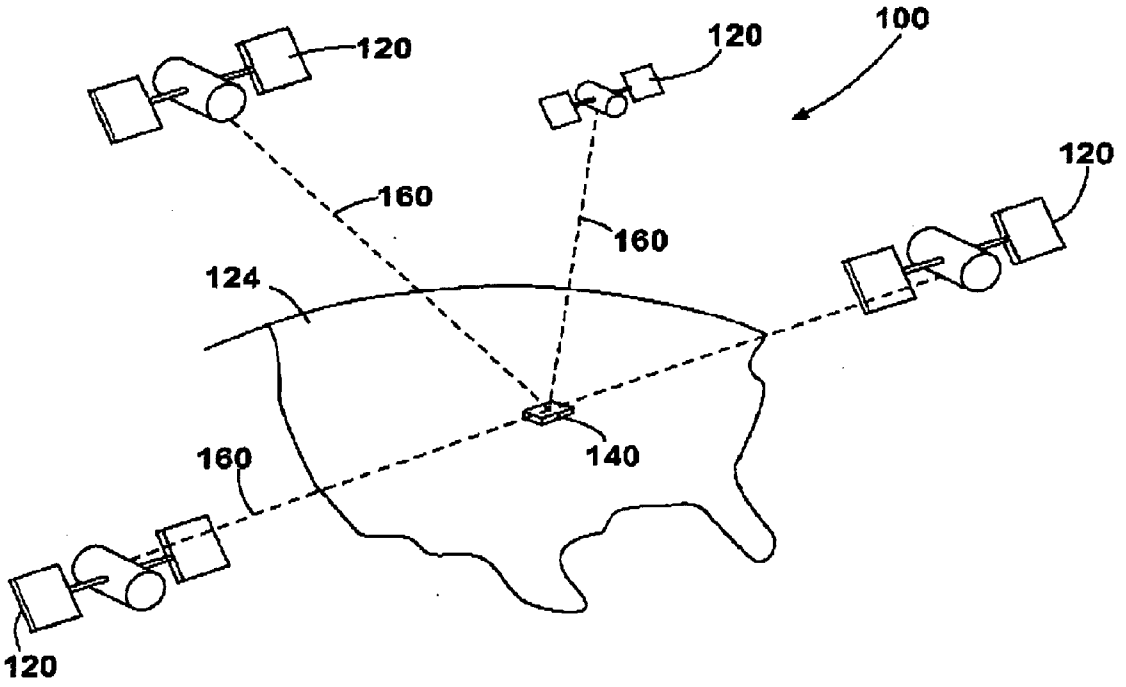


Fig. 1

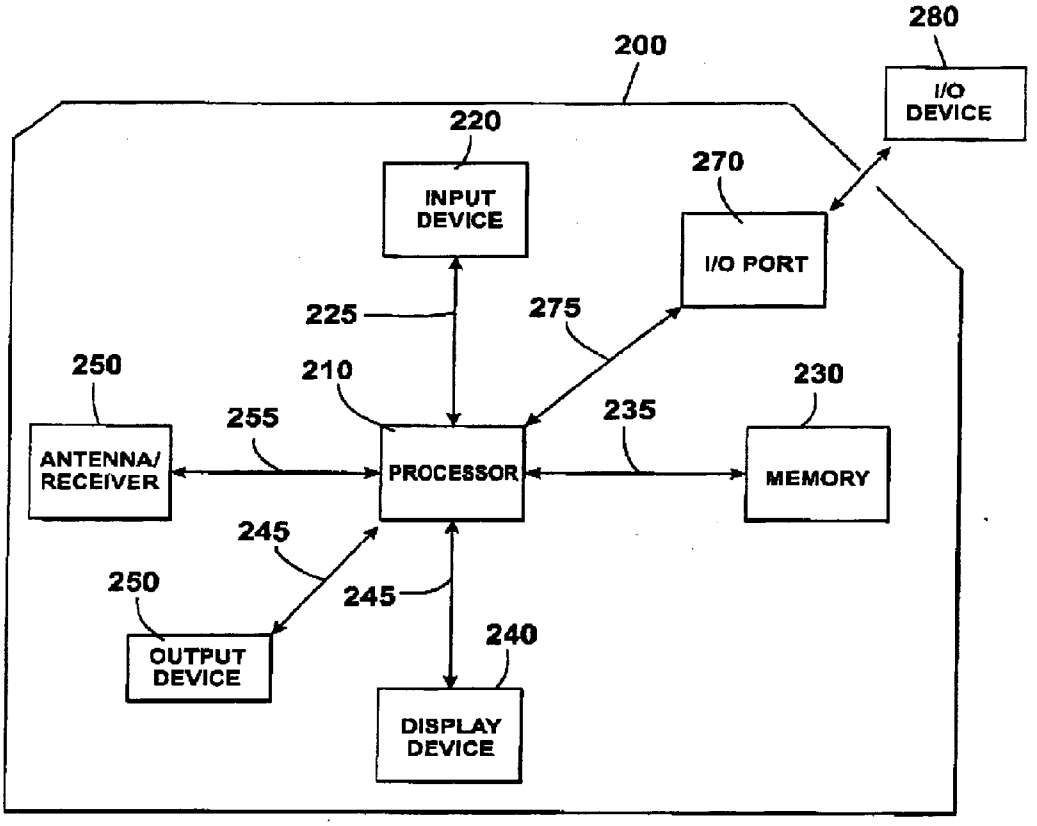

200
280
I/O DEVICE
220
INPUT DEVICE
270
I/O PORT
225
275
250
210
230
255
235
ANTENNA/ RECEIVER
PROCESSOR
MEMORY
245
250
245
240
OUTPUT DEVICE
DISPLAY DEVICE

Fig. 2

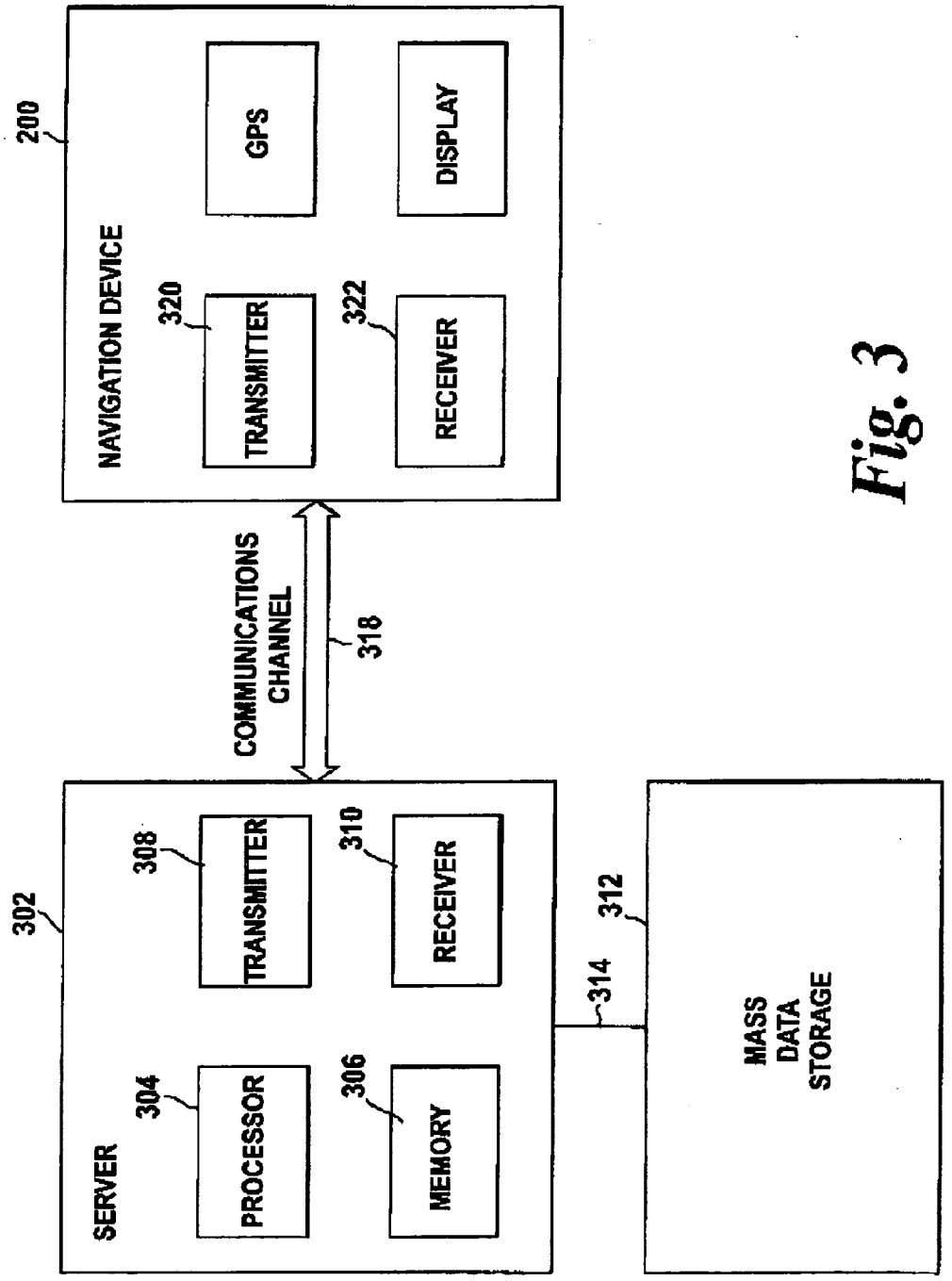

200
NAVIGATION DEVICE
GPS
DISPLAY
320
TRANSMITTER
322
RECEIVER
COMMUNICATIONS CHANNEL
318
302
SERVER
308
TRANSMITTER
310
RECEIVER
304
PROCESSOR
306
MEMORY
312
314
MASS DATA STORAGE

Fig. 3

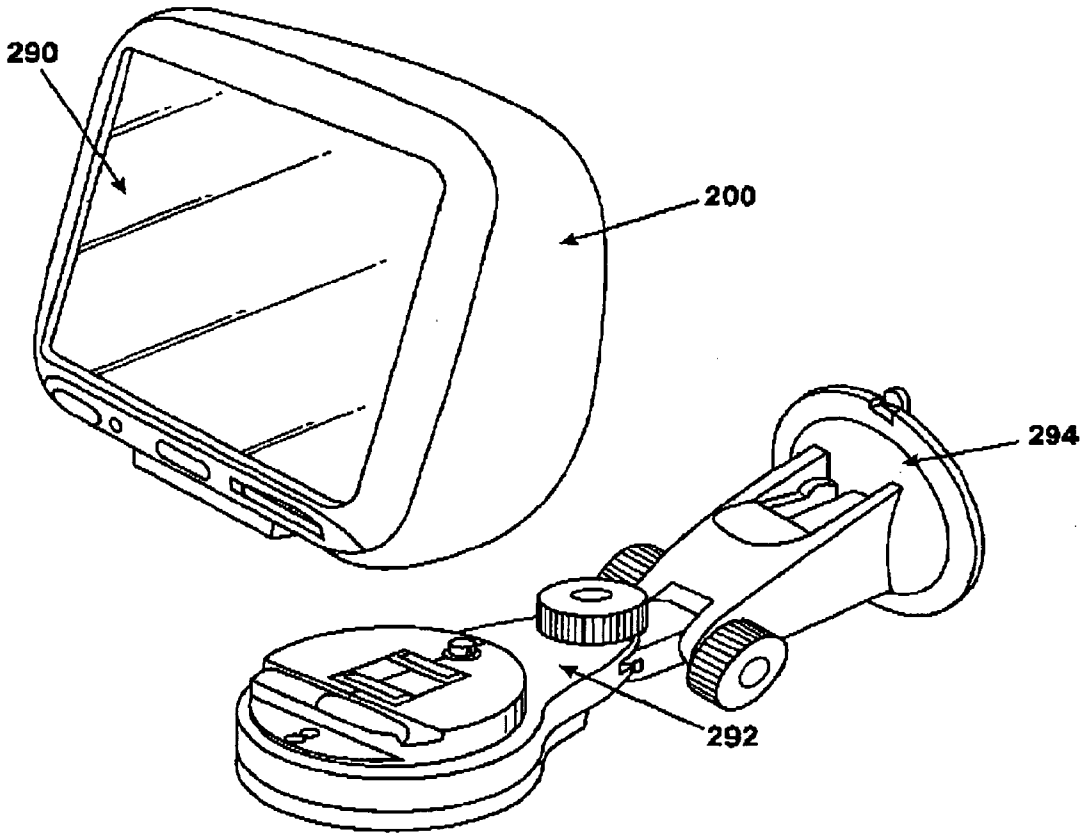


Fig. 4A

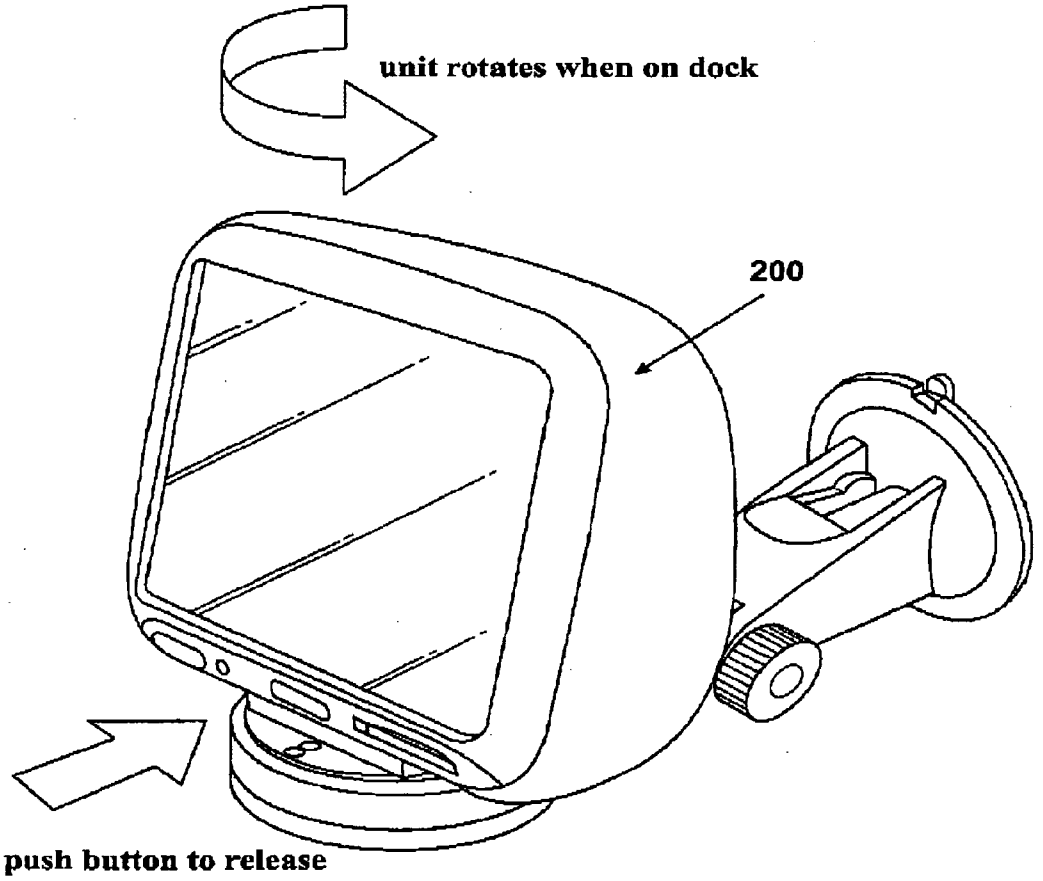


Fig. 4B

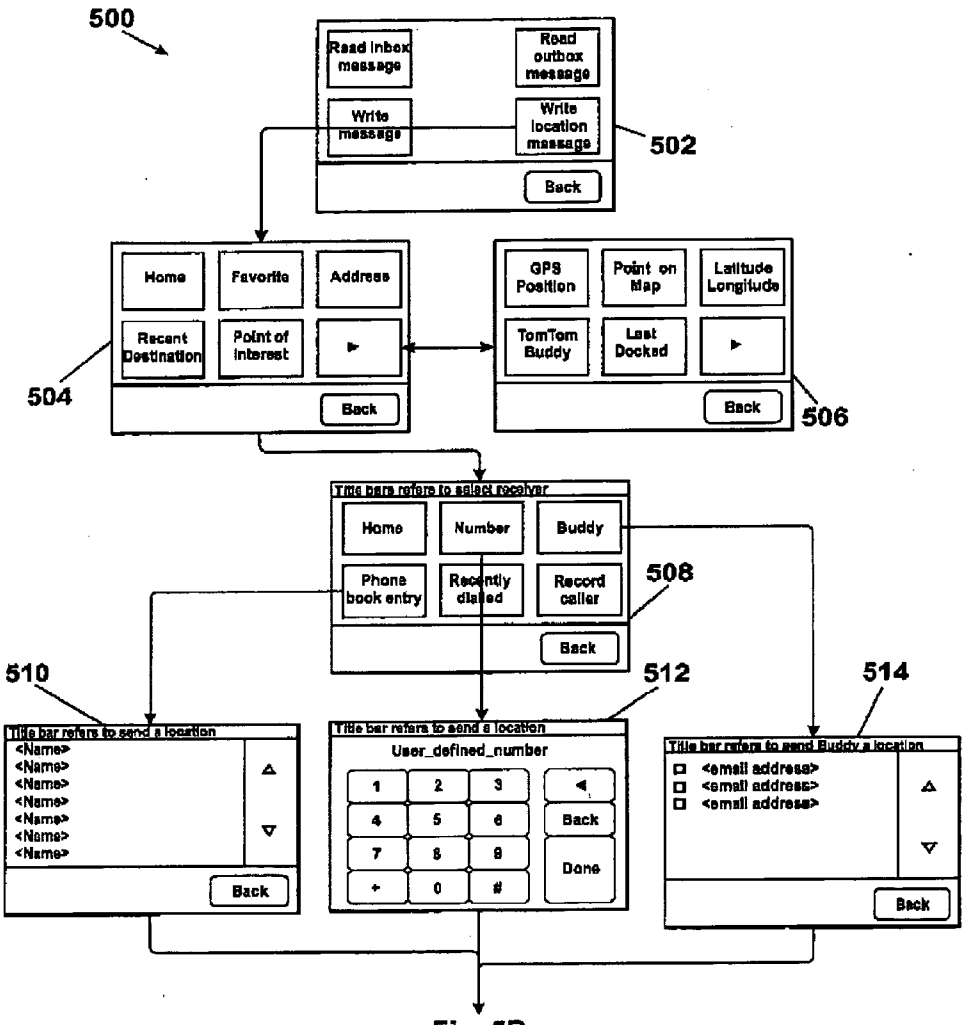

500
Read inbox message
Read outbox message
Write message
Write location message
Back
502
Home
Favorite
Address
Recent Destination
Point of interest
Back
504
GPS Position
Point on Map
Latitude Longitude
TomTom Buddy
Last Docked
Back
506
Title bars refers to select receiver
Home
Number
Buddy
Phone book entry
Recently dialled
Record caller
Back
508
510
Title bar refers to send a location
<Name>
<Name>
<Name>
<Name>
<Name>
<Name>
<Name>
Back
512
Title bar refers to send a location
User_defined_number
1
2
3
4
5
6
7
8
9
*
0
#
Back
Done
514
Title bar refers to send Buddy a location
<email address>
<email address>
<email address>
Back

Fig. 5B

Fig. 5A

Fig. 5A

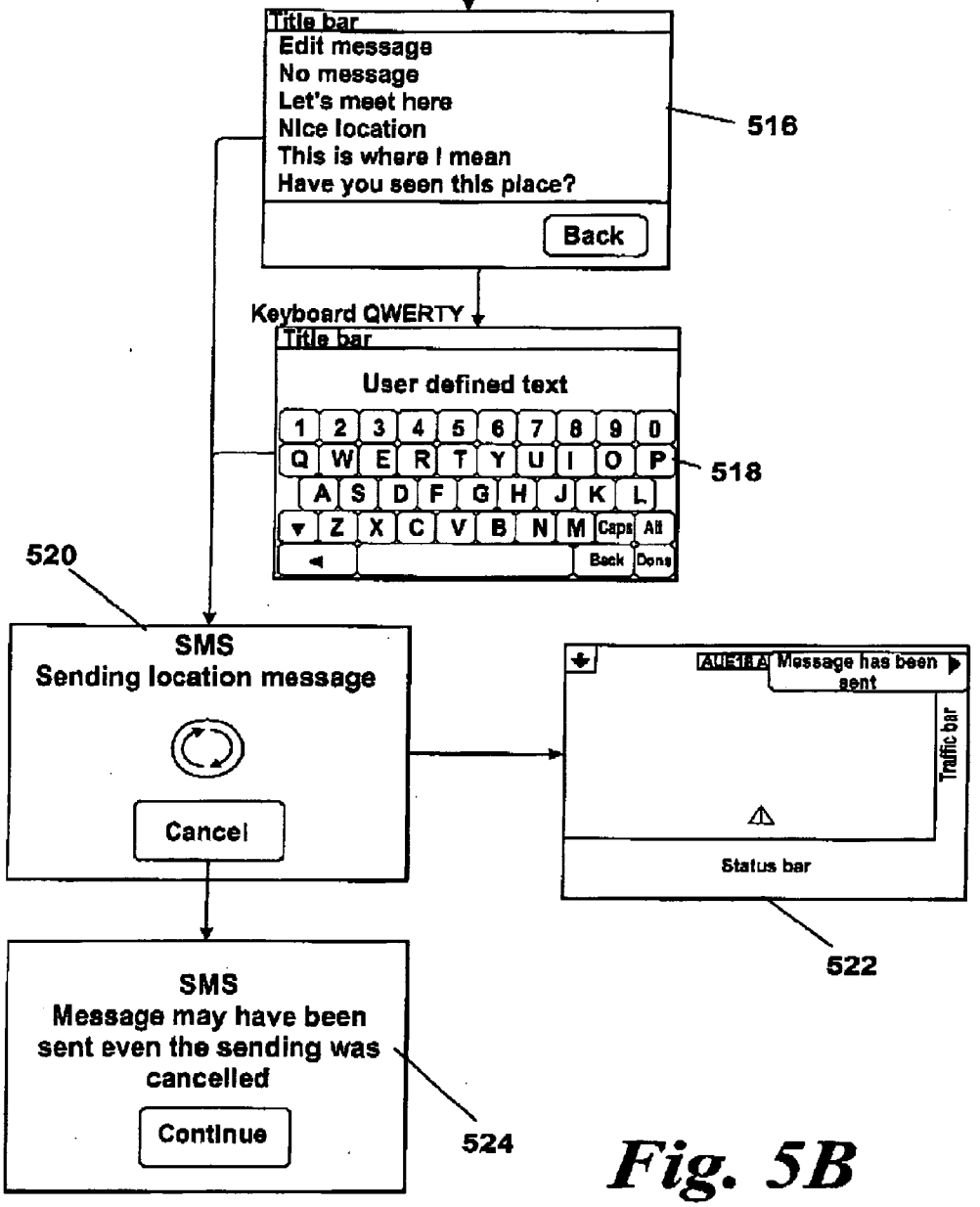

Title bar
Edit message
No message
Let's meet here
Nice location
This is where I mean
Have you seen this place?
Back
516
Keyboard QWERTY
Title bar
User defined text
1 2 3 4 5 6 7 8 9 0
Q W E R T Y U I O P
A S D F G H J K L
Z X C V B N M Caps Alt
Back Done
518
520
SMS
Sending location message
Cancel
Message has been sent
Traffic bar
Status bar
522
SMS
Message may have been sent even the sending was cancelled
Continue
524

Fig. 5B

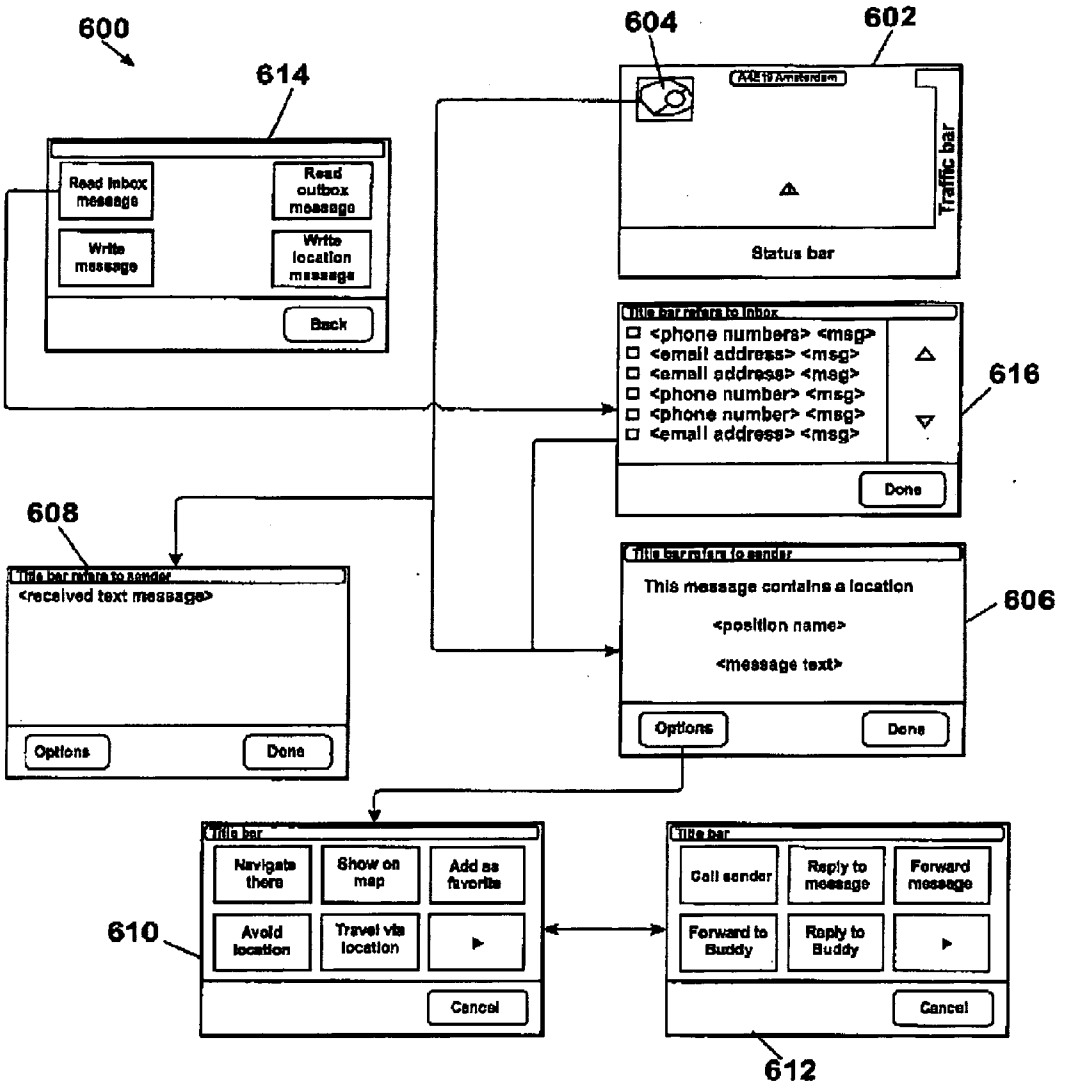

600
604
602
614
Read inbox message
Read outbox message
Write message
Write location message
Back
Traffic bar
Status bar
<phone numbers> <msg>
<email address> <msg>
<email address> <msg>
<phone number> <msg>
<phone number> <msg>
<email address> <msg>
Done
616
608
<received text message>
Options
Done
This message contains a location
<position name>
<message text>
Options
Done
606
Navigate there
Show on map
Add as favorite
Avoid location
Travel via location
Cancel
610
Call sender
Reply to message
Forward message
Forward to Buddy
Reply to Buddy
Cancel
612

Fig. 6

NAVIGATION DEVICE AND METHOD USING A LOCATION MESSAGE

CO-PENDING APPLICATIONS

[0001] The following applications are being filed concurrently with the present applications. The entire contents of each of the following applications is hereby incorporated herein by reference: A NAVIGATION DEVICE AND METHOD FOR EARLY INSTRUCTION OUTPUT (Attorney docket number 06P207US01) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR ESTABLISHING AND USING PROFILES (Attorney docket number 06P207US02) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR ENHANCED MAP DISPLAY (Attorney docket number 06P207US03) filed on even date herewith; A NAVIGATION DEVICE AND METHOD RELATING TO AN AUDIBLE RECOGNITION MODE (Attorney docket number 06P207US04) filed on even date herewith; NAVIGATION DEVICE AND METHOD FOR PROVIDING POINTS OF INTEREST (Attorney docket number 06P207US05) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR FUEL PRICING DISPLAY (Attorney docket number 06P057US06) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR INFORMATIONAL SCREEN DISPLAY (Attorney docket number 06P207US06) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR DEALING WITH LIMITED ACCESS ROADS (Attorney docket number 06P057US07) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR TRAVEL WARNINGS (Attorney docket number 06P057US07) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR DRIVING BREAK WARNING (Attorney docket number 06P057US07) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR ISSUING WARNINGS (Attorney docket number 06P207US07) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR DISPLAY OF POSITION IN TEXT READABLE FORM (Attorney docket number 06P207US08) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR EMERGENCY SERVICE ACCESS (Attorney docket number 06P057US08) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR PROVIDING REGIONAL TRAVEL INFORMATION IN A NAVIGATION DEVICE (Attorney docket number 06P207US09) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR USING SPECIAL CHARACTERS IN A NAVIGATION DEVICE (Attorney docket number 06P207US09) filed on even date herewith; A NAVIGATION DEVICE AND METHOD USING A PERSONAL AREA NETWORK (Attorney docket number 06P207US10) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR CONSERVING POWER (Attorney docket number 06P207US11) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR USING A TRAFFIC MESSAGE CHANNEL (Attorney docket number 06P207US13) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR USING A TRAFFIC MESSAGE CHANNEL RESOURCE (Attorney docket number 06P207US13) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR QUICK OPTION ACCESS (Attorney docket number 06P207US15) filed on even date herewith; A NAVIGATION DEVICE AND METHOD FOR DISPLAYING A RICH CONTENT DOCUMENT (Attorney docket number 06P207US27) filed on even date herewith.

PRIORITY STATEMENT

[0002] The present application hereby claims priority under 35 U.S.C. §119(e) on each of U.S. Provisional Patent Application Nos. 60/879,523 filed Jan. 10, 2007; 60/879,549 filed Jan. 10, 2007; 60/879,553 filed Jan. 10, 2007; 60/879,577 filed Jan. 10, 2007; and 60/879,599 filed Jan. 10, 2007; the entire contents of each of which is hereby incorporated herein by reference.

FIELD

[0003] The present application generally relates to navigation methods and devices.

BACKGROUND

[0004] Navigation devices were traditionally utilized mainly in the areas of vehicle use, such as on cars, motorcycles, trucks, boats, etc. Alternatively, if such navigation devices were portable, they were further transferable between vehicles and/or useable outside the vehicle, for foot travel for example.

[0005] These devices provide a user with directions and map information to direct the user from one location to another location. These devices also included phone devices such that a user could make a voice call and send a text message.

SUMMARY

[0006] The inventors of the present application developed a method and implementation of a navigation device, to allow users of the navigation device to send and/or receive at least one location message to/from at least one other device.

[0007] In at least one embodiment of the present application, a navigation device includes an input device to receive a command to send at least one location message, the at least one location message including a segment indicating a location, and a transmitter to send the at least one location message.

[0008] In at least one embodiment of the present application, a navigation device includes a receiver to receive at least one location message, including a segment indicating a location, from at least one other device, and an input device for receiving a user command to store the location.

[0009] In at least one embodiment of the present application, a navigation device includes a receiver to receive at least one location message, including a segment indicating a location, from at least one other device, an input device to receive a user command to plan a route based on the location, and a processor to plan the route based on the location.

[0010] In at least one embodiment of the present application, a method includes receiving a command to send at least one location message including a segment indicating a location, and sending the at least one location message from a navigation device.

[0011] In at least one embodiment of the present application, a method includes receiving at least one location message, including a segment indicating a location, from at least one other device, and storing the location in memory associated with a navigation device.

[0012] In at least one embodiment of the present application, a method includes receiving at least one location mes-

sage, including a segment indicating a location, from at least one other device, receiving a user command to plan a route based on the location, and planning the route based on the location.

[0013] In at least one embodiment of the present application, a navigation device includes means for receiving a command to send at least one location, the at least one location message including a segment indicating a location, and means for sending the at least one location message.

[0014] In at least one embodiment of the present application, a navigation device includes means for receiving at least one location message, including a segment indicating a location, from at least one other device, and means for indicating receipt of the at least one location message to a user of the navigation device.

[0015] In at least one embodiment of the present application, a navigation device includes means for receiving at least one location message, including a segment indicating a location, from at least one other device, means for receiving a user command to plan a route based on the location, and means for planning the route based on the location.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The present application will be described in more detail below by using example embodiments, which will be explained with the aid of the drawings, in which:

[0017] FIG. **1** illustrates an example view of a Global Positioning System (GPS);

[0018] FIG. **2** illustrates an example block diagram of electronic components of a navigation device of an embodiment of the present application;

[0019] FIG. **3** illustrates an example block diagram of a server, navigation device and connection therebetween of an embodiment of the present application;

[0020] FIG. **4**A illustrates a perspective view of a navigation device separated from an arm of a docking station;

[0021] FIG. **4**B illustrates a perspective view of a navigation device connected to the arm of the docking station;

[0022] FIGS. **5**A and **5**B illustrates example displays for sending a location message; and

[0023] FIG. **6** illustrates example displays for receiving a location message.

DETAILED DESCRIPTION OF THE EXAMPLE EMBODIMENTS

[0024] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the present invention. As used herein, the singular forms "a", "an", and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "includes" and/or "including", when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0025] In describing example embodiments illustrated in the drawings, specific terminology is employed for the sake of clarity. However, the disclosure of this patent specification is not intended to be limited to the specific terminology so selected and it is to be understood that each specific element includes all technical equivalents that operate in a similar manner.

[0026] Referencing the drawings, wherein like reference numerals designate identical or corresponding parts throughout the several views, example embodiments of the present patent application are hereafter described. Like numbers refer to like elements throughout. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

[0027] FIG. **1** illustrates an example view of Global Positioning System (GPS), usable by navigation devices, including the navigation device of embodiments of the present application. Such systems are known and are used for a variety of purposes. In general, GPS is a satellite-radio based navigation system capable of determining continuous position, velocity, time, and in some instances direction information for an unlimited number of users.

[0028] Formerly known as NAVSTAR and potentially known as Galileo, the GPS incorporates a plurality of satellites which work with the earth in extremely precise orbits. Based on these precise orbits, GPS satellites can relay their location to any number of receiving units.

[0029] The GPS system is implemented when a device, specially equipped to receive GPS data, begins scanning radio frequencies for GPS satellite signals. Upon receiving a radio signal from a GPS satellite, the device determines the precise location of that satellite via one of a plurality of different conventional methods. The device will continue scanning, in most instances, for signals until it has acquired at least three different satellite signals (noting that position is not normally, but can be determined, with only two signals using other triangulation techniques). Implementing geometric triangulation, the receiver utilizes the three known positions to determine its own two-dimensional position relative to the satellites. This can be done in a known manner. Additionally, acquiring a fourth satellite signal will allow the receiving device to calculate its three dimensional position by the same geometrical calculation in a known manner. The position and velocity data can be updated in real time on a continuous basis by an unlimited number of users.

[0030] As shown in FIG. **1**, the GPS system is denoted generally by reference numeral **100**. A plurality of satellites **120** are in orbit about the earth **124**. The orbit of each satellite **120** is not necessarily synchronous with the orbits of other satellites **120** and, in fact, is likely asynchronous. A GPS receiver **140**, usable in embodiments of navigation devices of the present application, is shown receiving spread spectrum GPS satellite signals **160** from the various satellites **120**.

[0031] The spread spectrum signals **160**, continuously transmitted from each satellite **120**, utilize a highly accurate frequency standard accomplished with an extremely accurate atomic clock. Each satellite **120**, as part of its data signal transmission **160**, transmits a data stream indicative of that particular satellite **120**. It is appreciated by those skilled in the relevant art that the GPS receiver device **140** generally acquires spread spectrum GPS satellite signals **160** from at least three satellites **120** for the GPS receiver device **140** to calculate its two-dimensional position by triangulation. Acquisition of an additional signal, resulting in signals **160** from a total of four satellites **120**, permits the GPS receiver device **140** to calculate its three-dimensional position in a known manner.

[0032] FIG. **2** illustrates an example block diagram of electronic components of a navigation device **200** of an embodiment of the present application, in block component format. It should be noted that the block diagram of the navigation

device **200** is not inclusive of all components of the navigation device, but is only representative of many example components.

[0033] The navigation device **200** is located within a housing (not shown). The housing includes a processor **210** connected to an input device **220** and a display screen **240**. The input device **220** can include a keyboard device, voice input device, touch panel and/or any other known input device utilized to input information; and the display screen **240** can include any type of display screen such as an LCD display, for example. In at least one embodiment of the present application, the input device **220** and display screen **240** are integrated into an integrated input and display device, including a touchpad or touchscreen input wherein a user need only touch a portion of the display screen **240** to select one of a plurality of display choices or to activate one of a plurality of virtual buttons.

[0034] In addition, other types of output devices **250** can also include, including but not limited to, an audible output device. As output device **250** can produce audible information to a user of the navigation device **200**, it is equally understood that input device **240** can also include a microphone and software for receiving input voice commands as well.

[0035] In the navigation device **200**, processor **210** is operatively connected to and set to receive input information from input device **240** via a connection **225**, and operatively connected to at least one of display screen **240** and output device **250**, via output connections **245**, to output information thereto. Further, the processor **210** is operatively connected to memory **230** via connection **235** and is further adapted to receive/send information from/to input/output (I/O) ports **270** via connection **275**, wherein the I/O port **270** is connectible to an I/O device **280** external to the navigation device **200**. The external I/O device **280** may include, but is not limited to an external listening device such as an earpiece for example. The connection to I/O device **280** can further be a wired or wireless connection to any other external device such as a car stereo unit for hands-free operation and/or for voice activated operation for example, for connection to an ear piece or head phones, and/or for connection to a mobile phone for example, wherein the mobile phone connection may be used to establish a data connection between the navigation device **200** and the internet or any other network for example, and/or to establish a connection to a server via the internet or some other network for example.

[0036] The navigation device **200**, in at least one embodiment, may establish a "mobile" network connection with the server **302** via a mobile device (such as a mobile phone, PDA, and/or any device with mobile phone technology) establishing a digital connection (such as a digital connection via known Bluetooth technology for example). Thereafter, through its network service provider, the mobile device can establish a network connection (through the internet for example) with a server **302**. As such, a "mobile" network connection is established between the navigation device **200** (which can be, and often times is mobile as it travels alone and/or in a vehicle) and the server **302** to provide a "real-time" or at least very "up to date" gateway for information.

[0037] The establishing of the network connection between the mobile device (via a service provider) and another device such as the server **302**, using the internet for example, can be done in a known manner. This can include use of TCP/IP layered protocol for example. The mobile device can utilize any number of communication standards such as CDMA, GSM, WAN, etc.

[0038] As such, an internet connection may be utilized which is achieved via data connection, via a mobile phone or mobile phone technology within the navigation device **200** for example. For this connection, an internet connection between the server **302** and the navigation device **200** is established. This can be done, for example, through a mobile phone or other mobile device and a GPRS (General Packet Radio Service)-connection (GPRS connection is a high-speed data connection for mobile devices provided by telecom operators; GPRS is a method to connect to the internet.

[0039] The navigation device **200** may include its own mobile phone technology within the navigation device **200** itself (including an antenna for example, wherein the internal antenna of the navigation device **200** can further alternatively be used). The mobile phone technology within the navigation device **200** can include internal components as specified above, and/or can include an insertable card, complete with necessary mobile phone technology and/or an antenna for example. As such, mobile phone technology within the navigation device **200** can similarly establish a network connection between the navigation device **200** and the server **302**, via the internet for example, in a manner similar to that of any mobile device.

[0040] For GRPS phone settings such as GSM mentioned above, the Bluetooth enabled device may be used to correctly work with the ever changing spectrum of mobile phone models, manufacturers, etc., model/manufacturer specific settings may be stored on the navigation device **200** for example. The data stored for this information can be updated in a manner discussed in any of the embodiments, previous and subsequent.

[0041] FIG. **2** further illustrates an operative connection between the processor **210** and an antenna/receiver **250** via connection **255**, wherein the antenna/receiver **250** can be a GPS antenna/receiver for example. It will be understood that the antenna and receiver designated by reference numeral **250** are combined schematically for illustration, but that the antenna and receiver may be separately located components, and that the antenna may be a GPS patch antenna or helical antenna for example.

[0042] Further, it will be understood by one of ordinary skill in the art that the electronic components shown in FIG. **2** are powered by power sources (not shown) in a conventional manner. As will be understood by one of ordinary skill in the art, different configurations of the components shown in FIG. **2** are considered within the scope of the present application. For example, in one embodiment, the components shown in FIG. **2** may be in communication with one another via wired and/or wireless connections and the like. Thus, the scope of the navigation device **200** of the present application includes a portable or handheld navigation device **200**.

[0043] In addition, the portable or handheld navigation device **200** of FIG. **2** can be connected or "docked" in a known manner to a motorized vehicle such as a car or boat for example. Such a navigation device **200** is then removable from the docked location for portable or handheld navigation use.

[0044] FIG. **3** illustrates an example block diagram of a server **302** and a navigation device **200** of the present application, via a generic communications channel **318**, of an embodiment of the present application. The server **302** and a

navigation device **200** of the present application can communicate when a connection via communications channel **318** is established between the server **302** and the navigation device **200** (noting that such a connection can be a data connection via mobile device, a direct connection via personal computer via the internet, etc.).

[0045] The server **302** includes, in addition to other components which may not be illustrated, a processor **304** operatively connected to a memory **306** and further operatively connected, via a wired or wireless connection **314**, to a mass data storage device **312**. The processor **304** is further operatively connected to transmitter **308** and receiver **310**, to transmit and send information to and from navigation device **200** via communications channel **318**. The signals sent and received may include data, communication, and/or other propagated signals. The transmitter **308** and receiver **310** may be selected or designed according to the communications requirement and communication technology used in the communication design for the navigation system **200**. Further, it should be noted that the functions of transmitter **308** and receiver **310** may be combined into a signal transceiver.

[0046] Server **302** is further connected to (or includes) a mass storage device **312**, noting that the mass storage device **312** may be coupled to the server **302** via communication link **314**. The mass storage device **312** contains a store of navigation data and map information, and location information and message information and can again be a separate device from the server **302** or can be incorporated into the server **302**.

[0047] The navigation device **200** is adapted to communicate with the server **302** through communications channel **318**, and includes processor, memory, etc. as previously described with regard to FIG. **2**, as well as transmitter **320** and receiver **322** to send and receive signals and/or data through the communications channel **318**, noting that these devices can further be used to communicate with devices other than server **302**. Further, the transmitter **320** and receiver **322** are selected or designed according to communication requirements and communication technology used in the communication design for the navigation device **200** and the functions of the transmitter **320** and receiver **322** may be combined into a single transceiver.

[0048] Software stored in server memory **306** provides instructions for the processor **304** and allows the server **302** to provide services to the navigation device **200**. One service provided by the server **302** involves processing requests from the navigation device **200** and transmitting navigation data from the mass data storage **312** to the navigation device **200**. According to at least one embodiment of the present application, another service provided by the server **302** includes processing the navigation data using various algorithms for a desired application and sending the results of these calculations to the navigation device **200**.

[0049] The communication channel **318** generically represents the propagating medium or path that connects the navigation device **200** and the server **302**. According to at least one embodiment of the present application, both the server **302** and navigation device **200** include a transmitter for transmitting data through the communication channel and a receiver for receiving data that has been transmitted through the communication channel.

[0050] The communication channel **318** is not limited to a particular communication technology. Additionally, the communication channel **318** is not limited to a single communication technology; that is, the channel **318** may include several communication links that use a variety of technology. For example, according to at least one embodiment, the communication channel **318** can be adapted to provide a path for electrical, optical, and/or electromagnetic communications, etc. As such, the communication channel **318** includes, but is not limited to, one or a combination of the following: electric circuits, electrical conductors such as wires and coaxial cables, fiber optic cables, converters, radio-frequency (rf) waves, the atmosphere, empty space, etc. Furthermore, according to at least one various embodiment, the communication channel **318** can include intermediate devices such as routers, repeaters, buffers, transmitters, and receivers, for example.

[0051] In at least one embodiment of the present application, for example, the communication channel **318** includes telephone and computer networks. Furthermore, in at least one embodiment, the communication channel **318** may be capable of accommodating wireless communication such as radio frequency, microwave frequency, infrared communication, etc. Additionally, according to at least one embodiment, the communication channel **318** can accommodate satellite communication.

[0052] The communication signals transmitted through the communication channel **318** include, but are not limited to, signals as may be required or desired for given communication technology. For example, the signals may be adapted to be used in cellular communication technology such as Time Division Multiple Access (TDMA), Frequency Division Multiple Access (FDMA), Code Division Multiple Access (CDMA), Global System for Mobile Communications (GSM), etc. Both digital and analogue signals can be transmitted through the communication channel **318**. According to at least one embodiment, these signals may be modulated, encrypted and/or compressed signals as may be desirable for the communication technology.

[0053] The mass data storage **312** includes sufficient memory for the desired navigation applications. Examples of the mass data storage **312** may include magnetic data storage media such as hard drives for example, optical storage media such as CD-Roms for example, charged data storage media such as flash memory for example, molecular memory, etc.

[0054] According to at least one embodiment of the present application, the server **302** includes a remote server accessible by the navigation device **200** via a wireless channel. According to at least one other embodiment of the application, the server **302** may include a network server located on a local area network (LAN), wide area network (WAN), virtual private network (VPN), etc.

[0055] According to at least one embodiment of the present application, the server **302** may include a personal computer such as a desktop or laptop computer, and the communication channel **318** may be a cable connected between the personal computer and the navigation device **200**. Alternatively, a personal computer may be connected between the navigation device **200** and the server **302** to establish an internet connection between the server **302** and the navigation device **200**. Alternatively, a mobile telephone or other handheld device may establish a wireless connection to the internet, for connecting the navigation device **200** to the server **302** via the internet.

[0056] The navigation device **200** may be provided with information from the server **302** via information downloads which may be periodically updated upon a user connecting navigation device **200** to the server **302** and/or may be more

dynamic upon a more constant or frequent connection being made between the server **302** and navigation device **200** via a wireless mobile connection device and TCP/IP connection for example. For many dynamic calculations, the processor **304** in the server **302** may be used to handle the bulk of the processing needs, however, processor **210** of navigation device **200** can also handle much processing and calculation, oftentimes independent of a connection to a server **302**.

[0057] The mass storage device **312** connected to the server **302** can include volumes more cartographic and route data than that which is able to be maintained on the navigation device **200** itself, including maps, etc. The server **302** may process, for example, the majority of the devices of a navigation device **200** which travel along the route using a set of processing algorithms. Further, the cartographic and route data stored in memory **312** can operate on signals (e.g. GPS signals), originally received by the navigation device **200**.

[0058] As indicated above in FIG. **2** of the application, a navigation device **200** of an embodiment of the present application includes a processor **210**, an input device **220**, and a display screen **240**. In at least one embodiment, the input device **220** and display screen **240** are integrated into an integrated input and display device to enable both input of information (via direct input, menu selection, etc.) and display of information through a touch panel screen, for example. Such a screen may be a touch input LCD screen, for example, as is well known to those of ordinary skill in the art. Further, the navigation device **200** can also include any additional input device **220** and/or any additional output device **240**, such as audio input/output devices for example.

[0059] FIGS. **4**A and **4**B are perspective views of an actual implementation of an embodiment of the navigation device **200**. As shown in FIG. **4**A, the navigation device **200** may be a unit that includes an integrated input and display device **290** (a touch panel screen for example) and the other components of FIG. **2** (including but not limited to internal GPS receiver **250**, microprocessor **210**, a power supply, memory systems **220**, etc.).

[0060] The navigation device **200** may sit on an arm **292**, which itself may be secured to a vehicle dashboard/window/etc. using a large suction cup **294**. This arm **292** is one example of a docking station to which the navigation device **200** can be docked. As shown in FIG. **4**B, the navigation device **200** can be docked or otherwise connected to an arm **292** of the docking station by snap connecting the navigation device **292** to the arm **292** for example (this is only one example, as other known alternatives for connection to a docking station are within the scope of the present application). The navigation device **200** may then be rotatable on the arm **292**, as shown by the arrow of FIG. **4**B. To release the connection between the navigation device **200** and the docking station, a button on the navigation device **200** may be pressed, for example (this is only one example, as other known alternatives for disconnection to a docking station are within the scope of the present application).

[0061] According to embodiments of the present application, a navigation device **200** includes an input device **220** to receive a command to send at least one location message, the at least one location message including a segment indicating a location, and a transmitter **320** to send the at least one location message.

[0062] According to embodiments of the present application, a navigation device **200** includes a receiver **322** to receive at least one location message, including a segment indicating a location, from at least one other device, and an input device **220** for receiving a user command to store the location.

[0063] According to embodiments of the present application, a navigation device **200** includes a receiver **322** to receive at least one location message, including a segment indicating a location, from at least one other device, an input device **220** to receive a user command to plan a route based on the location, and a processor to plan the route based on the location.

[0064] According to embodiments of the present application, a method includes receiving a command to send at least one location message including a segment indicating a location, and sending the at least one location message from a navigation device **200**.

[0065] According to embodiments of the present application, a method includes receiving at least one location message, including a segment indicating a location, from at least one other device, and storing the location in memory associated with a navigation device **200**.

[0066] According to embodiments of the present application, a method includes receiving at least one location message, including a segment indicating a location, from at least one other device, receiving a user command to plan a route based on the location, and planning the route based on the location.

[0067] According to embodiments of the present application, a navigation device **200** includes means for receiving a command to send at least one location, the at least one location message including a segment indicating a location, and means for sending the at least one location message.

[0068] According to embodiments of the present application, a navigation device **200** includes means for receiving at least one location message, including a segment indicating a location, from at least one other device, and means for indicating receipt of the at least one location message to a user of the navigation device **200**.

[0069] According to embodiments of the present application, navigation device **200** includes means for receiving at least one location message, including a segment indicating a location, from at least one other device, means for receiving a user command to plan a route based on the location, and means for planning the route based on the location.

[0070] According to another embodiment of the present application, a navigation device can share a location message. The location message is a message which includes a location. FIG. **5** illustrates a method of sharing a location message from a navigation device to at least one other device and is generally referenced **500**. The method includes receiving a command to send a location message and transmitting the location message. The location included in the location message can be a number of different locations selected by a sender of the location message.

[0071] It should be noted that each of the aforementioned aspects of an embodiment of the present application have been described with regard to the method of the present application. However, at least one embodiment of the present application is directed to a navigation device **200**, including a input device **220** to receive a command to send at least one location message, the at least one location message including a segment indicating a location and a transmitter **320** to send the at least one location message. Thus, such a navigation device **200** may be used to perform the various aspects of the method described with regard to FIGS. **5-6**, as would be

understood by one of ordinary skill in the art. Thus, further explanation is omitted for the sake of brevity.

[0072] Initially, a number of options are displayed for a user of the navigation device **200** at example display **502**. If the user provides an input to write a location message, example display **504** is displayed on the navigation device **200** to receive a location to include in the location message. The user of the navigation device **200** can provide an input to the right arrow of example display **504** to display further options included in example display **506**. The location selected by the user can include one of more of a home location, a favorite location, an address, a current location, a recent destination, a point of interest, a GPS position, a point on a map, a latitude and a longitude, a location of a different navigation device, and a position of last stop. A user can also include some other location in a location message depending on the particular implementation of an embodiment. The location included by the user can be for a number of purposes as illustrated in the examples below.

[0073] For example, a user of a navigation device **200** can send a location message to another person to request assistance at the user's current location. In such an example, the user can include a current location of the user. When the other person receives the message including the location, the other person can proceed to the current location of the user to provide the requested assistance. The user would not have to know and relay the user's location, e.g. mile marker 137 on Highway 28. In another example, a user of a navigation device **200** can set up a meeting with a contractor by sending a location message. A location included in the location message can be an address, such as a job site for the contractor to meet the user. The text may include a time and a subject of the meeting, e.g. kitchen flooring. The contractor can easily proceed to the location of the meeting. Further examples are included below with respect to receiving a location message.

[0074] After the navigation device **200** receive a location, the navigation device **200** displays example display **508** to prompt the user to enter an intended receiver of the location message. The intended receiver of the location message can include one or more of a device and/or person designated home, a number entered by the user, an entry in a phone book stored in memory **230** associated with the navigation device **200** (as shown in example display **510**), a recently dialed number, a recent caller, a point of interest and a buddy (shown in example display **514**). Sending a location message to any one of these devices/persons proceeds with displays similar to the displays shown in FIG. **5**, although the ordering of the example displays may be change depending on the particular implementation of sending a location message. In this exemplary sharing of a location message, the navigation device **200** received an input from the user selecting a number associated with the intended receiver of the location message. In response to the input, the navigation device **200** displays example display **512**.

[0075] Example display **512** allows the sender to input the number associated with the intended receiver of the location message. After the navigation device receives the number associated with the intended receiver, the navigation device **200** displays example display **516**.

[0076] After entering the location, example display **516** is displayed on navigation device **200** to receive a message from the user. As shown, the user can select one or more of form messages, which are stored in memory **230** associated with the navigation device **200**. After choosing one or more form messages, the user can alter the selected form message by providing one or more inputs to a keyboard on the integrated display and input device **290** as shown in example display **518**. Alternatively, the user can compose an original message by providing one or more inputs to the keyboard on the integrated display and input device **290** as shown in the example display **518**. The user can also omit a text message from the location message. After the navigation device **200** receives an input from the user based on example displays **516** and/or **518**, the navigation device **200** transmits the location message to the at least one other device, via a transmitter **320** and/or I/O port **270**. Example display **520** is displayed on the navigation device **200** to indicate a status of the location message to the user. In one implementation of at least one embodiment, an input device **220** of a navigation device **200** is included in an integrated display and input device **290**. The integrated display and input device **290** displays a sending status of the at least one location message, such as shown in example display **516**. The location message is sent as indicated in example display **522** or can be cancelled from example display **520**. If the navigation device **200** receives an input from the user to cancel the location message send, the navigation device **200** displays example display **524**. Alternatively, if the message send fails, a message send failed display is displayed on navigation device **200**.

[0077] A navigation device **200** can also share a location message with another navigation device known to the navigation device **200**. As shown in FIG. **5**, a user of the navigation device **200** can share a location message with one or more "buddy" navigation devices. A buddy navigation device is selected from example display **514**, instead of entering a number in example display **512** as disclosed above. When the navigation device **200** receives an input to send a location message to the buddy navigation device at example display **508**, the navigation device **200** displays example display **514** to receive an input from the user to select a buddy navigation device. The user can identify a buddy navigation device by a phone number, email address, etc. The remainder of sharing the location message with the buddy navigation device is similar to the method presented above.

[0078] It should be noted that the ordering of the example display above is one implementation of at least one embodiment of the present application. The methods describes above can include example displays in other orders. For example, a navigation device **200** can receive and input indicating an intended receiver before receiving an input for a location to be included in a location message. The message included in the location message, if any, can also be received by the navigation device **200** before or after one or both of indicating the intended receiver and indicating a location of a location message.

[0079] According to yet another embodiment of the present application, a navigation device **200** can receive a location message. A receiver of a location message receives a location message according to the displays outlined in FIG. **6**. FIG. **6** illustrates a method of receiving a location message from a navigation device **200** to at least one other device and it is generally referenced **600**. The method includes receiving at least one location message and receiving a user command related to the at least one location message. The location message is a message which includes a location. The location can be a number of different locations selected by a sender of a location message.

[0080] It should be noted that each of the aforementioned aspects of an embodiment of the present application have been described with regard to the method of the present application. However, at least one embodiment of the present application is directed to a navigation device **200**, including a receiver **322** and/or I/O port **270** to receive at least one location message, including a segment indicating a location, from at least one other device and an input device **220** for receiving a user command to store the location as a point of interest. The navigation could alternatively include an input device **220** to receive a user command to plan a route based on the location and a processor **210** to plan the route based on the location. Thus, such a navigation device **200** may be used to perform the various aspects of the method described with regard to FIGS. **5-6**, as would be understood by one of ordinary skill in the art. Thus, further explanation is omitted for the sake of brevity.

[0081] When a message is received by a navigation device **200**, a display device **240** is included to indicate receipt of the at least one location message to a user of the navigation device **200**. As shown in FIG. **6**, a receipt indicator is displayed in example display **602**. In this particular embodiment, the receipt indicator is an envelope icon **604**. The envelope icon **604** is displayed when a normal text message is received. When a location message is received, the envelope icon **604** is display on the navigation device **200** and can also include a target, as shown in FIG. **6**. The target indicates to the user a location has been included in a message, i.e. a location message. The receipt indicator can also include an audio indicator to a user of the navigation device **200**. The audio indicator can be different for a location message and a plain text message.

[0082] Once the message is received, the user can choose when to view the message. When the user provides an input to the navigation device **200** to view the message, the navigation device can display one of example display **606** and example display **608**. The navigation device **200** displays example display **606** if the message is a location message. As shown in example display **606**, the text message portion (if any) and the location designated by a user of the at least one other device are displayed. The location can be any of the location recited above, including a location of the at least one other device when the at least one location message was sent. If the message is a normal text message, example display **608** is displayed on the navigation device **200**. As shown in example display **608**, a normal text message included in the message is displayed.

[0083] From example display **606**, the user of the navigation device **200** can provide an input to the navigation device **200** to view a number of options related the location, as indicated by an options button included in example display **606**. When the navigation device **200** receives the input at the options button, the navigation device **200** displays the options related to the location in example display **610**. If the navigation device **200** receives an input at a right arrow of display **610**, the navigation device **200** displays further options included in example display **612**, and vise-versa. The receiver of the location message can choose one or more of navigate to the location, show the location on a map, add to a list of favorite locations, add as a point of interest, avoid location, and travel via location. The navigation device **200** receives one of these options via a user input device **220** included in the navigation device **200**, e.g. an integrated display and input device.

[0084] A number of the listed options utilize the processor **210** of the navigation device **200** to provide map information and/or plan a route including the location in the location message. For example, a user of a navigation device can receive a location message including a location which the user intends to avoid. By providing an input to avoid the location, the navigation device can plan a route based on the location, such that the planned route excludes the location in the location message. Other options provide a command to the navigation device to store the location message. In another example, a navigation device **200** can include a processor **210** to plan a route from a current location of the navigation device **200** to the location of the at least one other device when the location message was sent. The navigation device **200** then displays the planned route for a user on a display device **240**. In yet another example, a user of a navigation device **200** can receive a location message indicating a new restaurant. The user can save the restaurant as a new point of interest (POI) entry in memory **230** associated with the navigation device **200**. The user can recall the POI entry and navigate to the new restaurant based on the location included in the location message. Additional options illustrated in example display **612** include call sender, reply to message, forward message, forward to a navigation device user, replay to navigation device user.

[0085] The user can chose to view a received message from example display **602**. The navigation device **200** displaying example display **602** receives an input from the user to view the received message. Alternatively, the user can choose to view a message inbox or outbox via an example menu display **614**. When the navigation device **200** receives an input from the user at a read inbox message button, the navigation device **200** displays the message inbox, as shown in example display **616**. The message inbox includes a listing of the messages received by the navigation device **200**. Each of the messages is viewable by selection. The user can scroll up and down in the message inbox to view messages. The user of the navigation device **200** can also manage the message inbox. For example, the user can delete previously viewed messages. A message outbox can be selected from the example menus display **614**. The message outbox is similar to the message inbox illustrated in example display **616**. A user can view the messages in the message outbox, similar to example displays **606** and **608**. Additionally, a user can select a message in the message outbox and call the intended receiver, re-send a message, forward a message to a different receiver, and/or forward the message to a buddy.

[0086] The above description has included a description of a navigation device for sharing a location message with at least one other device and a navigation device for receiving a location message from at least one other device. These two navigation devices could be a single navigation device **200** for sharing and receiving a location message. As presented above, a navigation device **200** can also be implemented such that the navigation device **200** can only share a location message or only receive a location message. In either embodiment, the at least one other device can be one or more of a navigation device, a pager, a computer, a mobile phone, and a personal digital assistant.

[0087] As described above, a navigation device **200** can send and/or receive one or more independent location messages. In another implementation of at least one embodiment, a navigation device **200** can share and/or receive multiple related messages, also known as a string of messages. Based

on the type of communication channel used in transmitting and/or receiving a message, the size of a message may be limited to a standard size. Based an implementation of at least one embodiment, a navigation device **200** can break-up and/or reconstruct a message according to a require message size. For example, a message including a long section of text can be broken into a string of three messages. One or more of the message includes instruction related to the break-up and/or reconstruction of the message. The navigation device **200** sends the string of messages including the at least one location message. Each message is sent separately and sequentially.

[0088] When a navigation device **200** receives the three separate messages, the navigation device **200** recognizes the string of message. A processor **210** is included in the navigation device to compile a single location message when the at least one location message is included in a string of messages. The location can be included in one or more of the messages. When the single message is compiled, the message constitutes a location message including a location. In another example, a different number of messages can be included in a string of messages depending on a required size and the size of the message to be sent/received. Again, it should be understood that a string of messages can be sent from a navigation device **200** to at least one other device. And, a string of messages can be received by a navigation device **200** from at least one other device.

[0089] In one implementation of at least one embodiment of a string message, an electronic business card can be larger than a Short Message Service (SMS) standard or a Global System for Mobile Communication (GSM) standard. In this implementation, the location message includes the electronic business card and the location is a location associated with the electronic business card. The electronic business card or vCard can be broken into multiple messages, constituting a string of messages. The electronic business card is transmitted as a string of messages including at least one location message. When the string of message is received and reconstructed, the electronic business card can be treated like any other location message received. For example, the electronic business card can be stored in a memory **230** associated with a navigation device **200**. A user can also provide an input to a navigation device **200** such that a processor **210** included in the navigation device **200** plans a route based on the location included in the electronic business card or displays map information including an icon representing the electronic business card at the location included in the electronic business card.

[0090] The methods of at least one embodiment expressed above may be implemented as a computer data signal embodied in the carrier wave or propagated signal that represents a sequence of instructions which, when executed by a processor (such as processor **304** of server **302**, and/or processor **210** of navigation device **200** for example) causes the processor to perform a respective method. In at least one other embodiment, at least one method provided above may be implemented above as a set of instructions contained on a computer readable or computer accessible medium, such as one of the memory devices previously described, for example, to perform the respective method when executed by a processor or other computer device. In varying embodiments, the medium may be a magnetic medium, electronic medium, optical medium, etc.

[0091] Even further, any of the aforementioned methods may be embodied in the form of a program. The program may be stored on a computer readable media and is adapted to perform any one of the aforementioned methods when run on a computer device (a device including a processor). Thus, the storage medium or computer readable medium, is adapted to store information and is adapted to interact with a data processing facility or computer device to perform the method of any of the above mentioned embodiments.

[0092] The storage medium may be a built-in medium installed inside a computer device main body or a removable medium arranged so that it can be separated from the computer device main body. Examples of the built-in medium include, but are not limited to, rewriteable non-volatile memories, such as ROMs and flash memories, and hard disks. Examples of the removable medium include, but are not limited to, optical storage media such as CD-ROMs and DVDs; magneto-optical storage media, such as MOs; magnetism storage media, including but not limited to floppy disks (trademark), cassette tapes, and removable hard disks; media with a built-in rewriteable non-volatile memory, including but not limited to memory cards; and media with a built-in ROM, including but not limited to ROM cassettes; etc. Furthermore, various information regarding stored images, for example, property information, may be stored in any other form, or it may be provided in other ways.

[0093] As one of ordinary skill in the art will understand upon reading the disclosure, the electronic components of the navigation device **200** and/or the components of the server **302** can be embodied as computer hardware circuitry or as a computer readable program, or as a combination of both.

[0094] The system and method of embodiments of the present application include software operative on the processor to perform at least one of the methods according to the teachings of the present application. One of ordinary skill in the art will understand, upon reading and comprehending this disclosure, the manner in which a software program can be launched from a computer readable medium in a computer based system to execute the functions found in the software program. One of ordinary skill in the art will further understand the various programming languages which may be employed to create a software program designed to implement and perform at least one of the methods of the present application.

[0095] The programs can be structured in an object-orientation using an object-oriented language including but not limited to JAVA, Smalltalk, C++, etc., and the programs can be structured in a procedural-orientation using a procedural language including but not limited to COBOL, C, etc. The software components can communicate in any number of ways that are well known to those of ordinary skill in the art, including but not limited to by application of program interfaces (API), interprocess communication techniques, including but not limited to report procedure call (RPC), common object request broker architecture (CORBA), Component Object Model (COM), Distributed Component Object Model (DCOM), Distributed System Object Model (DSOM), Remote Method Invocation (RMI), and TCP/IP Sockets. However, as will be appreciated by one of ordinary skill in the art upon reading the present application disclosure, the teachings of the present application are not limited to a particular programming language or environment.

[0096] The above systems, devices, and methods have been described by way of example and not by way of limitation with respect to improving accuracy, processor speed, and ease of user interaction, etc. with a navigation device **200**.

[0097] Further, elements and/or features of different example embodiments may be combined with each other and/or substituted for each other within the scope of this disclosure and appended claims.

[0098] Still further, any one of the above-described and other example features of the present invention may be embodied in the form of an apparatus, method, system, computer program and computer program product. For example, of the aforementioned methods may be embodied in the form of a system or device, including, but not limited to, any of the structure for performing the methodology illustrated in the drawings.

[0099] Example embodiments being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

What is claimed is:

1. A navigation device for sending at least one location message with at least one other device, the navigation device comprising:

an input device to receive a command to send at least one location message, the at least one location message including a segment indicating a location; and

a transmitter to send the at least one location message.

2. The navigation device of claim **1** wherein the location is a current location of the navigation device.

3. The navigation device of claim **1** wherein the input device is included in an integrated display and input device, the integrated display and input device to display a sending status of the at least one location message.

4. The navigation device of claim **1** wherein the at least one location message includes an electronic business card and the location is a location associated with the electronic business card.

5. The navigation device of claim **1** wherein the at least one location message includes a form message.

6. The navigation device of claim **1** wherein the at least one other device is one of a navigation device, a pager, a computer, a mobile phone, and a personal digital assistant.

7. The navigation device of claim **1** wherein the transmitter sends a string of messages includes the at least one location message.

8. A navigation device for receiving at least one location message from at least one other device, the navigation device comprising:

a receiver to receive at least one location message, including a segment indicating a location, from at least one other device; and

an input device for receiving a user command to store the location.

9. The navigation device of claim **8** wherein the location is stored as a point of interest.

10. The navigation device of claim **8** wherein the location is a location of the at least one other device when the at least one location message was sent.

11. The navigation device of claim **8** further comprising a processor to plan a route from a current location of the navigation device to a location of the at least one other device when the location message was sent.

12. The navigation device of claim **8** wherein the at least one location message is an electronic business card and the location is a location associated with the electronic business card.

13. The navigation device of claim **12** further comprising a memory to store the electronic business card.

14. The navigation device of claim **8** further comprising a display device to indicate receipt of the at least one location message to a user of the navigation device.

15. The navigation device of claim **8** wherein the location is a location designated by a user of the at least one other device.

16. The navigation device of claim **15** further comprising a processor to plan a route from a current location of the navigation device to the address associated with the user of the at least one other device.

17. The navigation device of claim **8** wherein the at least one other device is one of a navigation device, a pager, a computer, a mobile phone, and a personal digital assistant.

18. The navigation device of claim **8** further comprising a processor to compile a single location message when the at least one location message includes a string of messages.

19. The navigation device of claim **8** further comprising a memory to stored the location, wherein the location is a stored as a favorite location.

20. A navigation device for receiving at least one location message, the navigation device comprising:

a receiver to receive at least one location message, including a segment indicating a location, from at least one other device;

an input device to receive a user command to plan a route based on the location; and

a processor to plan the route based on the location.

21. The navigation device of claim **20** wherein the location is a location of the at least one other device when the at least one location message was sent.

22. The navigation device of claim **20** wherein the processor plans the route from a current location of the navigation device.

23. The navigation device of claim **20** wherein the at least one location message is an electronic business card and the location is a location associated with the electronic business card.

24. The navigation device of claim **23** further comprising a memory to store the electronic business card.

25. The navigation device of claim **20** wherein the location is a location designated by a user of the at least one other device.

26. The navigation device of claim **20** wherein the at least one other device is one of a navigation device, a pager, a computer, a mobile phone, and a personal digital assistant.

27. A method for using a navigation device to send at least one location message with at least one other device, the method comprising:

receiving a command to send at least one location message including a segment indicating a location; and

sending the at least one location message from a navigation device.

28. The method of claim **27** wherein the location is a current location of the navigation device.

29. The method of claim **27** wherein the at least one location message includes an electronic business card.

30. The method of claim **27** wherein the at least one other device is one of a navigation device, a computer, a mobile phone, and a personal digital assistant.

31. A method for using a navigation device to receive at least one location message from at least one other device, the method comprising:

receiving at least one location message, including a segment indicating a location, from at least one other device; and

storing the location in memory associated with a navigation device.

32. The method of claim **31** wherein the location is stored as a point of interest.

33. The method of claim **31** wherein the location is stored as a favorite location.

34. The method of claim **31** wherein the location is a location of the at least one other device when the at least one location message was sent.

35. The method of claim **31** wherein the at least one location message includes an electronic business card.

36. The method of claim **35** wherein the electronic business card is stored in the memory associated with a navigation device.

37. The method of claim **31** further comprising determining a route from a current location of the navigation device to the location.

38. A method for a using navigation device to receive at least one location message, the method comprising:

receiving at least one location message, including a segment indicating a location, from at least one other device;

receiving a user command to plan a route based on the location; and

planning the route based on the location.

39. The method of claim **38** wherein the location is a location of the at least one other device when the at least one location message was sent.

40. The method of claim **38** wherein the location is a location designated by a user of the at least one other device.

40. The method of claim **38** further comprising displaying the planned route on a display device of the navigation device.

42. The method of claim **38** wherein the planned route avoids the location.

43. A navigation device for sharing at least one location message with at least one other device, the navigation device comprising:

means for receiving a command to send at least one location, the at least one location message including a segment indicating a location; and

means for sending the at least one location message.

44. The navigation device of claim **43** wherein the location is a current location of the navigation device.

45. The navigation device of claim **43** wherein the location is an address associated with a user of the navigation device.

46. A navigation device for receiving at least one location message from at least one other device, the navigation device comprising:

means for receiving at least one location message, including a segment indicating a location, from at least one other device; and

means for storing the location in memory associated with a navigation device.

47. The navigation device of claim **46** further comprising means for determining a route from a current location of the navigation device to the location, the location being an address designated by a user of the at least one other device.

48. The navigation device of claim **46** wherein the location is stored as one of a favorite location and a point of interest.

49. The navigation device of claim **46** further comprising means for indicating receipt of the at least one location message to a user of the navigation device.

50. A navigation device for receiving at least one location message, the navigation device comprising:

means for receiving at least one location message, including a segment indicating a location, from at least one other device;

means for receiving a user command to plan a route based on the location; and

means for planning the route based on the location.

51. The navigation device of claim **50** the location is a current location of the at least one other device when the at least one location message was sent.

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