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(71) Applicant *(for all designated States except US)*: **NETWORKS IN MOTION, INC.** [US/US]; 35 Tesla, Suite 250, Irvine, CA 92618 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SHEHA, Michael, A.** [US/US]; 8 Larkfield Lane, Laguna Niguel, CA 92677 (US). **SHEHA, Angie** [US/US]; 8 Larkfield Lane, Laguna Niguel, CA 92677 (US). **URIOSTE, Brian** [US/US]; 5822 Larry Dean Street, Corona, CA 92880 (US).

(74) Agents: **YANG, David, T.** et al.; Morrison & Foerster LLP, 555 West Fifth Street, Los Angeles, CA 90013-1024 (US).

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(54) **Title:** METHOD AND SYSTEM FOR A USER INPUT SOLUTION FOR A LIMITED TELECOMMUNICATION DEVICE

(57) **Abstract:** It is an object of the present invention to provide a method and system for enabling a simple and efficient method of directional arrows for the purpose of easily maneuvering throughout a contextual menu system (i.e., menus, text entry boxes, buttons, and the like) on a mobile device using limited input keys. In one embodiment, this allows a user to only require a rocker key with "directional arrows" and a select key, which is sometimes referred to as an "OK" or "Enter" key, to fully maneuver a menu and text entry system on a mobile device. This includes going forwards and backwards in the menu system tree, in addition to moving upwards and downwards in any menu list, all without needing to use any other keys. In another embodiment, this solution enables and illustrates a plurality of a-priori defined graphical pathways for the user to navigate.

METHOD AND SYSTEM FOR A USER INPUT SOLUTION FOR A LIMITED TELECOMMUNICATION DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

The present invention claims benefit under 35 U.S.C. 119(e) of United States Provisional Application No. 60/748,463 filed on December 7, 2005, the contents of which are incorporated by reference herein.

BACKGROUND

1. Field of Invention

This present invention relates to a method and system for maneuvering throughout a mobile device in combination with a enabling a text predictive solution that compliments each other in a novel approach.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a method and system for enabling a simple and efficient method of directional arrows for the purpose of easily maneuvering throughout a contextual menu system (i.e., menus, text entry boxes, buttons, and the like) on a mobile device using limited input keys. In one embodiment, this allows a user to only require a rocker key with "directional arrows" and a select key, which is sometimes referred to as an "OK" or "Enter" key, to fully maneuver a menu and text entry system on a mobile device. This includes going forwards and backwards in the menu system tree, in addition to moving upwards and downwards in any menu list, all without needing to use any other keys. In another embodiment, this solution enables and illustrates a plurality of a-priori defined graphical pathways for the user to navigate.

It is an object of the present invention to provide a method and system to enable the directional arrows to convey different actions with different visual representations, such as colors, sizes, highlights, strokes, or the like. In one embodiment, since the left rocker key can have different functionality in the same screen based on the cursor's current position, such as when a cursor is in a text box and pressing the left rocker key can either move back one character in the string or go back to the previous screen if the cursor is at the beginning of the text box, a method is needed to differentiate to the user when each of these actions are is

allowed while using a limited input solution as only a rocker key to move through and within screens.

It is an object of the present invention to provide a method and system for optimizing the viewable space on a navigation-enabled mobile device, such that the same window or screen can provide a plurality of views relating to similar information which can further be illustrated in a more appropriate manner from different viewpoints without causing confusion to the user. Additionally, this "look ahead" and "curtain" view allows a user to visualize a navigational display of the same turn using both a Limited Cartography ("LC") displays and a Vector Map display. In one embodiment, a user can toggle between these views using the rocker keys on a mobile device that acts in the same manner as a window that slides between two views. This allows more content specific information to be visualized by the user that is pertinent to the particular view while having a common reference point, such as the current driving directions maneuver displayed to the user at all times. For example the user can toggle between the LC view and the vector map view of the same maneuver, while keeping the "next turn" name constant.

It is an object of the present invention for the "look ahead" and "curtain" view to be controlled either by the application, the user, or both. In one embodiment, a Limited Cartography ("LC") displays will transition to a Vector Map display automatically based on the mobile device's GPS information as it approaches the current turn. In another embodiment, the user might be close enough to the turn such the application transitions to the Vector Map display, but the user wants to view the approaching turn using the Limited Cartography display. In this embodiment, the user always has the choice to change the view manually. In this same embodiment, the application will transition to the Vector Map display based on the distance to the turn.

It is an object of the present invention to provide a method and system for predictive text to be generated, which is based on a database of validated spatial information, such as address information. In one embodiment, this validated spatial database of information is transferred to the device over a wireless connection, such as a GSM, UMTS, W-CDMA, CDMA, WiFi, Bluetooth, or the like.

It is an object of the present invention for the databases to be generated by a server system and transferred to the phone after the data has been validated. In one embodiment, the address information is constructed and validated on the server and transferred to the handset thus ensuring that the consistency of the data is preserved and accurate based on a

database. In this embodiment, the database would be a spatial database that references address and mapping information.

It is another object of the present invention for the local mobile database to be adaptive and to be modified continuously during user entries, search experiences, and application interaction. In one embodiment, while a user searches for nearby local places, the system would learn the address information for each point of interest (POI) and continuously update the look ahead spatial cache (i.e., street address, city, state, zip code, and the like) to be indicative of the user's search patterns within the application. In another embodiment, every stored location, name, phone number, or the like that was qualified and sent to the mobile device from a server can be used in the text predictive solution. The application thus learns the user's "preferred" entries, such as a street address (i.e., their home address), or the yellow page name of "Mario's by the Sea", or the zip code of the town the user is currently located in which is based on their GPS information, or the like. This allows the local database to organically grow based on the user's search patterns in connection with the server to include what is important to the user. In this same embodiment, as people skilled in the art will appreciate, this mitigates the need for the server to continuously send false positives to the mobile device, such as in the case when searching for "Pizza Hut" by entering just "Pi" in a search field input box for performing a "Local Search". If the user just once views, maps, navigates to, or calls "Pizza Hut", then the application will learn and store the name, phone number, and spatial information about "Pizza Hut". In this same embodiment, the user will only need to enter "Pi" and the application will display to the user possible matches based on "Pi", such as "Pizza Hut" without the need to interact with the server, since this information was already stored in the mobile device's database due to a previous search about this point of interest. The user effectively "pre-validates" the search term that is sent to the server for searching for the nearest "Pizza Hut" in the area, thus maximizing the ability of that first search to produce results that are relevant to what the user is searching for, such as finding a "Pizza Hut" near me based on my GPS information.

It is another object of the present invention for the database records to have spatial information, such as addresses, to include a timestamp of the last time the spatial data was requested to be added to the database.

It is another object of the present invention for the server system to validate spatial information, such as address information, for the purpose of only adding said spatial information to the mobile devices' database. This ensures a level of quality over non-validated information. Addresses are also added from a-priori defined lists which are downloaded from the server, such as state lists, airports, or the like. In one embodiment, the name and address

information for "Starbucks, 35 Tesla, Irvine, CA" would only be added to the database if it was first validated and sent from the server to the mobile device. This ensures only qualified content can be stored in the local mobile device's database that is qualified by the server.

It is another object of the present invention to allow the text predictive algorithm to be based on a plurality of databases, such as both LRU (recent searches) and a standard persistent store with explicit additions and deletions, such as a user's personal favorites. Each database can have its own maximum size. Additionally, databases can be based on pre-defined databases that are immutable and defined by the server, such as state lists, airports, or the like.

It is another object of the present invention to store spatial information based on actions that the user does within the application for raking the results, all of which the provided results were sent from a server to a mobile device. In one embodiment, any and all spatial or non-spatial information that is sent from the server can be stored in the local database on the mobile device for the text predictive invention. In another embodiment, any item, including place address and phone numbers, that the user performs and action on, including viewing the address, mapped, navigated to (in a navigation device), calling a place (from the mobile device), saving as a favorite, or the like using an application specific action (i.e., which can vary per application) will be applied to the local database for the text predictive solution to utilize.

It is another object of the present invention to allow the database to be reset through the graphical user interface. In one embodiment, this includes deleting your favorites, clearing all the databases, or the like.

It is another object of the present invention for each field in the record and dataset to be searched against. This includes all spatial information fields, such as, but not limited to, the street address, city, state, and zip code.

It is yet another object of the present current invention for text predictive matches to be "string starts with" matches that are based on a string of characters which are entered by the user.

It is yet another object of the present invention for matches to be searched for based on key entries, such as entering a "T" in the state field matches "Tennessee", while entering "TX" matches "Texas".

It is yet another object of the present invention for the first result match to cause the un-entered text to be displayed in another color followed by a symbolic indicator, such as, in this embodiment, a right arrow. In one embodiment, depressing the right key from the key indicator commits the suggested text to the user's entered text. In another embodiment, selecting the "next match" key, which can be arbitrarily defined on the mobile device, results in the next match to be displayed instead of the first match.

It is yet another object of the present invention for the match order to be based on name or timestamp.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a network system for providing a communication channel between various wireless and landline computing devices;

FIG. 2 illustrates one embodiment of the present invention showing a personal computer with an integrated web browser;

FIG. 3 illustrates one embodiment of the present invention of a wireless Telecommunication Device and an accompanying high-level block diagram of a wireless Telecommunication Device;

FIG. 4 illustrates one embodiment of a mobile device's limited user interface;

FIG. 5 illustrates one embodiment of a plurality of directional arrows and text predictive menu boxes;

FIG. 6 illustrates one embodiment for illustrating the limited cartography navigation screen on a limited screen size mobile device;

FIG. 7 illustrates one embodiment for illustrating the navigation look ahead / curtain view;

FIG. 8 illustrates yet another embodiment of the navigation look ahead screen;

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The preferred embodiments of the present invention relate to methods and systems for increasing the usability and functionality of the mobile device based on a limited user interface.

The present invention may be embodied in a pre-commercial (non-public) application called "AtlasBook" or "VZ Navigator" which is owned and licensed by Networks In Motion, Inc.

of Irvine, California. "VZ Navigator" is a trademark of Verizon Wireless. These applications are connected to NIM's NAVBuilder server LBS platform.

FIG. 1 and FIG. 2 illustrate high-level diagrams of one embodiment that is a suitable computing and networking environment in which the invention may be implemented. The invention will be described in the general context of an application that executes on an operating system in conjunction with a personal computer or server, but those skilled in the art will realize that this invention may also be implemented in combination with other program modules. Program modules typically include routines, programs, data structures, etc. that perform particular tasks or implement particular abstract data types. This invention is not limited to a typical personal computer, but may also be utilized with other computing systems, such as handheld devices, mobile lap top computers, wireless phones, in-vehicle navigation systems, programmable consumer electronics, mainframe computers, distributed computer systems, etc., and the like.

FIG. 1 is a network block diagram illustrating the connection (**125 & 101**) of both wireless **100** and wired **126** Telecommunication devices to an Application Service Provider (ASP) **123**, also referred to as an online server system. This online server system may be configured at a single location and on a single computer, or can be configured as a distributed computer system and at different locations. The wireless Mobile Telecommunication Devices **100** are wirelessly connected **101** (i.e., CDMA, GSM, WiFi, Bluetooth, or the like) to a nearby wireless base station **102**, which are typically connected or have access to **105** the Internet, Intranet, or Extranet **106**. Additionally, a landline Telecommunication Device **126** is typically connected to a nearby central office **124** which is connected or has access to **123** the Internet, Intranet, or Extranet **106**. Additionally, the Application Service Provider (ASP) **123** also has access **109** to the Internet, Intranet, or Extranet **106**. The ASP **123** generally consists of a front-end firewall and XML router **113** which itself has access (**111 & 114 & 119**) to other local computing modules, such as a database **112**, POI server **115**, geocoding server **116**, mapping server **117**, and webpage client server **118**. The web-server front-end **118** can be connected to the outside Internet, Intranet, or Extranet **106** either through the local front-end firewall **113**, or as in this embodiment, via **120** the web server **121**, which is connected **122** directly to the Internet, Intranet, or Extranet **106** by using a software firewall which is well known to those skilled in the art. Additionally, either mobile 104 or landline **108** computing devices, such as a personal computer, are connected to the Internet, Intranet, or Extranet **106**, either directly **107** or through a wireless connection **103** and base station **102**.

FIG. 2 illustrates a typical personal computer **150**, that includes a central processing unit (CPU) **173**, video adapter **172**, hard disk drive **157**, optical disk **158**, serial port **159**, magnetic disk drive **163**, system bus **156**, and network interface **176** → **177** & **167** & **169** → **109**. The hard disk drive **157** typically refers to a local non-volatile storage system for storing large amounts of data, such as a web browser program files or cookies or a user's Contact data. The optical disk **158** typically refers to a CD-ROM disk used for storing read-only data, such as an installation program. The serial port interface **159** is typically used to connect **161** the computer **150** to external devices **160**, such as a keyboard, mouse, and graphical touch screen interface, and also can connect **164** to positioning devices **165**, such as a GPS receiver. The keyboard and mouse **160**, amongst other input devices **165**, enable users to input information into the computer **150**. The connection **161** & **164** cables can include a serial cable or universal serial bus (USB) cable. Other input devices, that are not shown, may include a joystick, scanner, camera, microphone, or the like. The magnetic disk drive **163** is typically used to store small amounts data, in comparison to a hard **157** or optical **158** disk drive, and typically lacks the data transfer rates of those other storage drives, but it enables both readable and writable capability. The hard disk drive **157**, optical disk drive **158**, serial port interface **159**, and magnetic disk drive **163** are all connected to the main system bus **156** of the computer **150** for transferring data. A monitor **170** or other type of display device, such as a LCD display, is connected **171** to the computer system's **150** video adapter **172**, which is connected to the system bus **156**. Additional peripheral output devices, which are not included in this embodiment, such as a printer, speaker, etc., can also be connected to a personal computer **150**. The system bus **156** also connects to the network interface **176**, central processing unit (CPU) **173**, and system memory **151**. The system memory **151** contains both random access memory (RAM) **153**, and read only memory (ROM) **152**, that typically consists of the BIOS (Basic Input/Output System) of the computer, necessary for containing basic routines that enable the transfer of information between elements within the personal computer **150**. The RAM **153** stores a number of program modules, such as the web browser and synchronization applications **155**, and the Operating System **154** of the personal computing device **150** or personal computer **150**. One example of such a program module **155** would be a web browser that is connected to the "NAVBuilder" server that was previously mentioned.

FIG. 3 illustrates a next generation wireless Telecommunication Device **311** which typically includes a display **314**, an antenna **313**, and a keypad **312**. The next generation wireless Telecommunication Device **311** & **300**, as illustrated in FIG. 3, provides a foundation **302** for running programs or applications that can access the Telecommunication Device's **311** internal interfaces, such as the Bluetooth **309**, Speech/Audio Codec **308**, GPS Interface **307**, TAPI (Telephony Application Program Interface) **306** Interface, Screen/Keypad API

(Application Program Interface) or Interface **305**, Camera API **304**, or the like as well known to those that are skilled in the art. As those that are skilled in the art will appreciate, a Telecommunication Device (**300** & **311**) will also include scheduling/timers **310** for scheduling specific events as is provided with standard computing platforms. Additionally, next generation Telecommunication Devices (**300** & **311**) have graphical user interfaces (GUI) **301** for applications to allow user input using a graphical display **314**. As people skilled in the art will appreciate, these next generation Telecommunication Devices provide the means to access the Telecommunication Devices' internal APIs using a middleware **302** platform, such as BREW, J2ME, Symbian, Linux, which are well known to those skilled in the art. This simplifies the development process since there is significant support for obtaining developer access to the Telecommunication Device's internal APIs, such as the TAPI interface for making telephone calls and capturing call logs.

FIG. 4 illustrates a typical wireless device design **400** that includes a Right Soft Key **401** and Left Soft Key **405**, which are hardware keys that relate to software controllable functions. Other keys include the directional Rocker Key **404** for trapping up / down / left / right key events, the Center Soft Key **403** or the "OK" key **403** which provides the select or enter functionality, and the Clear Key **402** which is used for going back in the user interface flow within an application and the handset's O/S. Those that are skilled in the art will realize that this is a typical layout for most mobile devices in various embodiments and markets.

FIG. 5 illustrates the graphical method of moving effectively throughout an application user interface (UI) that also adds significant value in enabling a text predictive system. As people skilled in the art will appreciate, prior art menu layouts enable users to move only upwards and downwards in a menu list without a clear and graphical indication of the allowed options for moving within that menu structure, such as in one embodiment, going forward and backwards to the previous and next screen in a UI flow. People that are skilled in the art will appreciate that a new layout of graphical icons **500 501 502 503** which illustrate your movement throughout the menu structure greatly simplify the application usability. Additionally, it illustrates the available options that the user can move **515**, such as only being able to move downwards **505**, back to the previous menu **504**, or forward to the next screen **506**. As people that are skilled in the art will appreciate, typical advancing and retreating within a menu structure's various screens is done by using the device's "OK" **403** and "CLR" clear keys **402**. This new method allows the advancing **503** and retreating **501** to also be simplified by both graphical icons and the use of the rocker keys **404**, thus providing a more advanced flow throughout the application. It should be noted that the graphical icons are coupled directly with the rocker key icons, such as directional arrows up **500** down **502** left **501** and right **503** are directly tied to the up **406** down **408** left **404** and right **409** rocker keys.

Toggling between two screens (i.e., the first **515** then the next **516**) is simply enabled by the forward **506** and backwards **507** icons illustration between two different screen flows in combination with the right and left rocker key, respectively.

An extension of the graphical method for selecting a text cached solution **516** of street addresses **508** for a particular text entry box **509** is further enhanced by the use of graphical icons in combination with the rocker key. In one embodiment, the backwards graphical icon's **507** color is transitioned **510** when entering data into the text box, thus illustrating that the back functionality enacted by the left rocker key is not designed to go backwards, but rather to delete characters within the text entry box **509**.

For the text predictive solution, the preferred embodiment **518** is based on learning the data of the application as the user uses the application through means of an online server database. This allows the application to learn the use patterns of the user through searching for addresses, points of interest which includes names, addresses, search patterns, or the like via the online server database through a wireless connection. In one embodiment, once the application has learned the desired material, entering the information again in the application can be facilitated by selecting a cached entry for quickly re-entering the data again. Typically data is stored in a cache as a First In – First Out cache (FIFO).

For example, in one embodiment, when a user searches for a local business, the application will store all of the data associated with a resulting place, such as but not limited to:

Location

Value	Description
area name	Area Name
streetnum	Street Number
street1	Street One Field
street2	Street Two Filed (suite #, etc.)
city	City Field
county	Country Field
state	State Field
postal	Postal / Zip Code
country	Country Field
airportcode	Airport Code
latitude	Latitude Value
longitude	Longitude Value
location type	Location Type

Phone

Value	
Country Code	Phone Country Code
Area Code	Phone Area Code (NPA)
Number	Phone Number (NXX + 4 digits)

Category

Value	
Category Code Length	Location – Yellow Page Category Code
Category Name	Location – Yellow Page Category Name

Place

Value	
Name	Place Name
Phone	Place Number
Category	Place Category

When future data entrees are made that match the previous searched data, then that data is provided to the user as an exact match, so that an additional request to the network is not needed to perform the search and find the information, thus allowing the user to select the exact information locally on the device. As it should be appreciated by those that are skilled in the art, people typically search for results that were previously entered, since humans are very repeatable by nature. For example, a person might search for the POI "Starbucks" repeatedly while on a business trip throughout various locations within a given geographical area. Only having to enter "St" will not improve their chances of success without selecting a

category first, such as "Coffee Shops" as the server system has to do fuzzy searching on the input string. Entering "St" might return "St. Ann's College" since the server is matching local search data that could be within a certain proximity or area.

As people that are skilled in the art will appreciate, if a user searched for "Starbucks" in the past, then the text predictive solution will cache that information locally and offer it in a single text box solution **512** such that the user is able to pick from it without needing to scroll down to a list of choices. This is typically known in the art as "auto complete". The search for "Starbucks" has been validated from the server already, and now (more importantly) the user initiating the search, since only validated searches are sent to the mobile device. This provides a level of quality, thus improving the search probability since the user qualifies the results before the search is sent to the server.

As people that are skilled in the art will appreciate, users typically don't like to enter lots of data on a mobile device through a key pad, since it takes significant effort, specifically with a "multi-tap" solution. Reducing that effort provides a significant enhancement in making sure that the search the user will do shall provide meaningful results, since the phrase "garbage in, garbage out" applies to this idea. This invention better qualifies the input search data, based on previous searches for known entries, such as local business names, address values (street, city, state, zip code), and the like without having to go back to the database on the server, thus reducing wireless network traffic and improving the scalability of the wireless network, server system, and the quality of the entry method.

Thus, any item that is searched for, viewed, mapped, navigated to, called, or the like will be applied to the local database.

As those skilled in the art will appreciate, below is the preferred example embodiment for the matching algorithm for text predictive solution:

```
function GetMatches (prefix, addressPart):     where prefix is the user entered text and addressPart is an address field ID (city, state, etc.)

    resultList = []
    databaseList = GetDatabases (addressPart)
    foreach db in databaseList:
      foreach record in db:
        fieldText = GetFieldText(record, field)
        prefixLength = StringLength(prefix)
        if StringCompareN(prefix, fieldText, prefixLength) == true:
          AppendResult(results, fieldText)

    Sort(resultList, criteria)

    return resultList
```

The navigation screen "look ahead" provides a unique method and system for displaying multiple views of the same information within the same display on a limited screen **314** for a mobile device **313**. In one embodiment, a navigation display contains the next street **600**, next turn **605**, distance to turn **601**, current street **606**, trip distance **602**, heading **603**, arrival time **607**, and GPS Health **608**. When the mobile device approaches a turn that has a stacked maneuver (i.e., a turn that is followed immediately by another turn), then a different display is shown that conveys the same, but additional information of the stacked turn **615**. In order to prioritize the information to the user, the top information that is provided is the next street **613**, next turn **614**, distance to turn **610**, current street **616**, trip distance **611**, heading **612**, and GPS Health **617**.

It will be appreciated by those skilled in the art that the reason the arrival time **607** is not shown in the stacked turn **615** view is since stack turns are only visible when the user is near the stacked turn. Additionally, the user can always left toggle **802** (press left on the rocker key) from the navigation screen to view the trip summary information which contains the arrival time information, and then back to the navigation screen using the right toggle arrow **801**.

As people that are skilled in the art will appreciate, this invention provides a method and system for illustrating a "limited cartographic" (LC) view **700 & 702**, and a "turns map" view **703 & 704**, without requiring the need to change the reference view of the next turn "Sand Canyon Avenue". This is accomplished through the "curtain" approach **701** that will maintain the view of both representations (i.e., LC and vector) for the same maneuver, but with a different visualization that is important. After the user has toggled from the LC view **702**

to the turns map view **704** using the top down "curtain" **701**, the user is able to transition back to the LC view **702** from the turns map view **704** using the bottom up "curtain" **705** with just using the rocker's up **406** and down **408** keys respectively.

This invention also supports have the application automatically transition the view form LC to vector. In one embodiment, this could be triggered as the mobile device approaches the maneuver, or the like

Additionally, the "look ahead" functionality utilizes the ability for the user to manually look at new turns in the future using the right toggle **801** functionality and the respective rocker key. The future maneuvers **803 & 808** view(s) intentionally looks different than the current turns view **800**, since it includes the text directions **805** for that turn, but keeps a similar look and feel around the current turn icon **807**. Each future maneuver view **803 & 808** also includes the "curtain" approach of toggling between the limited cartography view screen **805** and the vector view screen **809** using the top down "curtain" **806** and the bottom up "curtain" **810**.

As people that are skilled in the art will appreciate, this view reduces the user interface while maintain and maximizing the content for the navigation device within a limited screen device.

The following discusses preferred embodiments for creating a graphical LBS suite application for a mobile device with a limited user input and screen size. This LBS suite application includes all of the features described in this invention, including, but not limited to, the graphical user interface toggle solution and text predictive solution.

Introduction

Scope

This document details the end user functionality of graphical mobile application in its preferred embodiments, including the menu systems, functional buttons, and wording of all application text. The purpose of this document is to outline all possible UI flows and to provide a description of the application functionality.

Format

Each section of the application will be described in the following format:

1 SCREEN DESIGNATION
Name of the screen for specifications only, which is not necessarily the same as the screen name displayed within the application if any (e.g., Home Screen).

1.1 ENTRY
Includes all ways to access (enter) this screen.

1.2 CONTENTS
Includes what is visible on the screen, including soft key buttons, menu lists, graphics, general text or text entry controls, etc.

1.3 FLOW OPTIONS
Includes all possible user actions based on this screen, such as button presses. These button presses may or may not cause the application to exit the screen.

Text in this document that is in quotes represents the exact text found in the application.

Common Terms

The following terms are used in this document to describe how to access functionality in the VZ Navigator application:

- LSK – Left Soft Key
- CSK – Center Soft Key
- RSK – Right Soft Key
- NVK – Navigation Key
- CLR – Clear Key (Go Back)

General GUI Elements

There are several GUI elements that can be found throughout the application that look and behave consistently.

Help Screen

Entry

The Help screen can be accessed:

- From the Home screen by selecting Help with NVK-Down or pressing the number 5.
- From any screen with a menu connected to the right soft key, where the menu includes an item for Help.

In order to offer instructions or guidance on using the application, the user can access help from most screens within the application. Help is not offered if the user is currently viewing a help screen or any other modal dialog (informational screen with only an OK button).

Contents

Help screens contain context-sensitive text that includes the purpose of the screen and the function of all available options from that screen. Also contained in this screen is a single OK button (CSK).

Flow Options

From the Help popup menu, the user can take any one of the following actions:

- Press CLR – this will clear the help screen and display the screen that was previously displayed.
- Press OK (CSK) – this will have the same affect as pressing the CLR key.

Soft Key Menu

Entry

A soft key menu is available to the user when the image representing the soft key at the bottom of the screen shows a word such as "Options", "Set", or in the case of a map display, "Mode". Pressing the soft key beneath the word causes the Soft Key Menu to be displayed. The contents of this menu vary according to the application feature and screen that is currently in use.

Contents

Pressing a soft key button (LSK or RSK) that is associated with a menu will produce a popup menu with several options related to the screen that is currently displayed. Whenever a soft key menu is displayed, use NVK-Up or NVK-Down to navigate among items in the list. An OK button (CSK) is also displayed that can be used to select an item from the menu.

Flow Options

From the Soft Key Menu, the user can take any one of the following actions:

- Press CLR – this will close the menu and return to the screen that was previously displayed.
- Press OK – this will select the currently highlighted item in the soft key menu.
- Press NVK-Down – this will select the option in the soft key menu beneath the currently highlighted item
- Press NVK-Up – this will select the option in the soft key menu above the currently highlighted item
- Press a number on the number keypad – this will select the option in the soft key menu that is numbered as such, if there is one.

Progress Animation

Entry

Whenever a process is expected to take more than 2 seconds, the application displays a Progress Animation.

Contents

This animation is typically displayed at the bottom of the screen in place of the soft key button images, which is appropriate since soft key button functions are disabled during this process. However, only in the case of a navigation-related download (e.g., new route directions and/or voices), this progress animation is a full screen animation that includes the type of function in progress and a percentage value representing the amount of progress made on that process (i.e., 100% means the process is complete).

Flow Options

When a Progress Animation is displayed, the user can take the following action:

- Press CLR – this will cancel the process that is in progress and return to the screen that was previously displayed prior to the process being started.

Splash Screen

Entry

There is only one way the application can start and display the splash screen, and that is by the user manually selecting to run the application from the Application Manager in the appropriate category of the Get it Now® menu.

Contents

When the application is started, a Splash screen is shown for 2 seconds as an informational graphic only. In certain cases, the Splash screen will be displayed for a longer period of time and show updated status of a network process in progress. These cases include the following:

- First time the application is run, the application registers.
- Application has previously been made aware of an udpate that is pending download. Updates can include:
  - Update of category tree for Local Search feature
  - Update of voice files for the Navigation feature

The Splash screen contains graphics that include the application name. While the Splash screen is displayed the application may encounter errors related to the download of information which may include the following:

- "Could not connect to network. Press OK to retry."

Flow Options

From the Splash screen, the user can take any one of the following actions:

- Press CLR – this will exit the application
- Press OK – this will have no effect unless the Splash screen is displaying the error message "Could not connect to network. Press OK to retry.", in which case the application will try again to connect to the network.
- Wait until Splash screen expires and the Home screen automatically displays.

Home Screen

Screen Functions

Home				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Navigation	-	OK	Scroll up	Options
Local Search			Scroll down	
My Places				
Maps				
Help				

Entry

The Home screen can be accessed in multiple ways:

- From the Splash screen once it has expired.
- Pressing CLR from any of the major feature menus, including Navigation, Local Search, My Places, and Maps.
- Pressing CLR from the Help text screen from the Home screen.
- Pressing CLR from the Options screen.

Contents

The Home screen contains the following menu options:

1. "Navigation"
2. "Local Search"
3. "My Places"
4. "Maps"
5. "Help"

The Home screen also contains the following right soft key (RSK) menu options:

1. "Preferences
2. "Place Phone Call"
3. "About"

Flow Options

From the Home screen, the user can press any one of the following keys:

- CLR – this will exit the application.
- OK – this will select the currently highlighted item in the Home screen menu.
- A number on the number keypad – this will select the option in the soft key menu that is ordered as such. For example, pressing the 2 key will select the Local Search option, even though Local Search does not display this number in the Home screen menu. This acts as a hidden shortcut for advanced users.
- Send key – has the equivalent affect as having selected the option to "Place a Call" from the right soft key menu. This will allow a user to dial a phone number and initiate a phone call from within the application.
- Right soft key – shows the right soft key menu.

Options

The "Options" menu from the Home screen provides access to preferences, calling functions, updates, and software version information.

Screen Functions

Home > Options				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Preferences	-	OK	Scroll up	Cancel
Place Phone Call			Scroll down	
Check for Updates				
About				

Entry

The Options screen can be accessed:

- RSK - From the Home screen by selecting "Options" from the Right Soft Key

Contents

The Options screen contains the following functionality:

- Preferences – Provides access to General and Navigation preferences
- Place Phone Call – Place a phone call while in the VZ Navigator application
- Check for Updates – Checks to determine if the installed version of VZ Navigator is the most recent version of the software.
- About – Provides information on the current software version, application status, and copyright notices.

Flow Options

From this screen, the user can press any one of the following keys:

- NVK – scroll up or down through the menu list
- CSK – select an item in the menu list
- RSK – cancel and return to the Home screen
- CLR – cancel and return to the Home screen
- Keypad – enter a number to jump to a specific item in the menu list

Place Phone Call

Screen Functions

Home > Call > Call Recents				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Phone Number	Contacts	Call	Scroll up	Options
			Scroll down	
			Back	

Entry

The Place Phone Call screen can be accessed:

- From the Home screen by pressing the Send key
- With the RSK by selecting "Options" and then "Place Phone Call"

Contents

The Place Phone Call screen contains the following functionality:

- Text Box – for entering the "Phone Number" that the user wants to dial
- LSK – "Contacts" link that accesses the phonebook on the handset
- RSK – "Options" link that enables the user to clear text or get Help
- CSK – "Call" function to initiate a phone call the entered number

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – this will cancel the request to place a phone call and return to the previous screen.
- CALL – this will cause the phone call to be initiated using the currently entered phone number. The handset will display the confirmation dialog so the user can confirm that a phone call should be initiated.
- Send key – same as the OK key.
- Keypad – Any number key on the keypad has the effect of adding digits to the phone number that will be dialed.

After the phone call is made and completed, the application returns to the Place Phone Call screen, in case the user wishes to dial another number.

Preferences Menu

From the Preferences menu, users can access General and Navigation Preferences sub-menus. The end user can modify certain overall application behavior from General Preferences and can control specific Navigation behavior from "Navigation Preferences".

Screen Functions

Home > Options > Preferences				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
General	-	OK	Scroll up	Options
Navigation			Scroll down	
			Back	
			Drill in	

Entry

The Preferences screen can be accessed from the Home screen by selecting "Options" (RSK) and then selecting "Preferences" (RSK).

Contents

Selecting "Preferences" presents the user with the option of selecting:

- "General" Preferences
- "Navigation" Preferences

In General preferences, the user can modify overall application settings and behavior. For example, the user can choose to display distances in metric units (meters/kilometers) rather than feet/miles. In addition, the user can control certain display settings such as whether or not to show GPS accuracy, Recents/Favorites, and Place coordinates in various part of the application.

In Navigation preferences, the user can modify settings specific to the application behavior during a navigation session. For example, the user can change the Voice Type (Michelle or David), Trip Settings (Route Type, Vehicle Type, Trip preferences), Audio Prompts (None, Street Names, Tones only), Distance Announcements (Yes, No), Volume level, Turn Display, and whether or not to download Turn Maps.

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – return to the Home screen
- NVK – scroll up and down in the list with the navigation key
- CSK – select either General or Navigation preferences from the menu list
- RSK – "Options" provides access Help on this function

General Preferences

From the General Preferences menu, users can control certain aspects of the overall VZ Navigator application behavior. The following section describes the types of settings that can be controlled by the end-user in the application.

Screen Functions

Home > Options > Preferences > General				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Metric Units	SET	SAVE	Scroll up	Options
Heads Up in FollowMe			Scroll down	
Show GPS Accuracy			Back	
Show Recents/Favorites				
Show Place Coordinates				

Entry

The General Preferences screen can be accessed from the Home screen by selecting "Options" (RSK), selecting "Preferences" (RSK), and then selecting "General" from the Menu.

Contents

Selecting "General Preferences" presents the user with the ability to set a variety of application settings:

- Metric Units – Show meters/kilometers rather than feet/miles
- Heads Up in Follow Me – Put the direction you're headed at the top of the map instead of North
- Show GPS Accuracy on Map – Display an accuracy circle on the map
- Show Recents / Favorites – Provide a list of recently entered searches or access to saved favorites when entering addresses and searches.
- Show Place Coordinates – Display coordinates for places.

Flow Options

From this screen, the user can press any one of the following keys:

- LSK – "Set" enables the user to toggle on/off selection of items in the menu
- NVK – scroll up and down in the list, or go back to the main Preferences screen
- CLR – Returns the user to the main Preferences screen.
- CSK – "Save" will save the settings on the General Preferences screen.
- RSK – "Options" will enable the user to access Help on this function.

Navigation Preferences

From the Navigation Preferences menu, users can control certain aspects of the Navigation behavior in VZ Navigator. The following section describes the types of settings that can be controlled by the end-user in the application.

Screen Functions

Home > Options > Preferences > Navigation

Main Menu	LSK	CSK	NVK	RSK
Voice Type	SET	SAVE	Scroll up	Options
Trip Settings			Scroll down	
Download Turn Maps			Back	
Auto Show Turn Maps			Drill in	
Navigator Audio				
Say Distances in Nav				
Navigator Volume				
Show Next Turn				

Entry

The Navigation Preferences screen can be accessed from the Home screen by selecting "Options" (RSK), selecting "Preferences" (RSK), and then selecting "General" from the Menu.

Contents

Selecting "Navigation Preferences" presents the user with the ability to modify the behavior of the application during a Navigation session. The following settings can be modified:

- Voice Type – Choose Michelle or David depending on if you prefer a female or male voice for audio prompts during navigation.
- Trip Settings – Choose your route type, vehicle type, and specific navigation preferences such as avoidance of HOV lanes and toll roads.
- Download Turn Maps – Choose whether or not to download turn maps or just text directions for previewing a route.
- Auto Show Turn Maps -
- Navigator Audio – Choose to hear street name prompts, tone prompts, or no audio prompts during navigation.
- Say Distances in Nav – Choose whether or not to have distances to upcoming turns announced during navigation.
- Navigator Volume – Set the volume level for audible prompts during navigation.
- Show Next Turn – Choose whether or not to always show the next turn in the navigation display or only when the turn in nearby.

Flow Options

From this screen, the user can press any one of the following keys:

- LSK – "Set" enables the user to toggle on/off selection of items in the menu
- NVK – scroll up and down in the list, or go back to the main Preferences screen
- CLR – returns the user to the main Preferences screen
- CSK – saved the settings on the General Preferences screen
- RSK – "Options" provides access Help on this function

About Screen

From the Options menu, information about the VZ Navigator software can be determined by selecting the "About" item in the menu.

Screen Functions

Home > Options > About				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
-	-	OK	Scroll up	-
			Scroll down	

Entry

The About screen can be accessed from the Home screen by selecting "Options" and then selecting "About" from the Options menu.

Contents

- The About screen contains text about the application such as software version, company information, and copyright information.

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – returns to the previous screen (i.e., Home)
- OK – returns to the preview screen (i.e., Home)

Navigation Main Screen

VZ Navigator provides real-time, turn-by-turn driving directions to a particular destination. Users get a route based on their current GPS location using the Find Destination feature. If the origin of the route will not be the current GPS location, the Plan Trip feature can be used. For quick routing to Home or Work from your current GPS location, select Home or Work from the Navigation menu.

Home > Navigation				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Find Destination	-	OK	Scroll up	Options
Plan Trip			Scroll down	
Home			Back	
Work			Drill in	

Entry

The Navigation main screen can be accessed:

- From the Home screen by selecting Navigation

Contents

The Navigation main screen contains the following under the title "Get Directions To:"

- Find Destination – get directions to a recently entered location, favorite location, specific address, airport, or intersection based on current GPS location
- Plan Trip – get directions to a specific address from a defined starting point and select desired trip settings.
- Home – get directions home from current GPS location
- Work – get directions to work from current GPS location

Flow Options

From "Get Directions To" screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., Home)
- NVK – scroll up or down to select menu options, drill into menu options for additional options, or go back to the previous screen (i.e., Home)
- OK – this will select the highlighted menu option.
- RSK – access navigation options (see Navigation Preferences for details)
- Number – this will select the menu option with that number if one exists.

Find Destination (Navigation Sub-Menu)

Overview

The Find Destination feature in VZ Navigator is used to navigate to a location from your current GPS location.

Home > Navigation > Find Destination				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Recent Searches	-	OK	Scroll up	Options
Favorites			Scroll down	
Address			Back	
Airport			Drill in	
Intersection				

Entry

The Find Destination screen can be accessed by:

- Select Navigation from the Home Screen and then Select Find Destination
- Select Navigation from the Home Screen and then press "1" on the Keypad

Contents

The Find Destination main screen contains the following under the title "Find Location:"

- Recent Searches – to minimize text entry on the handset, the user can access recent address lookups, business names, and destinations from Recent Searches
- Favorites – to minimize text entry and enable the user to quickly get directions to frequently used destinations, the user can access items in his Favorites list
- Address – to get directions to a particular street address, the Address menu option enables entry of Street number and name, city, state, and zip code
- Airport – to get directions to an airport, the Airport menu enables the user to enter three letter airport codes or search from an entire list of US airports
- Intersection – to get directions to a general area, the intersection menu option enables the user to enter cross streets in a particular city, state, and zip code

Flow Options

From "Find Location" screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., Navigation)
- NVK – scroll up or down to select menu options, drill into menu options for additional options, or go back to the previous screen (i.e., Navigation)
- OK – this will select the highlighted menu option
- RSK – access Help on the Find Location features
- Keypad – pushing 1 – 5 on the keypad will select the menu option that corresponds to that menu item

Recent Searches (Find Destination Sub-Menu)

Overview

Recent Searches is an automatically saved list of destinations that have been looked up previously. The purpose of the Recent Searches functionality is to minimize text entry on the handset and to enable the user to recall previous locations.

Home > Navigation > Find Destination > Recent Searches				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
List of recents	Sort	NAV	Scroll up	Options
			Scroll down	
			Back	
			Drill in	

Entry

The Find Destination screen can be accessed by:

- Select Navigation from the Home Screen, select Find Destination, and then select "Recent Searches" from the "Find Location:" menu.
- Select My Places from the Home Screen, then select Recent Searches

Contents

The Recent Searches page displays a list of locations that have recently been mapped or navigated to. The list uses icons to provide visual cues about the type of location displayed in the list such as simple address, airport, or dining establishment.

Flow Options

From the Recent Searches screen, the user can press any one of the following keys:

- LSK – sorts the list either by most recent search or alphabetical order
- NVK – scroll up or down through the list, return to the previous page (i.e., Find Destination), or drill into details on a particular item in the list
- CSK – navigates to the selected destination in the list
- RSK – access navigation options
- CLR – return to the previous screen (i.e., Find Destination)
- Keypad – enter text into the "Go To" box to search for any location by name or address

Favorites (Find Destination Sub-Menu)

Overview

The Favorites list is used to store important destinations that will likely be used many times.

Home > Navigation > Find Destination > Favorites				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
List of Favorites	Sort	NAV	Scroll up	Options
			Scroll down	
			Back	
			Drill in	

Entry

The Favorites screen can be accessed by:

- Select Navigation from the Home Screen, select Find Destination, and then select "Favorites" from the "Find Location:" menu.
- Select Navigation from the Home Screen, select Find Destination, and then press "2" from the "Find Location:" menu.

Contents

The Favorites page displays a list of saved locations that have been entered from the Add New Favorite menu or saved from the result of a Local Search. The list uses icons to provide visual cues about the type of location displayed in the list such as simple address, airport, or dining establishment.

Flow Options

From the Favorite screen, the user can press any one of the following keys:

- LSK – sorts the list either by most recent search or alphabetical order
- NVK – scroll up or down through the list, return to the previous page (i.e., Find Destination), or drill into details on a particular item in the list
- CSK – navigates to the selected destination in the list
- RSK – access navigation options
- CLR – return to the previous screen (i.e., Find Destination)
- Keypad – enter text into the "Go To" box to search for any location by name or address

Address (Find Destination Sub-Menu)

Overview

To navigate to a particular address from your current GPS location, use the Address screen to enter the street name and number, city, state, and zip code.

Home > Navigation > Find Destination > Address				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Street	123	NAV	Scroll up	Options
City			Scroll down	
State			Back	
Zip Code			Drill in	

Entry

The Address screen can be accessed by:

- Select Navigation from the Home Screen, select Find Destination, and then select "Address" from the "Find Location:" menu.
- Select Navigation from the Home Screen, select Find Destination, and then press "3" from the "Find Location:" menu.

Contents

The Address page displays several text boxes that enable entry of a destination address:

- Street – to enter the street number and name
- City – to enter the destination city (can be skipped if zip code is entered)
- State – to enter the destination state (can be skipped if zip code is entered)
- Zip Code – to enter the destination zip code (can be skipped in city and state are entered)

Flow Options

From the Address screen, the user can press any one of the following keys:

- LSK – allows selection of number, text, or symbol entry
- NVK – scroll up or down through the list, return to the previous page (i.e., Find Destination), or use right toggle to view previously entered data for any text box
- CSK – navigates to the destination entered in the Address form
- RSK – clear all fields or access help on this function
- CLR – return to the previous screen (i.e., Find Destination)
- Keypad – enter text into the text boxes

Airport (Find Destination Sub-Menu)

Overview

To get driving directions to an airport, the Airport screen enables the user to quickly select from a list of domestic and international U.S. airports. Searches can be narrowed by using 3 letter airport abbreviations if they are known, or the user can sort the list alphabetically name.

Home > Navigation > Find Destination > Airport				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
List of recents	Sort	OK	Scroll up	Options
View Entire List			Scroll down	
			Back	

Entry

The Airport screen can be accessed by:

- Select Navigation from the Home Screen, select Find Destination, and then select "Airport" from the "Find Location:" menu.
- Select Navigation from the Home Screen, select Find Destination, and then press "4" from the "Find Location:" menu.

Contents

The Airport page displays:

- Text box – to enter the name of an airport or airport abbreviation
- View Entire List – to view a list of all U.S. domestic and international airports

Flow Options

From the Airport screen, the user can press any one of the following keys:

- LSK – sort the list by most recent or alphabetically
- NVK – scroll up or down through the list, or return to the previous page (i.e., Find Destination)
- CSK – navigates to the destination entered in the Address form
- RSK – clear all fields or access help on this function
- CLR – return to the previous screen (i.e., Find Destination)
- Keypad – enter text into the text box to search for airport by name or airport code

Intersection (Find Destination Sub-Menu)

Overview

The intersection function enables users to get directions to a general area if they do not know a specific address by entering cross streets.

Home > Navigation > Find Destination > Intersection				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
1st Cross Street	123	NAV	Scroll up	Options
2nd Cross Street			Scroll down	
City			Back	
State			Drill in	
Zip Code				

Entry

The Intersection screen can be accessed by:

- Select Navigation from the Home Screen, select Find Destination, and then select "Intersection" from the "Find Location:" menu.
- Select Navigation from the Home Screen, select Find Destination, and then press "5" from the "Find Location:" menu.

Contents

The Intersection page displays several text boxes that enable entry of a destination intersection:

- 1st Cross Street – name of first cross street
- 2nd Cross Street – name of second cross street
- City – to enter the destination city (can be skipped if zip code is entered)
- State – to enter the destination state (can be skipped if zip code is entered)
- Zip Code – to enter the destination zip code (can be skipped in city and state are entered)

Flow Options

From the Address screen, the user can press any one of the following keys:

- LSK – allows selection of number, text, or symbol entry
- NVK – scroll up or down through the list, return to the previous page (i.e., Find Destination), or use right toggle to view previously entered data for any text box
- CSK – navigates to the destination entered in the Address form
- RSK – clear all fields or access help on this function
- CLR – return to the previous screen (i.e., Find Destination)
- Keypad – enter text into the text boxes

Plan Trip (Navigation Sub-Menu)

Overview

The Plan Trip feature in VZ Navigator is used to navigate from one location to another, not necessarily based on your current GPS location.

Home > Navigation > Plan Trip				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Destination	Set	OK	Scroll up	Options
Start			Scroll down	
Trip Settings			Back	
			Drill in	

Entry

The Plan Trip screen can be accessed by:

- Select Navigation from the Home Screen and then select Plan Trip
- Select Navigation from the Home Screen and then press "2" on the keypad

Contents

The Plan Trip screen contains the following functionality:

- Destination – enter a street address or right toggle to access the Find Location menu that contains Recent Searches, Favorites, Addresses, Airports, Intersections, or GPS location as end point options.
- Start - enter a street address or right toggle to access the Find Location menu that contains Recent Searches, Favorites, Addresses, Airports, Intersections, or GPS location as end point options.
- Trip Settings – right toggle to select Route Type, Vehicle Type, and to specify any particular avoidance preferences

Flow Options

From "Find Location" screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., Navigation)
- NVK – scroll up or down to select menu options, drill into menu options for additional options, or go back to the previous screen (i.e., Navigation)
- OK – selects the highlighted menu option.
- RSK – access options such as Reverse Trip, Clear All Fields, and Help. Clear All Fields removes both the start and destination address.
- Keypad – pushing 1 – 5 on the keypad will select the corresponding menu item

Home (Navigation Sub-Menu)

Overview

The "Home" feature in VZ Navigator is used to navigate to a previously entered home address from the current GPS location.

Entry

The navigate "Home" screen can be accessed by:

- Select Navigation from the Home Screen and then select "Home"
- Select Navigation from the Home Screen and then press "3" on the keypad

Contents

When the "Home" menu item is selected from the Navigation screen, the application automatically begins routing to the home address from the current GPS location.

Flow Options

From "Home" screen, the user can press any one of the following keys:

- CLR – cancels request and returns to the previous screen (i.e., Navigation)

Work (Navigation Sub-Menu)

Overview

The "Work" feature in VZ Navigator is used to navigate to a previously entered work address from the current GPS location.

Entry

The navigate to "Work" screen can be accessed by:

- Select Navigation from the Home Screen and then select "Work"
- Select Navigation from the Home Screen and then press "4" on the keypad

Contents

When the "Work" menu item is selected from the Navigation screen, the application automatically begins routing to the "Work" address from the current GPS location.

Flow Options

From "Work" screen, the user can press any one of the following keys:

- CLR – cancels request and returns to the previous screen (i.e., Navigation)

Real-Time Navigation Screen

Overview

Real-time navigation provides the turn-by-turn driving directions with audible announcements automatically timed with your GPS position.

Route preview is also available from the Real-Time Navigation screen. Routes can be previewed with limited cartography or as vector maps with turns graphically illustrated on the map.

Entry

Real-time navigation is started by requesting a route with Find Destination, Plan Trip, or by selecting the Home or Work shortcuts.

Contents

The real-time navigation screen shows current street, distance to upcoming turn and upcoming turn direction, subsequent turn distance and direction, overall route length and GPS strength. The user can also retrieve a FollowMe Map that shows GPS position on a map.

Flow Options

From the Real-Time Navigation screen, the user can press any of the following buttons:

- LSK – retrieve a FollowMe Map
- CSK – repeat audible directions with the "Talk" button
- RSK – opens the "Options" dialog for access to Local Search, Calling features, Location Info, Text Directions, Audio Settings, and Help
- CLR – returns back to the real-time navigation screen

FollowMe Map

Overview

FollowMe Maps provide a map image with the route highlighted and a cursor that indicate current GPS position along the route. The FollowMe Map also shows a compass indicating current direction.

Entry

FollowMe Maps can be access from within a real-time navigation session. To retrieve a FollowMe Map:

- Press Map from the real-time navigation screen

Contents

The following functionality is available in the FollowMe Map screen:

- Zoom – select map zoom levels ranging from level 1 to 10
- Pin point a spot on the map – use the ID cursor to mark a spot, get the distance to that location, zoom in to the marked spot, do a local search to find businesses or points of interest around the marked location
- Local Search – find points of interest and business along the route, at your current GPS location, in your route direction
- Location Info – retrieve latitude and longitude information as well as accuracy, speed and time information about your position

Flow

From the FollowMe Map screen, the user can press any of the following buttons:

- LSK – back to the navigation session
- CSK – opens the zoom dialog and enables selection of zoom level from 1 – 10
- RSK – opens the "Option" dialog for access to Local Search, Location Info, and Help
- CLR – returns back to the real-time navigation screen

Real-Time Navigation Options

Overview

From within the Real-Time navigation screen, the use can access additional options to find nearby points of interest, determine location information, preview the routing directions in text mode, choose where audio output is played, or get additional help on the navigation functionality.

Home > Navigation > Plan Trip (or) Find Destination > Navigate > Options				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Local Search	-	OK	Scroll up	Cancel
Call			Scroll down	
Location Info				
Text Directions				
NAV Audio Ouput				
Help				

Entry

The Real-Time Navigation Options menu is accessed from within the Real-Time Navigation screen. To access real-time navigation options:

- Press "Options" with the RSK on the Real-Time Navigation screen

Contents

The Real-Time Navigation Options page displays the following menu items:

- Local Search – enables a search of points of interest and businesses "Around My Location" or "Along My Route"
- Call – if the navigation directions were to a place of interest, business, or favorite that has a favorite stored, this menu item enables the user to call the destination with the stored phone number. Alternatively, the user can enter a new number.
- Location Info - displays standard latitude, longitude, time, altitude, speed, and other location information.
- Text Directions – provides step by step text directions with turn symbols of the route
- NAV Audio Output – allows a choice of Speaker, Headset, Hands Free Kit, or Handset
- Help

Flow

From the Real-Time Navigation Options screen, the user can press any of the following buttons:

- NVK – to scroll up or down among the menu items
- Keypad – to enter a number that corresponds to a menu item
- CSK – to select a menu item
- CLR – to cancel and return to the Navigation screen
- RSK – to cancel and return to the Navigation screen

Local Search

Overview

Local Search enables users to find points of interest and business listings based on proximity to their GPS location, along a route, or near a particular address.

Home > Local Search				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Category	Set	Find	Scroll up	Options
What			Scroll down	
Where			Back	
			Drill in	

Entry

The Local Search main screen can be accessed:

- From the Home screen by selecting "Local Search"
- From the Home screen by pressing "2" on the keypad
- From the Real-Time Nav screen by selecting "Options" and then "Local Search"
- From a Map by selecting "Options", and then "Local Search"

Contents

The Local Search main screen contains the following:

- Category – choose from a list of categories such as Eating & Drinking, Gas Stations, ATMs, etc. Sub-categories such as Restaurant Cuisine are also available.
- What – enter the name of the place to search for.
- Where – by default this box is set to "My GPS Location", but options are also available such as "In My Direction", "Address", "Airport", "Intersection", or use a previously entered location from "Recent Searches" or "Favorites".
- Options – the options menu provides access to a "My Searches" link, "Clear All" function, and "Help" screen.

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., Home).
- CSK – initiate a Local Search with the currently entered search criteria
- Keypad – used to add text to the What field; otherwise key presses are ignored.
- RSK – access options such as My Searches, Clear All, and Help
- LSK – used to select options in the Category and Where text boxes

Local Search Results

Overview

The Local Search Results page displays the results of a search ranked by proximity to the location entered in the "Where" screen on the Local Search entry page. The following options are displayed for the Local Search Results:

Home > Local Search > Results				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Search Results	NAV	VIEW	Scroll up	Options
			Scroll down	
			Drill in	

Entry

The Local Search Results page can be accessed by:

- Completing a Local Search from the Home screen
- Any other Navigation or Mapping function that provides entry into Local Search

Contents

The Local Search Results page displays the following menu options:

- NAV – select a result from the search list, and navigate to it
- VIEW – select a result from the search list, view the details such as address and phone number, and then get a map of its location
- Options – access menu of additional options such as Get Directions, Map, Local Search, Add to Favorites, Call Place, Start Trip Here, and Help

Flow Options

From this screen, the user can press any of the following keys:

- LSK – Navigate to the selected place in the results
- CSK – View details of the selected place and then get a map
- NVK – Toggle right to view details of the selected place and then get a map
- RSK – Access options such as Get Directions, Map, Call, etc.
- CLR – Return to the Local Search screen

Map Local Search Result

Overview

Once Local Search Results are displayed, the user can view details of the place and also retrieve a map of its location. The Map screen displays the following options functions:

Home > Local Search > Results > View > Map				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Map	Mode	ZOOM	Pan up	Options
			Pan down	
			Pan left	
			Pan right	

Entry

The location map screen is accessed by:

Conducing a Local Search from the Home screen, selecting a search result, selecting View, and then pressing Map

Conducting a Local Search from the Home screen, selecting a search result, selecting Options, and then selecting Map

Accessing Local Search from any other entry point in the application and then using either one of the above options

Contents

The Map page displays the following functions:

- Mode – switch between zoom and ID-Cursor mode.
- Zoom – select a map zoom level between 1 and 10
- ID-Cursor – place the cursor anywhere on the map and the focus in on that area
- Options – access functions for getting directions, centering the map, finding additional places in the proximity of the current place, add the place to favorites, call the place, or start a trip from the place

Flow Options

From this screen, the user can press any of the following keys:

- LSK – access the Mode feature
- CSK – Zoom or place the cursor, depending on the Mode
- RSK – access the options
- NVK – pan the map right, left, up, and down
- CLR – go back to the previous screen (i.e., View details of place)

Map Options

Overview

Map options enable the user to get directions to a mapped location, perform a local search around a particular location, add a place to the favorites list, call a place, or start a trip from a mapped location. The following functions are available:

Home > Local Search > Results > View > Map > Options

Main Menu	LSK	CSK	NVK	RSK
Get Directions To	-	OK	Scroll up	Cancel
Center Map On			Scroll down	
Local Search				
Add to Favorites				
Call Place				
Start Trip Here				
Help				

Entry

The Map Options screen is accessed by:

- Performing a Local Search, selecting a search result, viewing the details of the search result and then requesting a map.
- Performing a Local Search, selecting a search result, selecting options, and then requesting a map
- Requesting a Map from the Home screen and then selecting options
- Accessing the Maps functionality from any other part of the application and then selecting options

Contents

The Map Options screen contains the following functionality:

- Get Directions To – gets turn-by-turn driving directions to the location from a current GPS location or other starting point
- Center Map On – adjusts the map display based on a choice of "Place and Search Center", "Place Only", or "Search Center Only"
- Local Search – performs a local search in the proximity of the selected search result or mapped location
- Add to Favorites – saves the location and location details into the Favorites list
- Call Place – initiates a phone call to the location based on the number retrieved from the Local Search result
- Start Trip Here – plan a trip by using the search result or mapped location as a starting point and enter another destination address
- Help – get help on the functions in Map display

Flow Options

From the Map Options menu, the user can press any of the following buttons:

- CSK – selects the highlighted menu item
- Keypad – selects the item in the menu list that corresponds to the keypad number
- RSK – cancels the operation and returns to the Map display
- CLR – cancels the operation and returns to the Map display

My Places Main Screen

Overview

The My Places feature enables the user to quickly access previous search results, Favorites, and stored locations for Home and Work. The following functionality is available from the My Places screen:

Home > My Places				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Recent Searches	-	OK	Scroll up	Options
Favorites			Scroll down	
Home			Back	
Work			Drill in	

Contents

The My Places main screen is the first menu within the My Places feature, and it contains the following menu options:

1. Recent Searches
2. Favorites
3. Home
4. Work

Entry

The My Places main screen can be accessed:

- From the Home screen by selecting My Places or pressing the number 3.

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., Home).
- OK – this will select the highlighted menu option.
- Number – this will select the menu option with that number if one exists.
- RSK – displays the options menu where Help on this feature can be found

My Places, Recent Searches

Overview

The Recent Searches functionality under My Places provides the end user with quick access to places that have been searched for previously.

Home > My Places > Recent Searches				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
List of items	Sort	View	Scroll up	Options
			Scroll down	
			Back	
			Drill in	

Entry

To access Recent Searches:

- Select My Places from the Home screen, then select Recent Searches

Contents

The Recent Searches page displays the following:

- List of previous search items
- Sort – sorts the list alphabetically or by most recent search result
- Go to – enables sorting of the list by entering letters or numbers
- View - view the details of a search result, then get a map, driving directions, or access advanced options
- Options – get directions, map the location, perform a local search in the proximity of the place, add the place to Favorites, call the place, or start a trip from the place.

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., My Places).
- CSK – this will select the highlighted menu option.
- Keypad– this will sort the list by the letter or number entered
- RSK – displays the options menu where Help on this feature can be found

My Places: Favorites

Overview

The Favorites list provides a place to store items that will be accessed frequently in the future.

Home > My Places > Favorites				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Recent Searches	-	OK	Scroll up	Options
Favorites			Scroll down	
Home			Back	
Work			Drill in	

Entry

To access Favorites:

- Select My Places from the Home screen, then select Favorites

Contents

The Favorites page displays the following:

- List of saved items
- Add New Favorite – enables entry of a new place
- Sort – sorts the list alphabetically or by most recent entry
- Go to – enables sorting of the list by entering letters or numbers
- View - view the details of a search result, then get a map, driving directions, or access advanced options
- Options – get directions, map the location, perform a local search in the proximity of the place, add the place to Favorites, call the place, or start a trip from the place.

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., My Places).
- CSK – this will select the highlighted menu option.
- Keypad– this will sort the list by the letter or number entered
- RSK – displays the options menu where Help on this feature can be found

My Places, Home

Overview

Home is a special type of Favorite that is provided to enable easy routing back home from any location with the minimum amount of button clicks.

Home > My Places > Home				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Home Address	NAV	MAP	-	Options

Entry

To access the Home favorite:

- Select My Places from the Home Screen, and then select Home

Contents

Once the Home favorite is selected the following functionality is available:

- Address and contact information for Home
- Call – press the Send key to call Home
- Nav – press the Nav key to navigate Home from your current GPS location
- Map – press the Map key to get a Map of your Home's location
- Options – access search, advanced trip planning, and editing features

Flow Options

From this screen, the user can press any one of the following keys:

- SEND – initiates a phone call
- LSK – navigates home from current GPS location
- CSK – gets a map of home address
- RSK – accesses advanced options
- CLR – returns to the My Places screen

My Places: Work

Overview

Work is a special type of Favorite that is provided to enable easy routing back home from any location with the minimum amount of button clicks.

Home > My Places > Home

Main Menu	LSK	CSK	NVK	RSK
Work Address	NAV	MAP	-	Options

Entry

To access the Work favorite:

- Select My Places from the Home Screen, and then select Work

Contents

Once the Work favorite is selected the following functionality is available:

- Address and contact information for Work
- Call – press the Send key to call Work
- Nav – press the Nav key to navigate Work from your current GPS location
- Map – press the Map key to get a Map of your Work's location
- Options – access search, advanced trip planning, and editing features

Flow Options

From this screen, the user can press any one of the following keys:

- SEND – initiates a phone call
- LSK – navigates Work from current GPS location
- CSK – gets a map of Work address
- RSK – accesses advanced options
- CLR – returns to the My Places screen

Recent Search and Favorites Options

Overview

From the Recent Searches Favorites and Favorites menus, the "Options" RSK provides advanced navigation options.

Home > Navigation > Find Destination > Recent Searches (or) Favorites > Options				
Main Menu	**LSK**	**CSK**	**NVK**	**RSK**
Get Directions To...	-	OK	Scroll up	Cancel
Map			Scroll down	
Local Search				
Add to Favorites...				
Start Trip Here...				
Help				

Entry

The advanced navigation "Options" screen can be accessed by:

- Select Navigation from the Home Screen, select Find Destination, select "Recent Searches" or "Favorites" from the "Find Location" menu, and then select "Options"
- Select Navigation from the Home Screen, select Find Destination, press "1" or "2" from the "Find Location" menu, and then select "Options"

Contents

The advanced navigation "Options" page displays several options:

- Get Directions To – enables navigation to the selected destination and also provides the user with access to Navigation Preferences.
- Map – downloads a map of the selected destination
- Local Search – enables the user to search for points of interest and business in the proximity of the destination
- Add to Favorites – enables the user to save the destination to their Favorites list
- Start Trip Here – enables the user to start a route from a recently entered destination or favorite to another address
- Help – provides an overview of the advanced navigation functionality

Flow Options

From the Address screen, the user can press any one of the following keys:

- NVK – scroll up or down through the list
- CSK – select item in the list
- RSK – return to the previous screen (i.e., Recents or Favorites)
- CLR – return to the previous screen (i.e., Recents or Favorites)
- Keypad – select menu item that corresponds to number in the list

Maps

Entry

The Maps functionality can be accessed:
From the Home screen by selecting Maps
From Navigation or Local Search by selecting Map

Contents

The Maps main screen contains a list with the header "Choose One:" and the following options:

1. Find Location – provides access to Recent Searches, Favorites, Address, Airport, and Intersection entry options
2. Where Am I? – gets a map of your current GPS location
3. FollowMe Map – gets a map your current GPS location and includes a cursor that tracks your position on the map

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., Home).
- CSK – this will select the highlighted menu option.
- Keypad – pressing a number will select the corresponding menu item
- RSK – access Options including Preferences and Help

Where Am I?

Overview

The Where Am I? function enables the user to quickly get a map of his current location.

Contents

The Where Am I? displays a map with the following functions:

- Mode – switch between Zoom and ID-Cursor
- Zoom – select a Zoom level between 1 and 10
- ID-Cursor – place the cursor on a point on the map
- Options – access Local Search, Add to Favorites, Start Trip Here, Location Info, and Help features

Entry

The Where Am I? screen can be accessed:

- From the Maps screen by selecting Where Am I? or pressing the number 2.

Flow Options

From this screen, the user can press any one of the following keys:

- CLR – this will return to the previous screen (i.e., Maps).
- CSK – Zoom or select a location with the Cursor
- RSK – access options
- NVK – pan the map left, right, up or down

It should be noted that the present invention may be embodied in forms other than the preferred embodiments described above without departing from the spirit or essential characteristics thereof. The specification contained herein provides sufficient disclosure for one skilled in the art to implement the various embodiments of the present invention, including the preferred embodiment, which should be considered in all aspect as illustrative and not restrictive; all changes or alternatives that fall within the meaning and range or equivalency of the claim are intended to be embraced within.

We Claim:

1. A portable electronic device comprising:

a display;

a plurality of rocker keys each rocker key being associated with a spatial direction;

a processor and

a memory, the memory including a plurality of instructions for execution by the processor and configured to cause the processor to:

display a user interface at the display, the user interface having a present state;

associate one or more of the rocker keys with a particular user command that is available to the user at the present state of the user interface;

display a plurality of arrows in the user interface, each arrow being associated with a spatial direction associated with a user command that is available to the user at the present state of the user interface.

2. The device of claim 1, wherein the device is a mobile telephone.

3. The device of claim 2, wherein the memory further comprises a navigation application.

4. The device of claim 1, wherein each of the plurality of rocker keys include a visible arrow that signifies a direction that the rocker key is associated with.

5. The device of claim 4, wherein the displayed arrows are displayed in the user interface in positions that are configured to indicate to the user the associated user command.

6. The device of claim 5, wherein the user interface includes a highlighted area, the highlighted area indicating a present user selection, and the displayed arrows are displayed around the highlighted area.

7. The device of claim 6, wherein:

the user interface includes a multi level menu and a plurality of items displayed therein;

the highlighted area indicates a selected item of the several items;

a left arrow is associated with a user command to traverse backward in the multi level menu;

a right arrow is associated with a user command to traverse forward in the multi level menu based on the current selected item; and

an up arrow is associated with a user command to select a higher menu item within the several displayed menu items;

a down arrow is associated with a user command to select a lower menu item within the several displayed menu items.

8. A method for presenting information to a user by utilizing a portable electronic device that comprises a display and a plurality of rocker keys, each rocker key being associated with a spatial direction, the method comprising:

display a user interface, the user interface having a present state;

associate each of one or more of the rocker keys with a particular user command that is available to the user at the present state of the user interface;

display a plurality of arrows in the user interface, each arrow being associated with a spatial direction associated with a user command that is available to the user at the present state of the user interface.

9. The method of claim 8, wherein the device is a mobile telephone.

10. The method of claim 8, wherein each of the plurality of rocker keys includes a visible arrow that signifies a direction that the rocker key is associated with.

11. The method of claim 10, wherein the displayed arrows are displayed in the user interface in positions that are configured to indicate to the user the associated user command.

12. The method of claim 11, further comprising:

highlighting an area of the interface, the highlighted area indicating a present user selection; and

displaying arrows around the highlighted area.

13. The method of claim 12, further comprising:

displaying a plurality of items within a multi level menu at the user interface, wherein the highlighted area indicates a selected item of the several items

associating a left arrow key of the rocker keys with a user command to traverse backward in the multi level menu;

associating a right arrow key of the rocker keys with a user command to traverse forward in the multi level menu based on the current selected item;

associating a up arrow of the rocker keys with a user command to select a higher menu item within the several displayed menu items; and

associating a down arrow key of the rocker keys with a user command to select a lower menu item within the several displayed menu items.

14. The method of claim 8, further including the steps of:

associating two user commands with a single rocker key wherein no more than one user command is valid at any given state, one of the commands being valid in the present state;

associating a different color with each of the two user commands;

displaying the arrow associated with the given rocker key in a color associated with the command of the two commands that is valid in the present state.

15. A portable electronic device comprising a display, a key pad capable of entering letters, a processor and a device readable medium, the device readable medium comprising a plurality of instructions for execution by the processor and configured to cause the processor to:

receive an entry of a first text string defining a search item;

send the first text string to a remote server;

save the first text string at the portable electronic device;

receive an entry of a short sequence of letters;

display the short sequence of letters on the display;

perform a search in the portable electronic devices memory based on the short sequence of letters;

determine whether the short sequence of letters match the beginning letters of the first text string; and

upon a positive determination, automatically complete the short sequence of letters by displaying the rest of the first text string immediately after the short sequence of letters.

16. The device of claim 15, wherein the portable electronic device is a mobile telephone.

17. The device of claim 16, wherein the instructions are a part of a navigation application and the first text string is a location.

18. The device of claim 17, wherein the first text string is an address.

19. The device of claim 17, wherein the instructions further cause the processor to receive a verification that the first text string is valid from the remote server, wherein the first text string is saved at the portable electronic device only if said verification is received.

20. A portable electronic device comprising:

a display;

a keypad configured to allow the entry of letters;

a processor and

a memory, the memory including a plurality of instructions for execution by the processor and configured to cause the processor to:

allow the user to enter a first text string defining a search item;

send the first text string to a remote server;

save the first text string at the portable electronic device;

allow the user to enter a short sequence of letters;

display the short sequence of letters on the display;

perform a search in the portable electronic devices memory based on the short sequence of letters;

determine that the short sequence of letters matches the beginning letters of the first text string; and

automatically complete the short sequence of letters by displaying the rest of the first text string immediately after the short sequence of letters.

21. The device of claim 20, wherein device is a mobile telephone.

22: The device of claim 21, wherein the first text string is an address.

23. The device of claim 21, wherein the instructions further cause the processor to receive a verification that the first text string is valid from the remote server, and wherein the first text string is saved at the portable electronic device only if said verification is received.

24. A portable electronic device comprising a display, a plurality of rocker keys including at least an up and a down key, a processor and a device readable medium, the device readable medium comprising a plurality of instructions for execution by the processor and configured to cause the processor to:

display a first information set at the display;

display an indication that a second information set is available;

receive a command from the user; and

display the second information set, by progressively sliding the second information set across the display so that it appear that the second information set is dragged over the first information set,

wherein the first and second information sets are related.

25. The device of claim 24, wherein the sliding of the second information set is displayed in such a way as to remind the user of the user of the sliding of a vertical window blind over window.

26. The device of claim 24, wherein the command received from the user is a press of the up or down rocker key, and the sliding of the second information set is performed by sliding the second information set vertically over the first.

27. The device of claim 26, wherein the direction in which the second information set is slid is the same as the direction associated with the pressed rocker key.

28. The device of claim 27, wherein the indication that a second information set is available includes an arrow which is in the same direction as the rocker key which is to be pressed to bring up the second set of information.

29. The device of claim 28, wherein the instructions are configured to further cause the processor to:

display a second indication that the second information can be removed;

receive a second command;

display the first information set, by progressively sliding the first information set into view as to appear the second information set is being slid away from the first information set in order to reveal the first information set from under the second information set.

30. The device of claim 24, wherein the instructions are part of a navigation application executing at the portable device, and the first and second sets of information sets comprise driving directions.

31. The device of claim 30, wherein the second information set comprises driving directions that are to be performed after the driving directions comprised in the first information set are performed.

32. A portable electronic device comprising:

a display;

a plurality of rocker keys each rocker key being associated with a spatial direction, the plurality of rocker keys including at least an up and a down key;

a processor and

a memory, the memory including a plurality of instructions for execution by the processor and configured to cause the processor to:

display a first information set at the display;

display an indication that a second information set is available;

receive a command from the user; and

display the second information set, by progressively sliding the second information set across the display so that it appears that the second information set is dragged over the first information set,

wherein the first and second information sets are related.

33. The device of claim 32, wherein the sliding of the second information set is displayed in such a way as to remind the user of the user of the sliding of a window blind.

34. The device of claim 32, wherein the command received from the user is a press of the up or down rocker key, and the sliding of the second information set is performed by sliding the second information set vertically over the first.

35. The device of claim 34, wherein the direction in which the second information set is slid is the same as the direction associated with the pressed rocker key.

36. The device of claim 35, wherein the indication that a second information set is available includes an arrow that is in the same direction as the rocker key which is to be pressed to bring up the second set of information.

37. The device of claim 36, wherein the memory further comprises instructions which cause the processor to:

display a second indication that the second information can be removed;

receive a second command;

display the first information set, by progressively sliding the first information set into view as to appear the second information set is being slid away from the first information set in order to reveal the first information set from under the second information set.

38. The device of claim 32, wherein the instructions are part of a navigation application executing at the portable device, and the first and second sets of information sets comprise driving directions.

39. The device of claim 38, wherein the second information set comprises driving directions that are to be performed after the driving directions comprised in the first information set are performed.

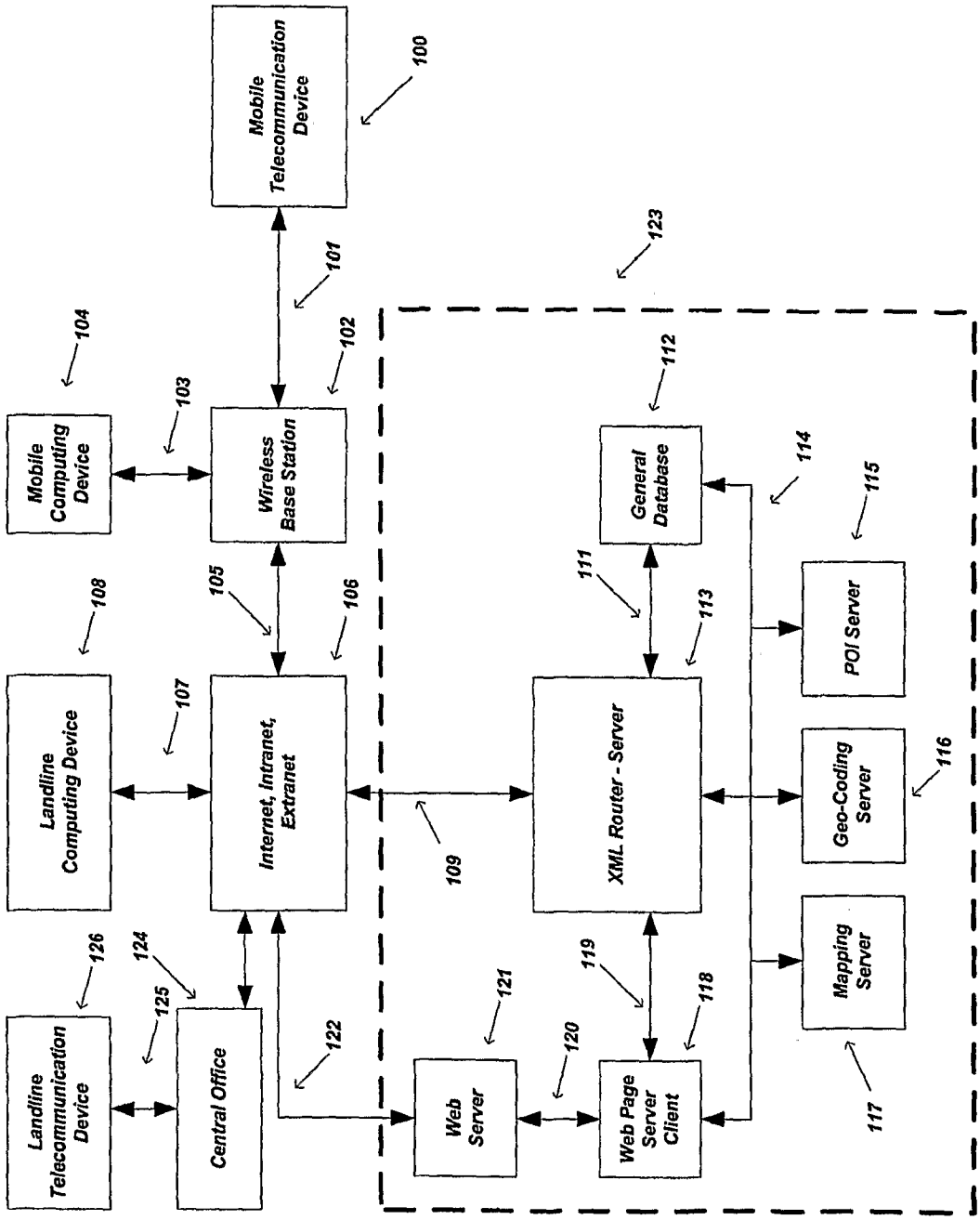
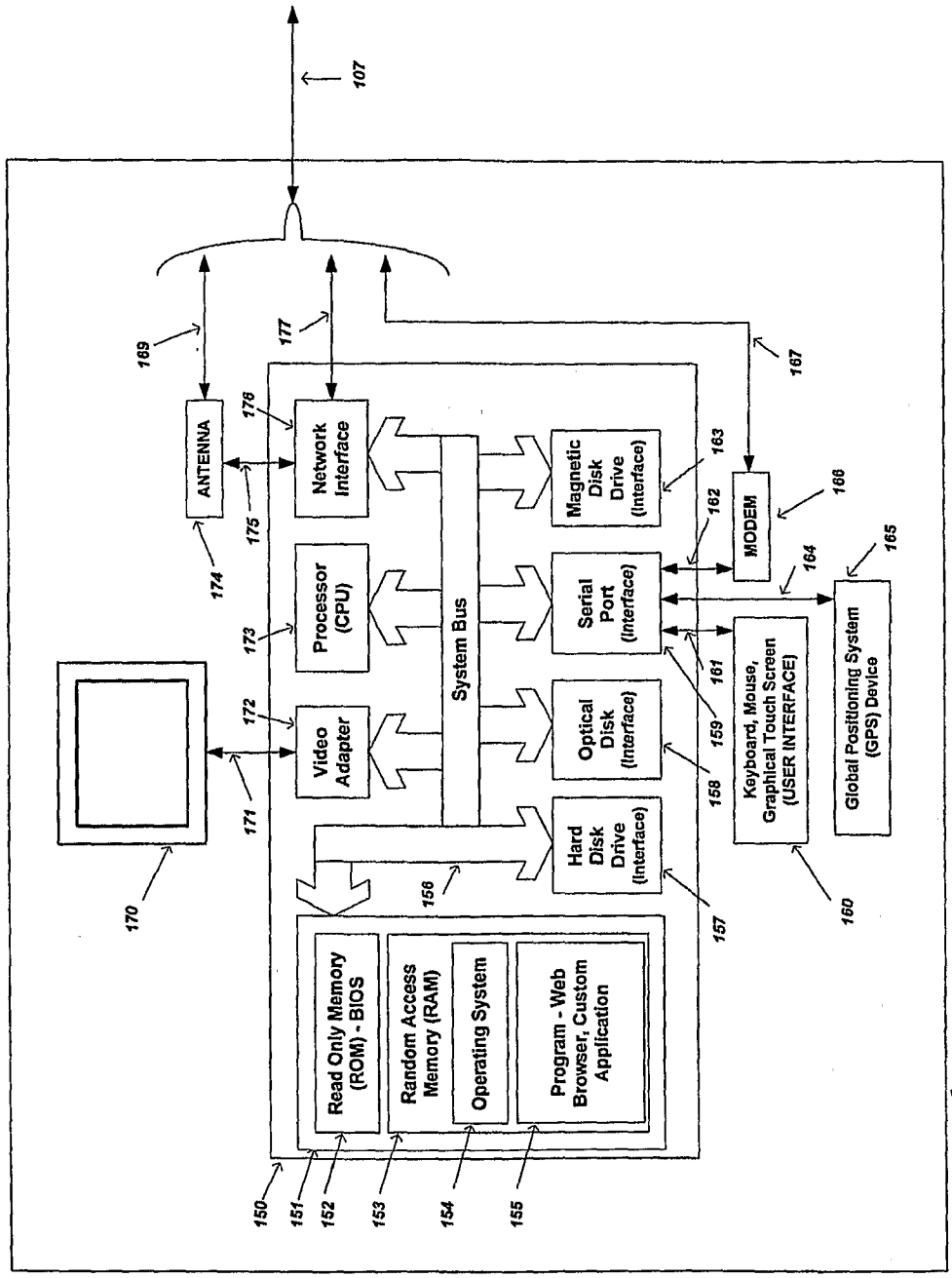

Mobile Telecommunication Device
100
101
123
104
103
102
112
Mobile Computing Device
Wireless Base Station
General Database
114
115
108
105
106
111
113
POI Server
Landline Computing Device
107
Internet, Intranet, Extranet
XML Router - Server
Geo-Coding Server
116
109
126
124
125
119
121
118
Mapping Server
Landline Telecommunication Device
Central Office
122
120
Web Server
Web Page Server Client
117

FIG. 1


107
169
177
167
ANTENNA
Network Interface
Magnetic Disk Drive (Interface)
MODEM
Processor (CPU)
System Bus
Serial Port (Interface)
Video Adapter
Optical Disk (Interface)
Keyboard, Mouse, Graphical Touch Screen (USER INTERFACE)
Global Positioning System (GPS) Device
Hard Disk Drive (Interface)
Read Only Memory (ROM) - BIOS
Random Access Memory (RAM)
Operating System
Program - Web Browser, Custom Application
150
151
152
153
154
155
156
157
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170
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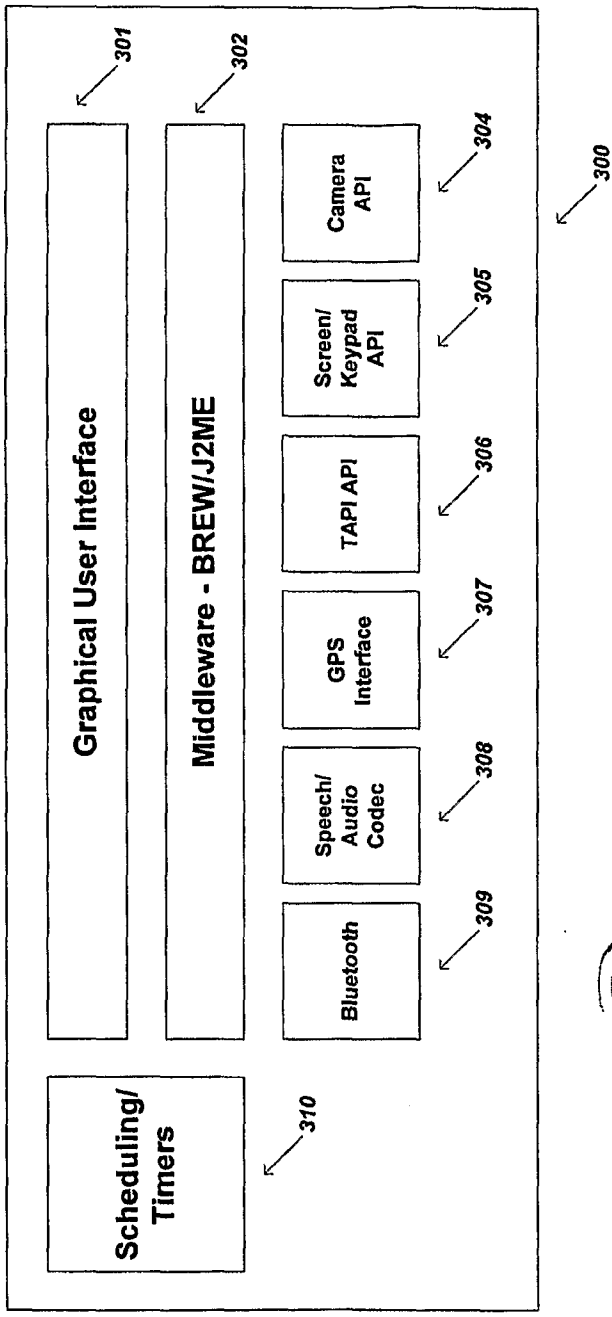
172
173
174
175
176
108

FIG. 2


Graphical User Interface
301
Middleware - BREW/J2ME
302
Camera API
304
Screen/ Keypad API
305
TAPI API
306
GPS Interface
307
Speech/ Audio Codec
308
Bluetooth
309
Scheduling/ Timers
310
300

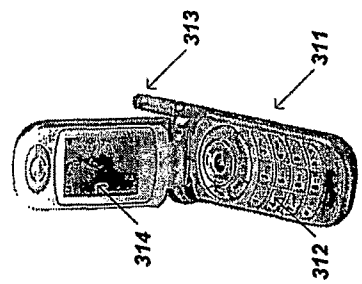

313
311
314
312

FIG. 3

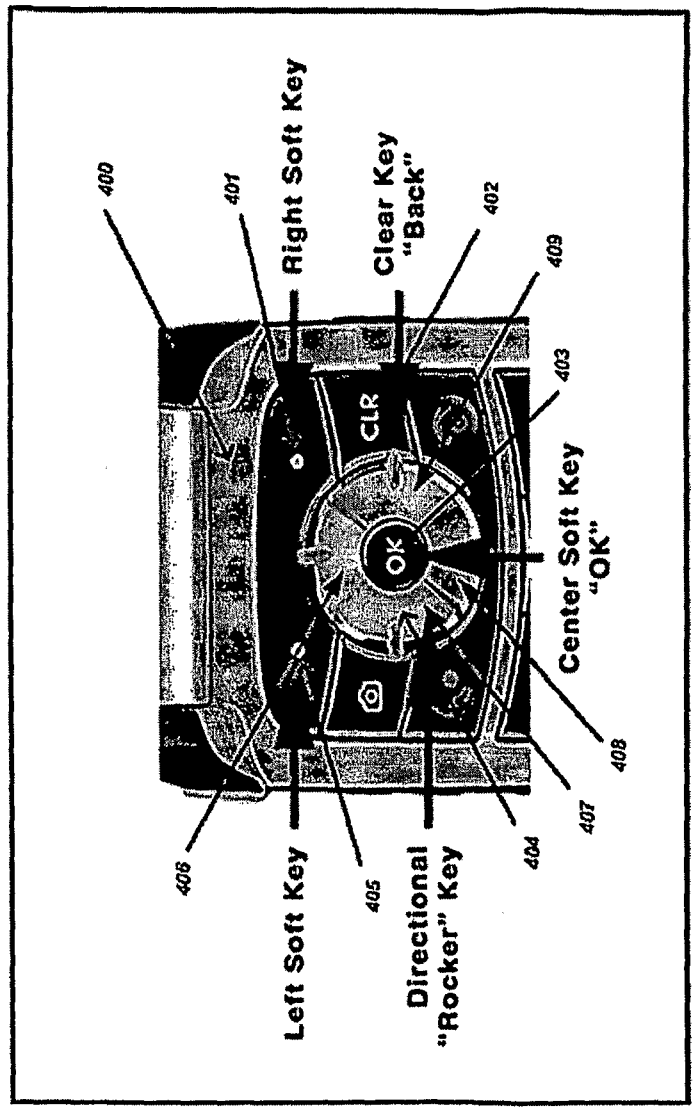

400
401
Right Soft Key
Clear Key
"Back"
402
409
403
CLR
OK
Center Soft Key
"OK"
408
407
404
406
405
Left Soft Key
Directional
"Rocker" Key

FIG. 4

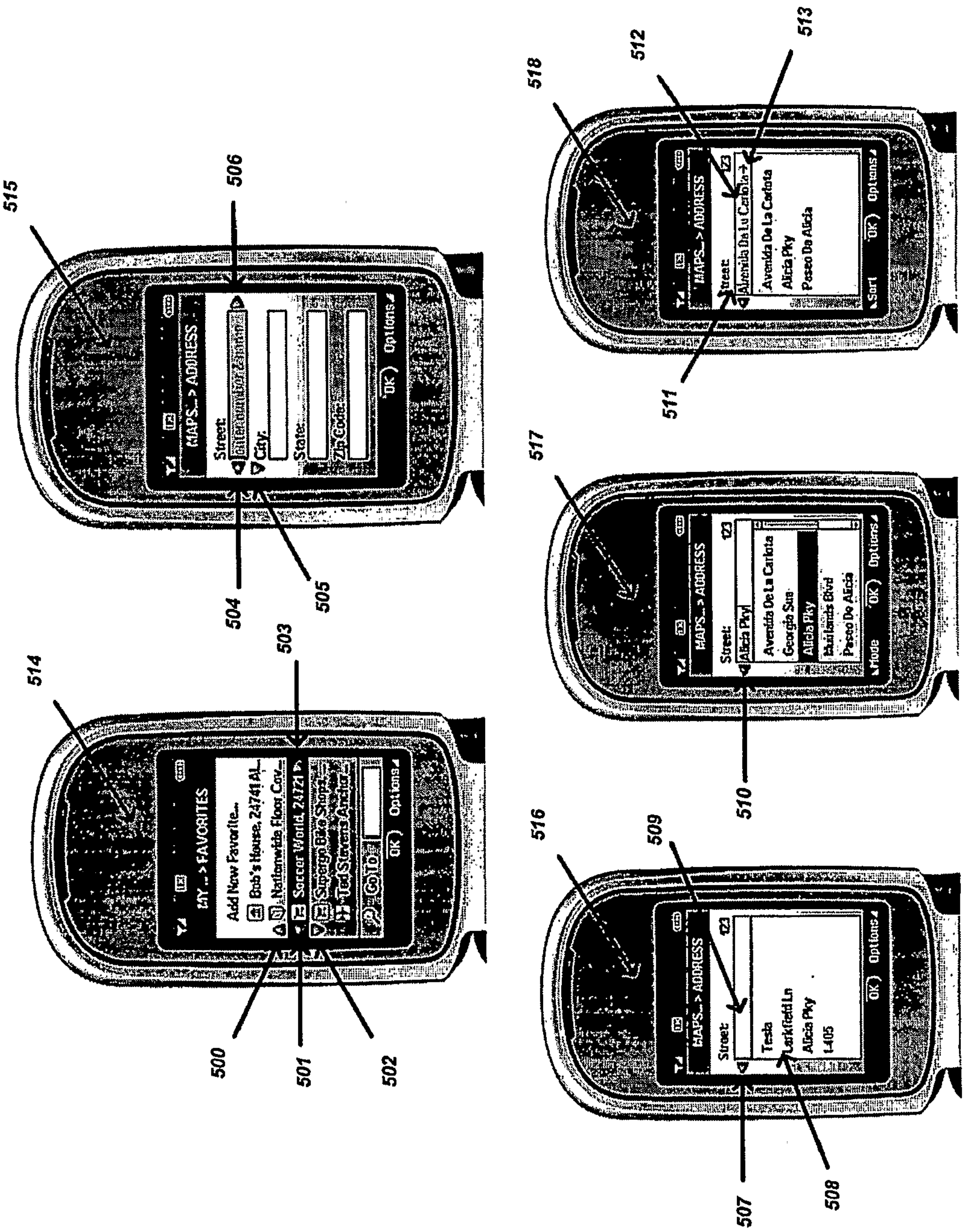

514
515
500
501
502
503
504
505
506
516
517
518
507
508
509
510
511
512
513

FIG. 5

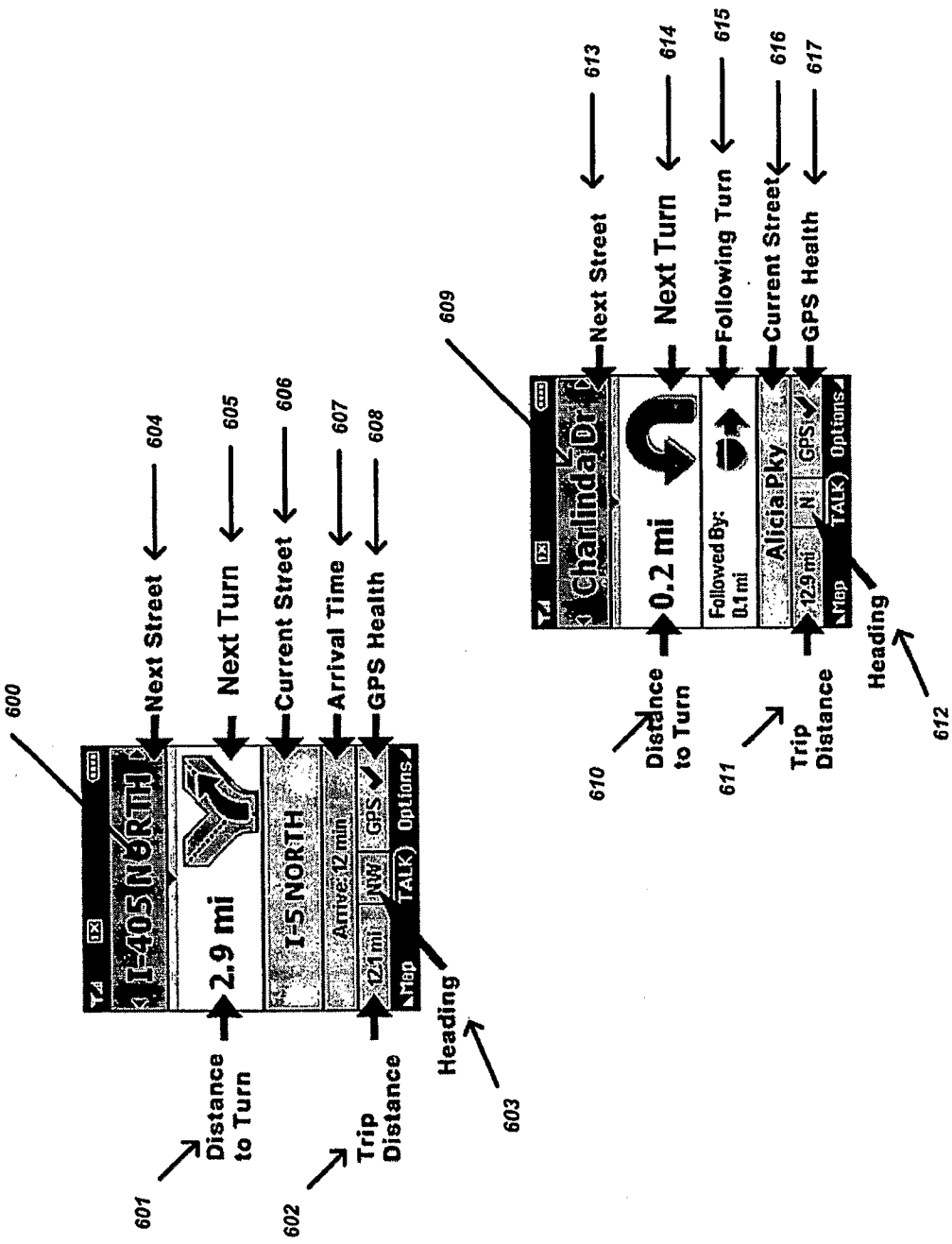

600
Next Street
604
Next Turn
605
Current Street
606
Arrival Time
607
GPS Health
608
I-405 NORTH
2.9 mi
I-5 NORTH
Arrive:12 min
12.1 mi
GPS
Options
TALK
Map
Distance to Turn
601
Trip Distance
602
Heading
603
609
Next Street
613
Next Turn
614
Following Turn
615
Current Street
616
GPS Health
617
Charlinda Dr
0.2 mi
Followed By:
0.1 mi
Alicia Pky
12.9 mi
N
GPS
Options
TALK
Map
Distance to Turn
610
Trip Distance
611
Heading
612

FIG. 6

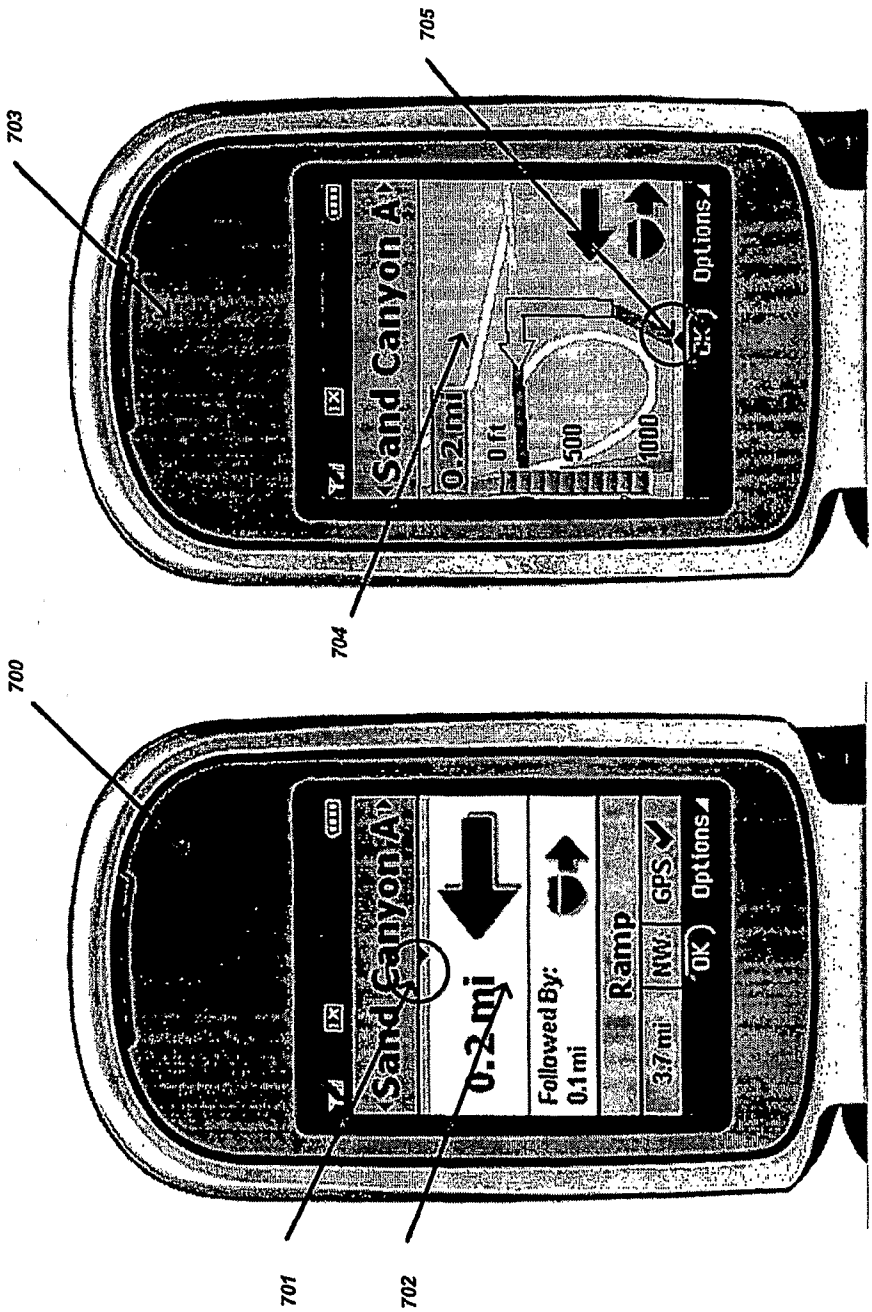

700
701
702
703
704
705
Sand Canyon A
0.2mi
Followed By:
0.1mi
Ramp
3.7mi
NW
GPS
OK
Options
0.2mi
0 ft
500
1000

FIG. 7

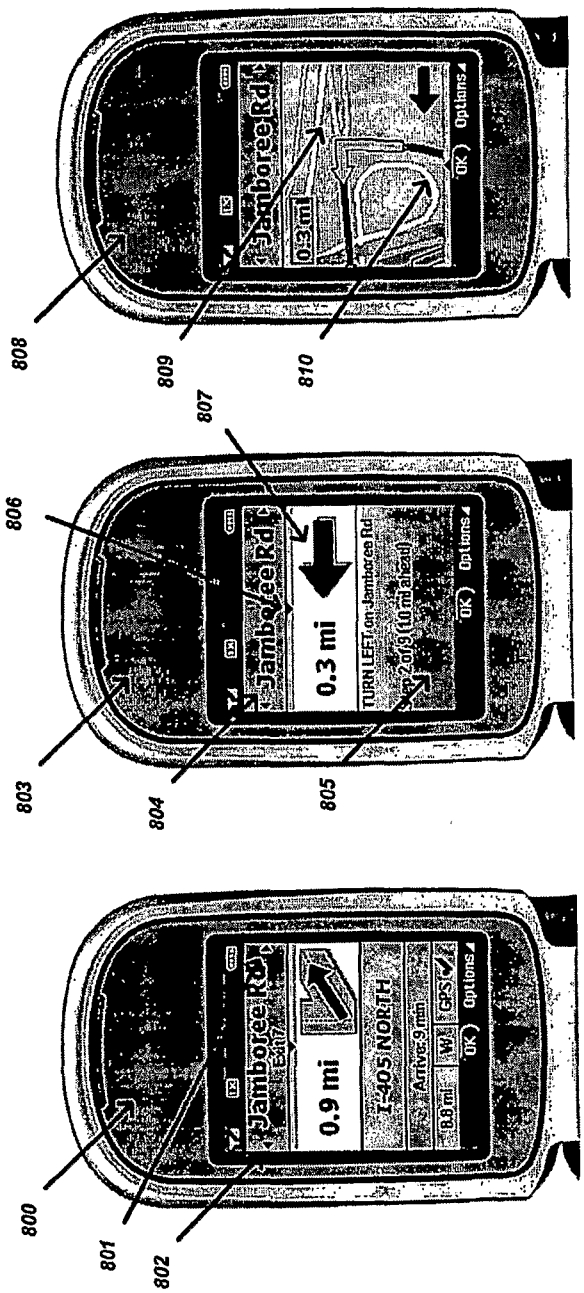

Jamboree Rd
0.3 mi
Options
OK
808
809
810
807
806
Jamboree Rd
0.3 mi
TURN LEFT on Jamboree Rd
Options
OK
803
804
805
Jamboree Rd
Exit 7A
0.9 mi
I-405 NORTH
Arrive 9:min
0.8 mi
GPS
Options
OK
800
801
802

FIG. 8