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(54) NAVIGATION DEVICE AND METHOD FOR PROVIDING REGIONAL TRAVEL INFORMATION IN A NAVIGATION DEVICE

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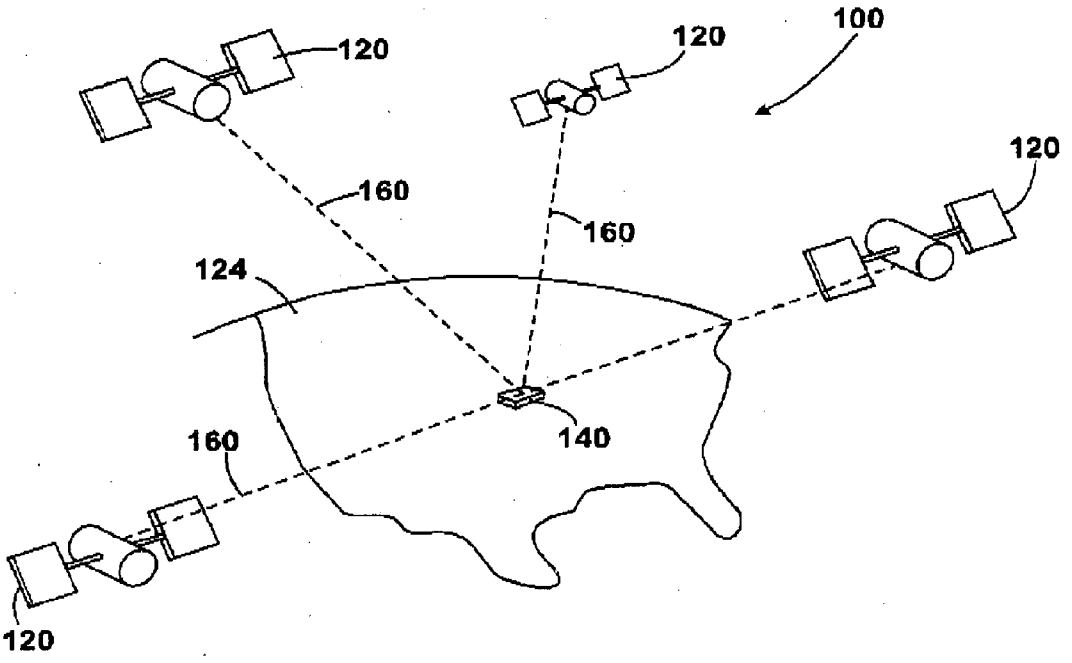
(57) **ABSTRACT**

A method and device are disclosed for providing regional travel information in a navigation device. In at least one embodiment, the method includes storing regional travel information in the navigation device; providing at least one travel information category in response to receipt of a request for information from a user of the navigation device; accessing stored regional travel information in response to receipt of an indication of a selection of at least one of the provided travel information categories by the user; and providing the accessed regional travel information to the user. In at least one embodiment, the navigation device includes an output device to provide information; an input device to receive an input; memory to store regional travel information; and a processor to access the regional information stored in memory and to provide accessed regional travel information through the output device in response to receipt of the input.



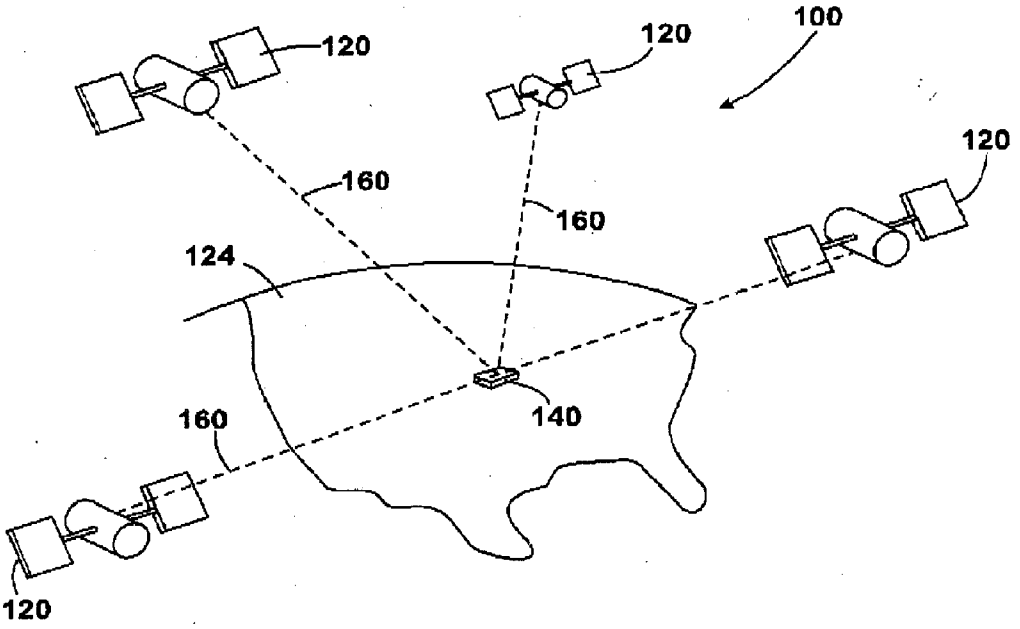


Fig. 1

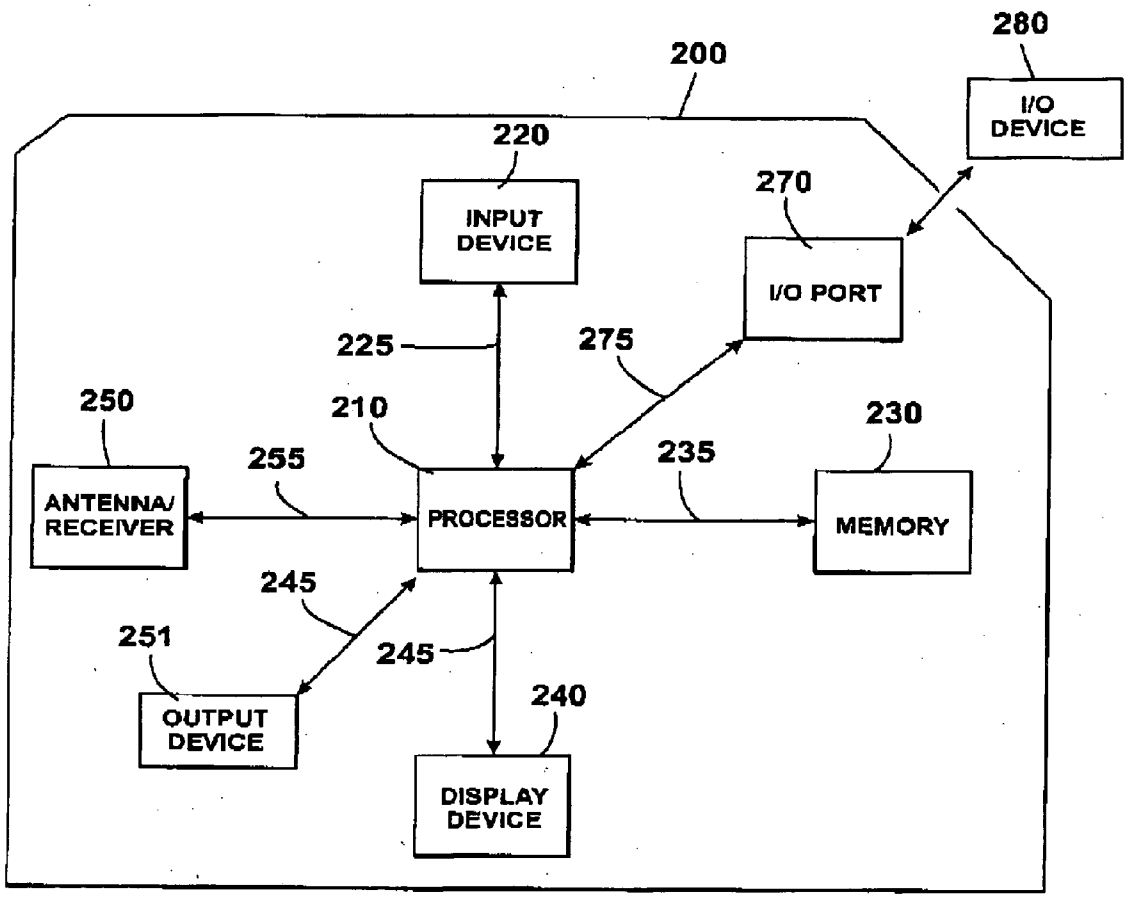

200
280
I/O DEVICE
220
INPUT DEVICE
270
I/O PORT
225
275
250
210
230
255
235
ANTENNA/ RECEIVER
PROCESSOR
MEMORY
245
251
245
240
OUTPUT DEVICE
DISPLAY DEVICE

Fig. 2

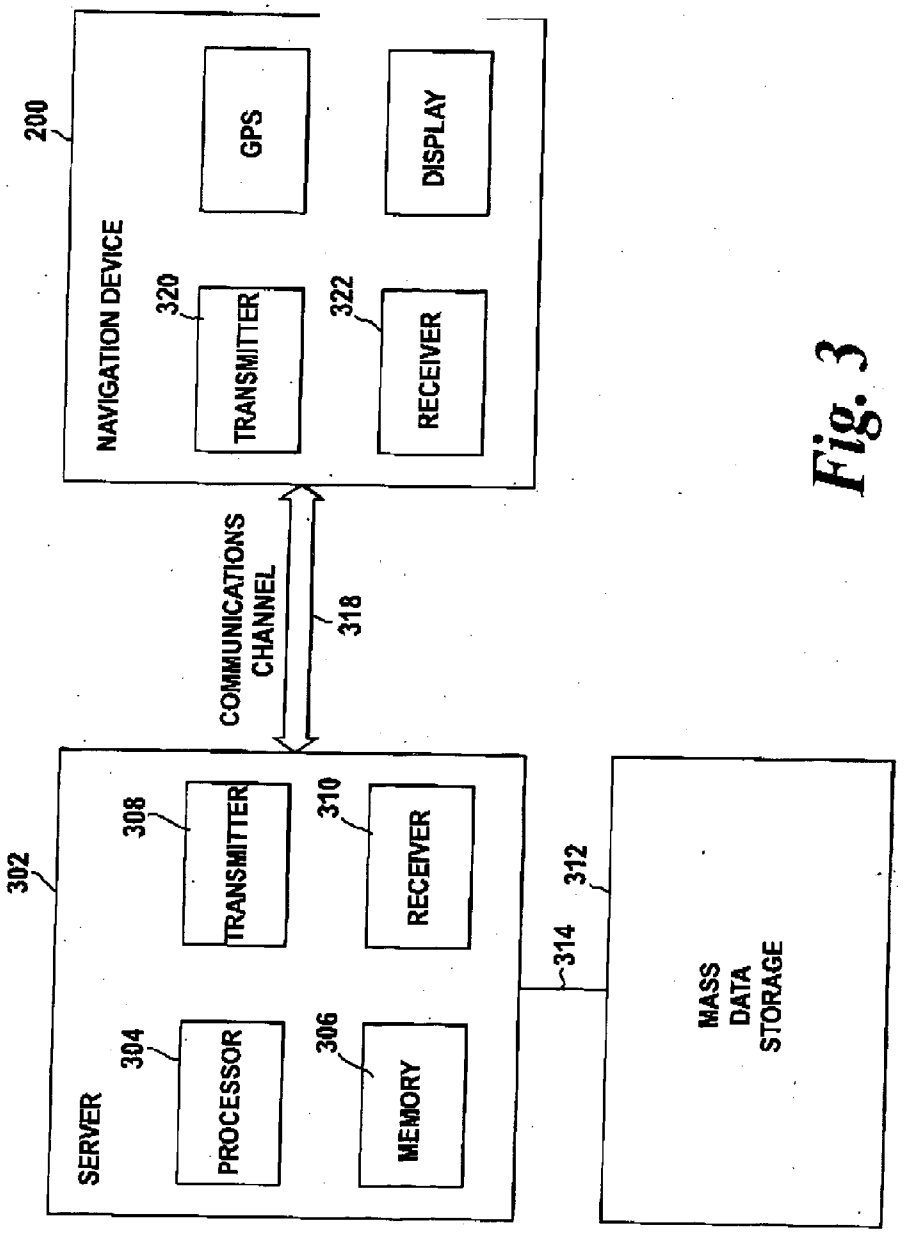

200
NAVIGATION DEVICE
GPS
DISPLAY
320
TRANSMITTER
322
RECEIVER
COMMUNICATIONS CHANNEL
318
302
SERVER
308
TRANSMITTER
310
RECEIVER
304
PROCESSOR
306
MEMORY
314
312
MASS DATA STORAGE

Fig. 3

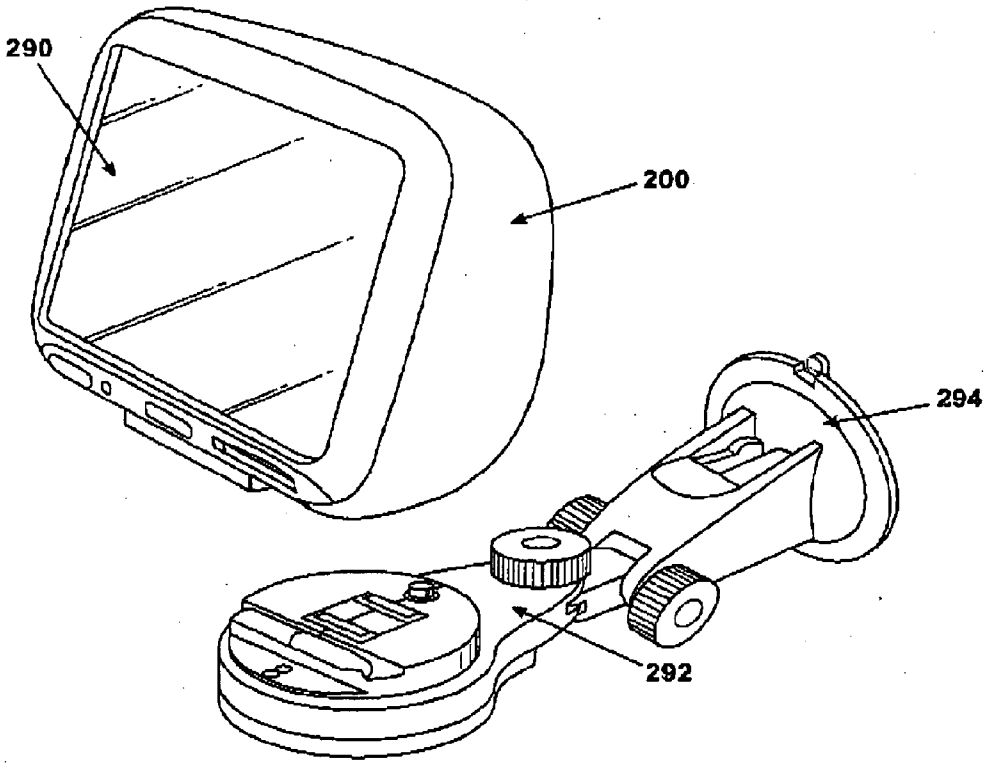


Fig. 4A

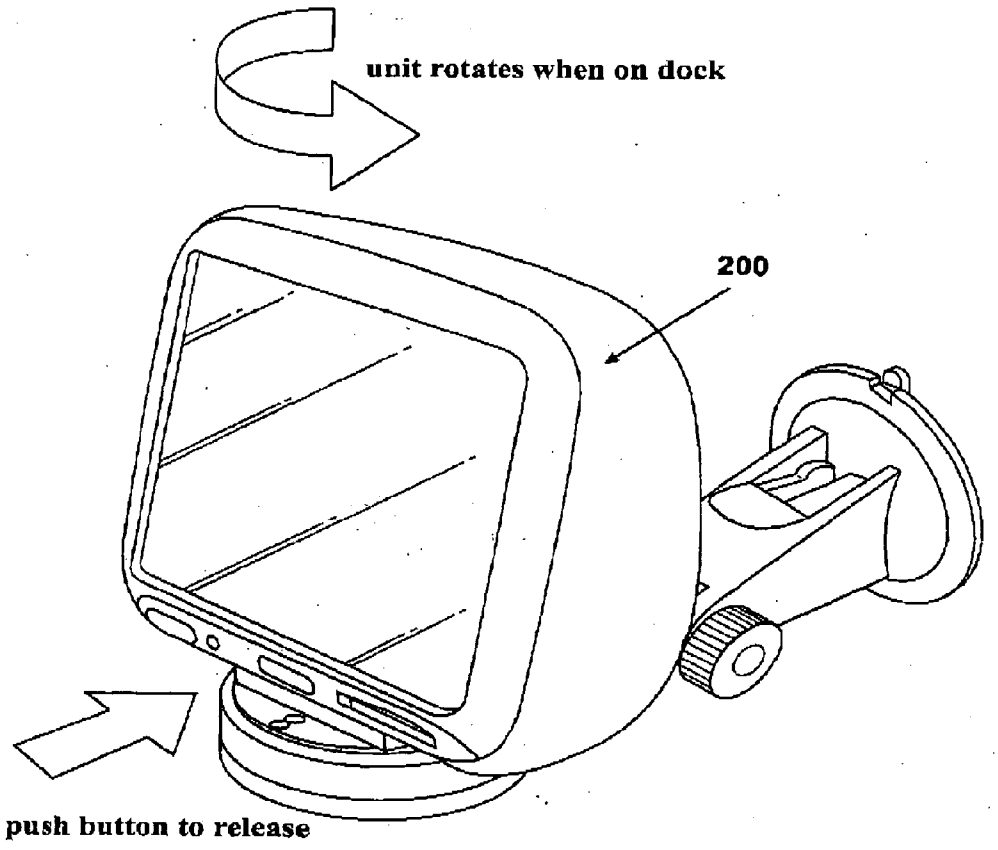


Fig. 4B

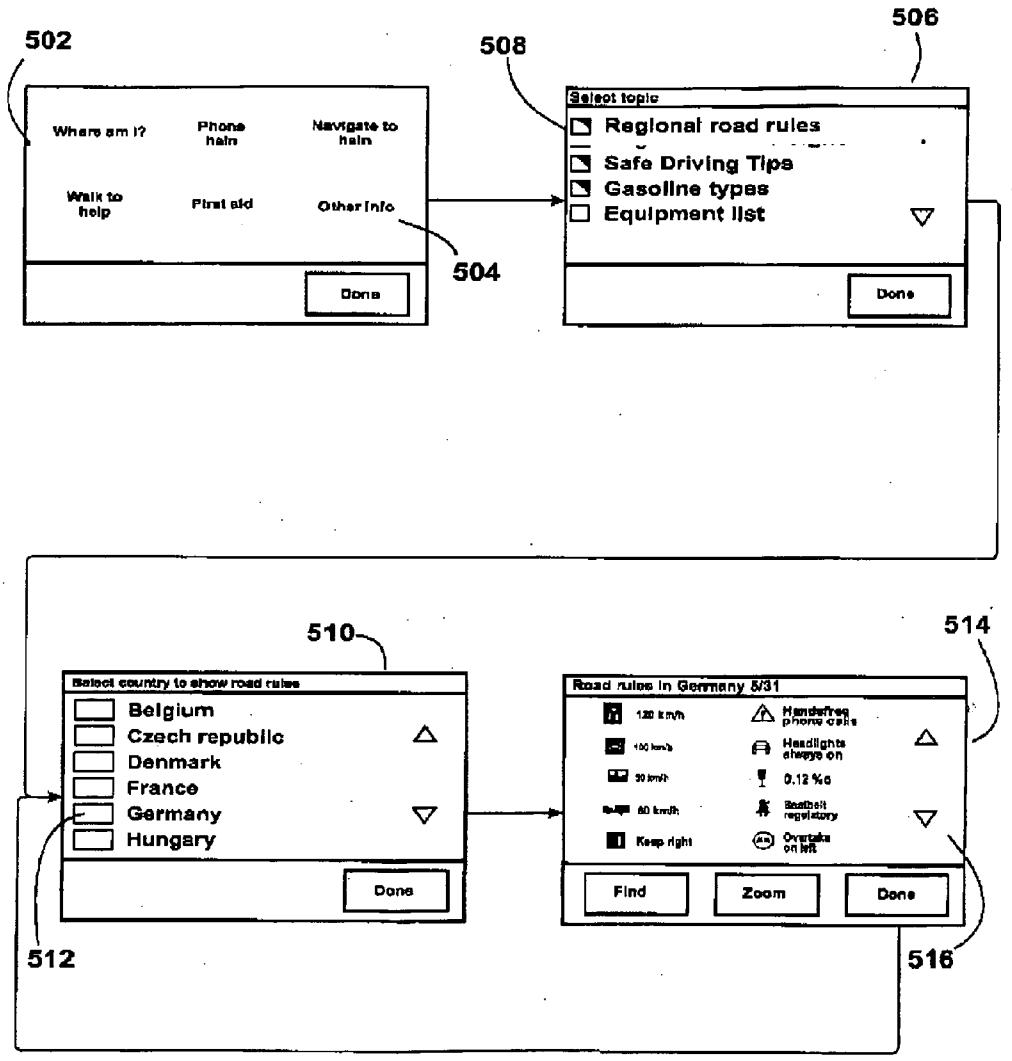

502
508
506
Where am I?
Phone hom
Navigate to hom
Walk to help
First aid
Other info
504
Done
Select topic
Regional road rules
Safe Driving Tips
Gasoline types
Equipment list
Done
510
514
Select country to show road rules
Belgium
Czech republic
Denmark
France
Germany
Hungary
Done
Road rules in Germany 5/31
Keep right
Find
Zoom
Done
512
516

Fig. 5

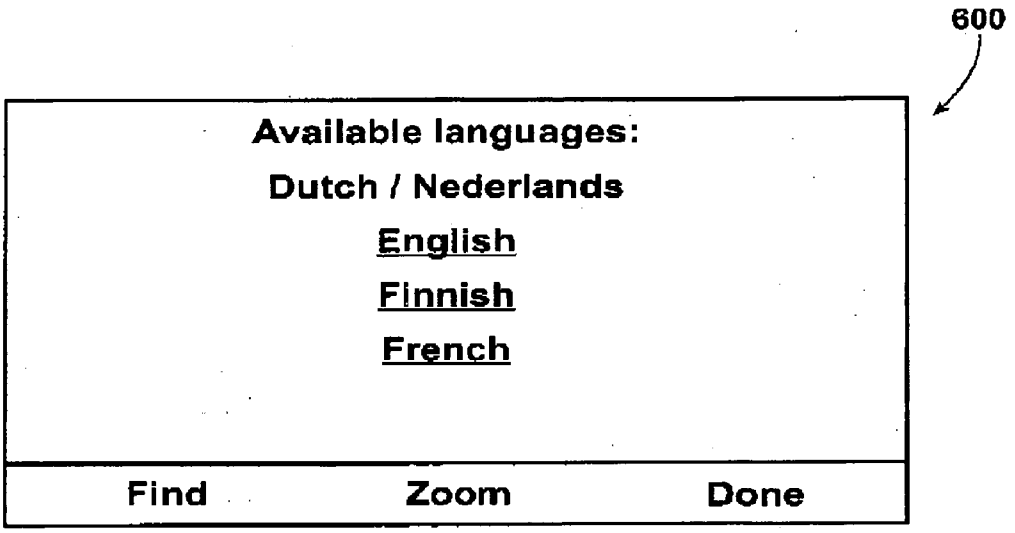

600
Available languages:
Dutch / Nederlands
English
Finnish
French
Find
Zoom
Done

Fig. 6

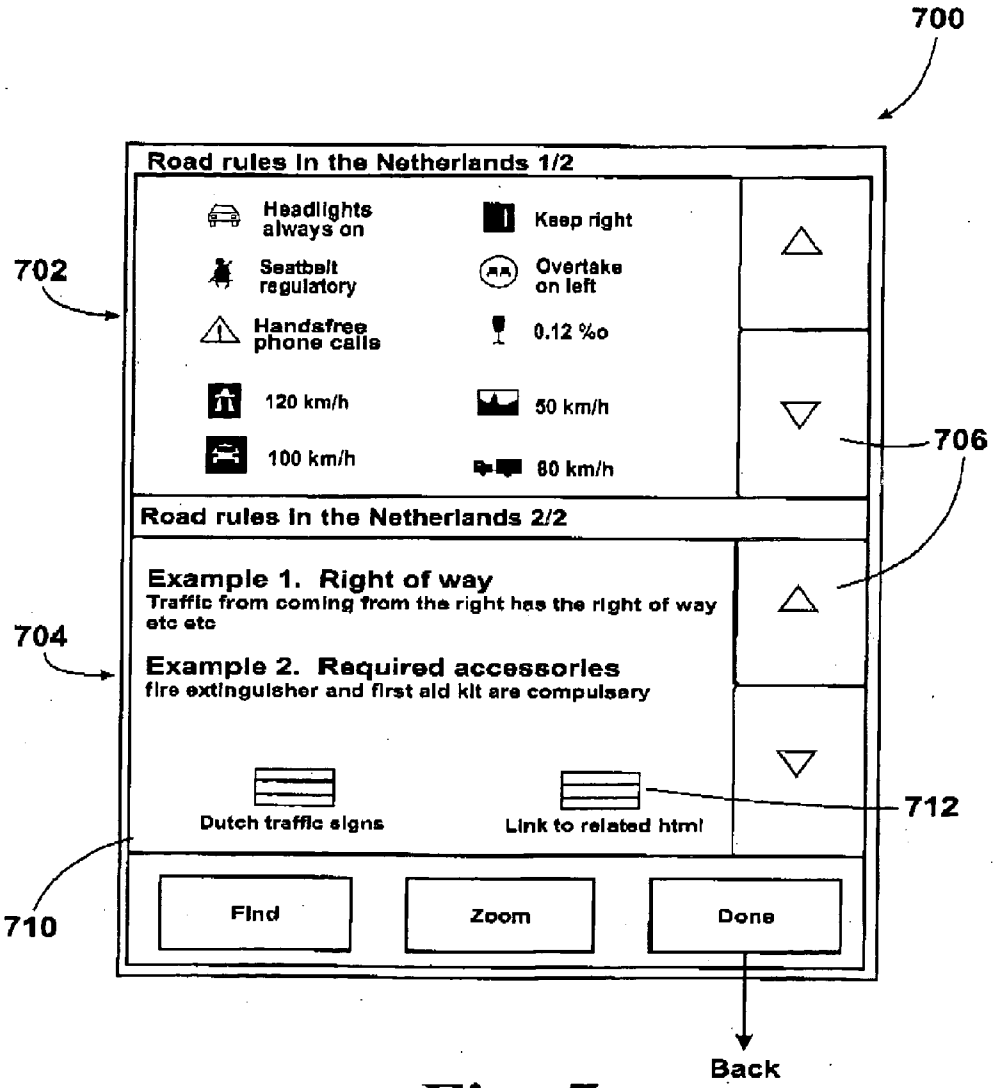

700
Road rules in the Netherlands 1/2
Headlights always on
Keep right
Seatbelt regulatory
Overtake on left
Handsfree phone calls
0.12 %o
120 km/h
50 km/h
100 km/h
80 km/h
Road rules in the Netherlands 2/2
Example 1. Right of way
Traffic from coming from the right has the right of way etc etc
Example 2. Required accessories
fire extinguisher and first aid kit are compulsary
Dutch traffic signs
Link to related html
Find
Zoom
Done
Back
702
704
706
710
712

Fig. 7

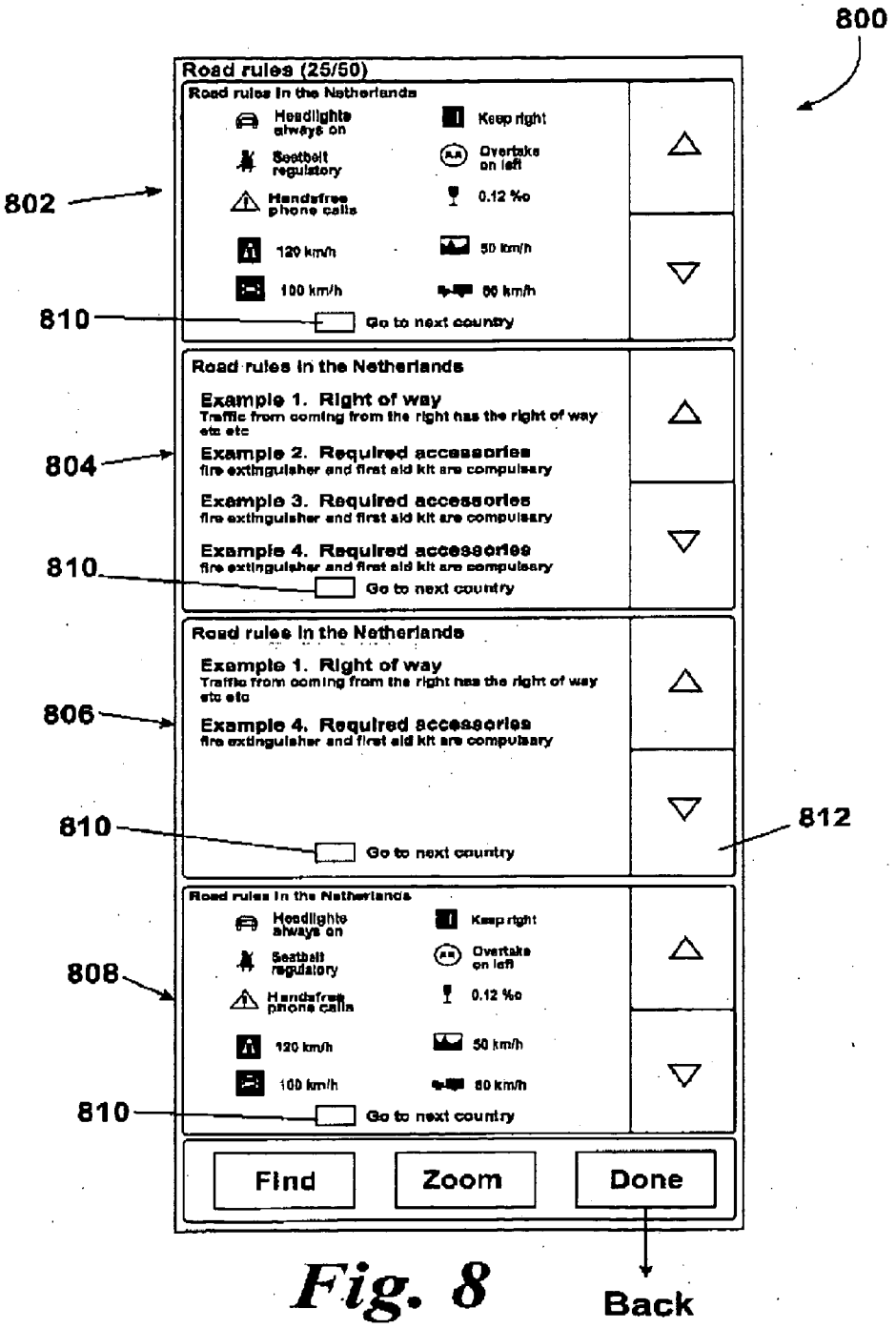

800
Road rules (25/50)
Road rules in the Netherlands
Headlights always on
Keep right
Seatbelt regulatory
Overtake on left
Handsfree phone calls
0.12 ‰
120 km/h
50 km/h
100 km/h
80 km/h
Go to next country
802
810
Road rules in the Netherlands
Example 1. Right of way
Traffic from coming from the right has the right of way etc etc
Example 2. Required accessories
fire extinguisher and first aid kit are compulsary
Example 3. Required accessories
fire extinguisher and first aid kit are compulsary
Example 4. Required accessories
fire extinguisher and first aid kit are compulsary
804
810
Road rules in the Netherlands
Example 1. Right of way
Traffic from coming from the right has the right of way etc etc
Example 4. Required accessories
fire extinguisher and first aid kit are compulsary
806
810
812
Road rules in the Netherlands
Headlights always on
Keep right
Seatbelt regulatory
Overtake on left
Handsfree phone calls
0.12 ‰
120 km/h
50 km/h
100 km/h
80 km/h
Go to next country
808
810
Find
Zoom
Done
Back

Fig. 8

NAVIGATION DEVICE AND METHOD FOR PROVIDING REGIONAL TRAVEL INFORMATION IN A NAVIGATION DEVICE

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 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 USING A LOCATION MESSAGE (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, 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 devices and methods of providing travel information in navigation 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 are typically tailored to produce a route of travel based upon an initial position of the navigation device and a selected/input travel destination (end position) noting that the initial position could be entered into the device, but is traditionally calculated via GPS Positioning from a GPS receiver within the navigation device. These device typically provide a user with a map information.

SUMMARY

[0006] The inventors discovered that users of a navigation device may benefit from having access to travel information about various regions including the region in which the user is located or through which the user is or may in the future be traveling. Thus, the inventors of the present application developed a method and implementation on a navigation device, to provide regional travel information to a user.

[0007] In at least one embodiment of the present application, a method of providing travel information in a navigation device is disclosed. The method includes storing regional travel information in the navigation device and providing at least one travel information category in response to receipt of a request for information from a user of the navigation device. The method further includes accessing stored regional travel information in response to receipt of an indication of a selection of at least one of the provided travel information categories by the user and providing the accessed regional travel information to the user.

[0008] In at least another embodiment of the present application, a navigation device includes an output device to provide information and an input device to receive an input. The navigation device also includes memory to store regional travel information and a processor to access the regional information stored in memory and to provide accessed regional travel information through the output device in response to receipt of the input.

[0009] In at least another embodiment of the present application, a navigation device includes a means for providing information and a means for receiving an input. The navigation device also includes a means for storing regional travel

information and a means for accessing the stored regional travel information and for providing accessed regional travel information through the means for providing information in response to receipt of the input.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] 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:

[0011] FIG. **1** illustrates an example view of a Global Positioning System (GPS);

[0012] FIG. **2** illustrates an example block diagram of electronic components of a navigation device of an embodiment of the present application;

[0013] FIG. **3** illustrates an example block diagram of a server, navigation device and connection therebetween of an embodiment of the present application;

[0014] FIGS. **4**A and **4**B are perspective views of an implementation of an embodiment of the navigation device **200**.

[0015] FIG. **5** illustrates an example of sequence of travel information screens an embodiment of the present application;

[0016] FIG. **6** illustrates an example of a language selection screen of an embodiment of the present application;

[0017] FIG. **7** illustrates an example of a multi-page regional travel information display of an embodiment of the present application;

[0018] FIG. **8** illustrates an example of a single file multi-page regional travel information display of an embodiment of the present application;

DETAILED DESCRIPTION OF THE EXAMPLE EMBODIMENTS

[0019] 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.

[0020] 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.

[0021] 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.

[0022] 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.

[0023] Formerly known as NAVSTAR, 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.

[0024] 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.

[0025] 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**.

[0026] 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.

[0027] 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.

[0028] 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 inte-

grated 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.

[0029] 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.

[0030] 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 connectable to an I/O device **280** external to the navigation device **200**. The external I/O device **270** 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.

[0031] The navigation device **200**, in at least one embodiment, may establish a "mobile" network connection with the server **302** via a mobile device **400** (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 **400** 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.

[0032] The establishing of the network connection between the mobile device **400** (via a service provider) and another device such as the server **302**, using the internet **410** for example, can be done in a known manner. This can include use of TCP/IP layered protocol for example. The mobile device **400** can utilize any number of communication standards such as CDMA, GSM, WAN, etc.

[0033] 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.

[0034] The navigation device **200** can further complete a data connection with the mobile device **400**, and eventually with the internet **410** and server **302**, via existing Bluetooth technology for example, in a known manner, wherein the data protocol can utilize any number of standards, such as the GSRM, the Data Protocol Standard for the GSM standard, for example.

[0035] 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 **410** for example, in a manner similar to that of any mobile device **400**.

[0036] For GRPS phone settings, 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.

[0037] 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.

[0038] 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**.

[0039] 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.

[0040] 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.).

[0041] 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.

[0042] 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 can again be a separate device from the server **302** or can be incorporated into the server **302**.

[0043] 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.

[0044] 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**.

[0045] 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.

[0046] 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.

[0047] 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.

[0048] 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.

[0049] 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.

[0050] 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.

[0051] 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.

[0052] 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**.

[0053] 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**.

[0054] 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.

[0055] 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.).

[0056] 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.

[0057] 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).

[0058] According to various embodiments of the present application, a method for providing regional travel information in a navigation device **200** includes storing regional travel information in the navigation device **200**. A region is generally some defined geographic area. A region can include a state, a nation, a group of states, a group of nations, a continent, or any other predetermined geographic or geopolitical area. A user of the navigation device **200** is provided with at least one travel information category in response to receiving a request for information from the user. Alternatively, the user may be provided with a plurality of travel information categories and the user may select one of the plurality of categories for which the user desires to receive information. When the navigation device **200** receives an indication of a selection of one of the travel information categories by the user, the navigation device **200** accesses the stored regional travel information and provides the accessed regional travel information to the user.

[0059] Although aspects of the embodiments of the present application have been, and will be, described with regard to the method of the present application, at least one embodiment of the present disclosure is directed to a navigation device **200**. The navigation device **200** includes an output device to provide information, an input device **220** to receive an input, memory **230** to store regional travel information and a processor **210** to access the regional information stored in memory **230** and to provide accessed regional travel information through the output device **250** in response to receipt of the input. Thus, such a navigation device **200** may be used to perform various aspects of the method described above, as would be understood by one of ordinary skill in the art. Further explanation is omitted for the sake of brevity.

[0060] Regional travel information includes many types of information about a region including, but not limited to, regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.

[0061] Regional statistics include statistical information relating to the region selected by the user. The user can view statistical information relating to any country or region shown on a map on the navigation device **200**. Statistics can include selected statistics about a region from sources such as the CIA fact book.

[0062] Medical information includes various types of medical information relevant to a region. For example, medical information can include general first aid information, required regional vaccinations, dangerous regional flora and fauna, and regional signs for pharmacies, doctors and hospitals

[0063] Road rules and driving tips consist of regional information relating to regional driving laws. Specifically, this can include laws about driving licenses, general speed limits, specific fines, seat belt laws, hands free calling laws, legality of devices mounted on the windshield

[0064] Regional road sign information includes images and localized descriptions of road signs that are used in a region. Test explaining the meaning of each road sign is displayed in the selected user interface language.

[0065] Gasoline types available in a region are an additional category of regional travel information and include information relating to the types of fuel that are available in a region. This information includes fuel types, applicable vehicles for each fuel type, and the regional and user interface language name of each fuel type.

[0066] Equipment lists include suggested equipment lists for various types of trips. Some examples include mountain trips, desert trips, trips in snowy weather, trips when traveling with a baby, and long distance trips.

[0067] Unit conversion tables are another category of regional travel information that is provided in some embodiments. Unit conversion tables can include conversion tables for distance units, speed, currencies, temperatures, weights, volumes, pressure, and GPS coordinate system.

[0068] The regional travel information can also include regional travel related phrases. The information includes regionally localized translations of common travel related phrases. In some embodiments, the navigation device is operable to produce an audible pronunciation of the phrases. The

common travel related phrases can relate to any of the regional travel information categories discussed above, general conversation or any other situations in which a traveler may find herself.

[0069] In one implementation of at least one embodiment, the navigation device **200** is configured to receive input and provide information in a plurality of languages. The method can further include determining if the regional travel information is available in the language selected by the user. If the information is not available in the language selected by the used, the method further includes prompting the user to select a language from a group of languages in which the regional travel information is available, as shown, for example, in the display illustrated in FIG. **6**.

[0070] The region for which regional travel information is accessed and provided varies depending upon the user selections and the various embodiments. In at least one embodiment, the regional travel information is related to the region in which the navigation device **200** is located. As the navigation device **200** uses a GPS system, the navigation device **200** is operable to know in what region it is currently located. In such embodiments, the default regional travel information relates to the current location of the navigation device **200**. Alternatively or additionally, the user may select the region for which regional travel information is provided. Thus a user can view information about a region to which the user will travel in the future or about which the user is simply interested regardless of the region in which the user is located. In other embodiments, the navigation device **200** provides the user with a group of regions for which travel information is available arranged in order of geographic proximity to the current location of navigation device **200**. Alternatively, the regions may be arranged in alphabetical order.

[0071] The regional travel information may be stored in any format that the navigation device **200** is operable to store, access and provide to the user. In some embodiments, the regional travel information is stored as a hypertext markup language (HTML) file. In such embodiments, providing the regional travel information includes displaying the HTML file on the display device of the navigation device **200**.

[0072] FIG. **5** provides one implementation of at least one embodiment. FIG. **5** illustrates a series of example displays. By selecting a help option, not shown, the help display **502** provides a group of options to a user. Although help display **502** illustrates text only options, the options may include icons, sounds or other enhancements. If the user selects the other info option **504**, the regional travel information categories display **506** is displayed. As shown in FIG. **5** this display can include a plurality of travel information categories. The regional travel information display **506** may include more or fewer categories than those illustrated in FIG. **5**. When the user selects a category, such as regional road rules **508**, the region selection display **510** is displayed to the user. Although the regions displayed on the region selection display illustrated in FIG. **5** are countries, as discussed above, the regions displayed may alternatively be states, continents or other geographic or geopolitical regions. As discussed above, there are numerous ways in which the regions may be arranged according to various embodiments of the present disclosure. Additionally, the regional selector may include the flag or other symbol for a region in close proximity to the name of the region. When the user selects a country, such as Germany **512**, the information display **514** is displayed. The content of the information display **514** depends on the category selected. In FIG. **5**, the information display **514** displays the road rules information for Germany as selected by the user. This information includes graphical symbols and text conveying various road rule information to the user as discussed above. As can be seen on displays **506**, **510** and **514**, if the information displayed cannot fit on the display device, scroll arrows **516** are present to allow the user to scroll up and/or down through the information.

[0073] As illustrated in FIG. **6**, if the user selects a regional travel information category or region for which there is no information available in the selected user interface language, the navigation device **200** will present the user with a language selection display **600**. The language selection display **600** allows the user to select an alternative language in which to display the requested information. Moreover, the language selection display **600** displays only the languages in which the selected information is available. In FIG. **6**, the selected information is available in four languages. However, the information may be available in more or fewer languages. After the user selects the alternate language, the selected regional travel information is displayed as discussed above.

[0074] FIG. **7** illustrates another implementation of at least one embodiment of a multi-page information display **700** of the present disclosure. The information display includes a first page **702** displaying information and a second page **704** displaying additional information. As can be seen in FIG. **7**, a user may scroll between the pages using the scroll bar **706**. The second page **704** also includes additional navigation options **710** and **712**, to allow the user to select additional and/or related information to be displayed without needing to return to an earlier menu of options first. In such an embodiment, a separate file is used for a regional travel information category for a region in each language. Thus, for example, as illustrated in FIG. **7**, road rules for the Netherlands displayed in English would be one file. Similar separate files would exist for the road rules information about Norway in English or about the Netherlands displayed in German.

[0075] An alternative implementation of at least one embodiment is illustrated in FIG. **8**. FIG. **8** illustrates a multi-page information display **800**. This information display **800**, however, includes a single file containing all of the information in a single regional travel information category for all of the available regions in one language. FIG. **8** illustrates four pages, **802**, **804**, **806** and **808**, of the multi-page information display **800**. The user has the option of scrolling through the pages of information using the scrollbar **812**, or skipping ahead to the next available region using the next region option **810**. As the user scrolls from display **802** to **804** and **806**, information related to one regions, e.g. the Netherlands, is displayed. All of the displays contain a display of a navigation option **810** which would allow the user to skip to the information display of the next available region. If the user continues to scroll past the end of the information about the first region, the display **808** containing the information related to the next available region, e.g. Norway, is displayed.

[0076] 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.

[0077] 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.

[0078] 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.

[0079] 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.

[0080] 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.

[0081] 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 COBAL, 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), and Remote Method Invocation (RMI). 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.

[0082] 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**.

[0083] 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.

[0084] 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.

[0085] 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 method of providing, in a navigation device, travel information, the method comprising:

storing regional travel information in the navigation device;

providing at least one travel information category in response to receipt of a request for information from a user of the navigation device;

accessing stored regional travel information in response to receipt of an indication of a selection of at least one of the provided travel information categories by the user; and

providing the accessed regional travel information to the user.

2. The method of claim **1**, wherein the travel information includes at least one of regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.

3. The method of claim **1**, wherein the navigation device is configured to receive an input and provide information in a plurality of languages selectable by the user.

4. The method of claim **3**, further comprising determining if travel information is available in a language selected by the user.

5. The method of claim **4**, further comprising prompting the user to select a language from a group of languages in which travel information is available, if travel information is determined not to be available in the language selected by the user.

6. The method of claim **1**, wherein the travel information relates to a region in which the navigation device is located.

7. The method of claim **1**, wherein the travel information relates to a region selected by the user.

8. The method of claim **7**, wherein user selectable regions are arranged in order of geographic proximity to a location of the navigation device.

9. The method of claim **1**, wherein the navigation device includes a display device and the providing includes displaying visually on the display device.

10. The method of claim **1**, wherein the at least one travel information category includes a plurality of travel information categories, selection of a travel information category includes selection of one of the plurality of travel information categories and the plurality of travel information categories include at least one of regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.

11. The method of claim **9**, wherein providing travel information includes displaying an HTML file containing travel information on the display device.

12. A navigation device comprising:

an output device to provide information;

an input device to receive an input;

memory to store regional travel information; and

a processor to access the regional information stored in memory and to provide accessed regional travel information through the output device in response to receipt of the input.

13. The navigation device of claim **12**, wherein regional travel information includes at least one of regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.

14. The navigation device of claim **13**, wherein the user determines by the input which type of regional travel information is provided.

15. The navigation device of claim **12**, wherein the navigation device is configured to receive the input and provide regional travel information through the output device in a plurality of languages selectable by a user.

16. The navigation device of claim **15**, wherein the processor is further configured to determine if regional travel information is available in a language selected by the user.

17. The navigation device of claim **16**, wherein the processor is further configured to prompt the user to select a language from a group of languages in which regional travel information is available if regional travel information is determined not to be available in the language selected by the user.

18. The navigation device of claim **12**, wherein the navigation device is configured to determine a region in which the navigation device is located.

19. The navigation device of claim **18**, wherein the processor is further configured to provide regional travel information for the region in which the navigation device is located.

20. The navigation device of claim **18**, wherein the processor is further configured to prompt a user to select a region for which regional travel information should be provided.

21. The navigation device of claim **20**, wherein the processor is further configured to provide a plurality of regions for which regional travel information is available.

22. The navigation device of claim **21**, wherein the plurality of regions are arranged in order of geographic proximity to the region in which the navigation device is located.

23. The navigation device of claim **12**, wherein regional information is stored in memory as HTML files.

24. The navigation device of claim **12**, wherein the input device includes a touch screen input device.

25. The navigation device of claim **12**, wherein the output device is a display device.

26. A navigation device comprising:

means for providing information;

means for receiving an input;

means for storing regional travel information; and

means for accessing the stored regional travel information and for providing accessed regional travel information through the means for providing information in response to receipt of the input.

27. The navigation device of claim **26**, wherein regional travel includes at least one of regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.

28. The navigation device of claim **27**, wherein the user determines by the input which type of regional travel information is provided.

29. The navigation device of claim **26**, wherein the navigation device is configured to receive the input and provide regional travel information in a plurality of languages selectable by a user.

30. The navigation device of claim **29**, wherein the means for accessing stored regional travel information is configured to determine if regional travel information is available in a language selected by the user.

31. The navigation device of claim **30**, wherein the means for accessing stored regional travel information is further configured to prompt the user to select a language from a group of languages in which regional travel information is available if regional information is determined not to be available in the language selected by the user.

32. The navigation device of claim **26**, wherein the navigation device is configured to determine a region in which the navigation device is located.

33. The navigation device of claim **32**, wherein the means for accessing stored regional travel information is further configured to provide regional travel information for the region in which the navigation device is located.

34. The navigation device of claim **32**, wherein the means for accessing stored regional travel information is further configured to prompt a user to select a region for which regional travel information should be provided.

35. The navigation device of claim **34**, wherein the means for accessing stored regional travel information is further configured to provide a plurality of regions for which regional travel information is available.

36. The navigation device of claim **35** wherein the plurality of regions are arranged in order of geographic proximity to the region in which the navigation device is located.

37. The navigation device of claim **12** wherein regional information is stored in memory as HTML files.

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