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(54) Title: METHOD AND DEVICE FOR GENERATING A JOURNEY STATUS MESSAGE

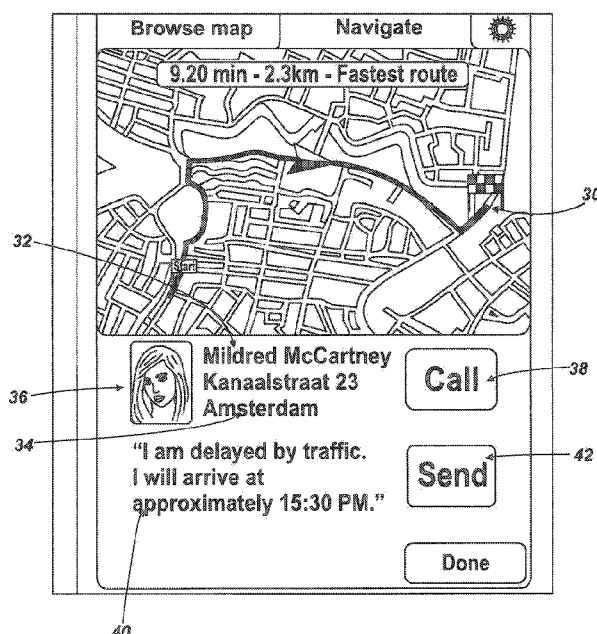


Fig. 2

(57) Abstract: A navigation device automatically generates a journey status message using a display operable to display a route destination and a visual destination. The device is operable to generate a journey status message and send the journey status message to the visual destination informing the visual destination of an estimated time of arrival. In a method for automatically generating a journey status message from a navigation device, a route destination and a visual destination are displayed on a touch sensitive display. A graphical icon is provided on the display such that a user can select to send a journey status message to a device associated with the visual destination informing the visual destination of an estimated time of arrival. The journey status message is then sent to the device associated with the visual destination.

**METHOD AND DEVICE FOR GENERATING  
A JOURNEY STATUS MESSAGE**

**BACKGROUND OF THE INVENTION**

**1. Field of the Invention:**

[0001] The present invention relates to a method and device for automatically generating a journey status message on a navigation device.

**2. Description of the Related Art:**

[0002] Navigation devices based on GPS (global positioning system) are well known and are widely employed as in-car navigation systems. Reference may be made to devices that integrate a GPS receiver into a computing device programmed with a map database and that can generate navigation instructions on a display, such as the TomTom Go™ device.

[0003] Moreover, the computing device is capable of determining a route between start and destination addresses, which can be input by a user of the computing device. Reference may also be made to the Navigator series software from the present assignee, TomTom B.V. This is software that, when running on a PDA (such as a Compaq iPaq®) connected to the external GPS receiver, enables a user to input to the PDA a start and destination address. The software then calculates the best route between the two end-points and displays instructions on how to navigate that route.

[0004] The navigation device may typically be mounted on the dashboard of a vehicle, but may also be formed as part of an on-board computer of the vehicle or car radio. The term navigation device refers to a device that enables a user to navigate to a pre-defined destination. The device may have an internal system for receiving location data, such as a GPS receiver, or may merely be connectable to a receiver that can receive location data.

[0005] By using positional information derived from the GPS receiver, the computing device can determine at regular intervals its position and can display the current position of the vehicle to the user. The navigation device may also i.e. memory

devices for storing map data and a display for displaying a selected portion of the map data.

[0006] Also, it can provide instructions how to navigate the determined route by appropriate navigation directions displayed on the display and/or generated as audible signals from a speaker, e.g., 'turn left in 100 m. Graphics depicting the actions to be accomplished, e.g. a left arrow indicating a left turn ahead, can be displayed in a status bar and also be superimposed upon the applicable junctions/turnings etc. in the map itself.

[0007] It is known to enable in-car navigation systems to allow the driver, whilst driving in a car along a route calculated by the navigation system, to initiate a route re-calculation. This is useful where the vehicle is faced with construction work, traffic or heavy congestion.

[0008] The selection of the route along which to guide the driver can be very sophisticated, and the selected route may take into account existing and predicted traffic and road conditions, historical information about road speeds, and the driver's own preferences for the factors determining road choice. In addition, the device may continually monitor road and traffic conditions, and offer to or choose to change the route over which the remainder of the journey is to be made due to changed conditions.

[0009] If a user is delayed on his way to a destination, e.g., because of traffic or road conditions, the driver often wants to inform someone that he/she will be arriving at a later time. However, calling or sending a message involves numerous problems. For example, the driver has to enter a phone number or look up the information of the contact he/she wants to call. For a text message or e-mail the driver must enter the telephone number or e-mail address and then type the message. This distracts the user while driving. It has been well documented that both hand held and hands free calling while driving deteriorates driving performance.

[0010] Moreover, while preparing the message or calling, the driver often does not have all available information available. For example, at what time will he arrive at the destination? How long will it take to park his car and walk to the final destination? Thus, there is a need in the prior art to provide a solution whereby a driver can be aided with the task of determining a delay and notifying about a delay,

**SUMMARY OF THE INVENTION**

[0011] It is therefore an aspect of the present invention to provide a portable GPS navigation device that displays map information and navigation instructions, wherein the device (a) offers the user the relevant information, i.e., contact details, estimated time of arrival; (b) automatically creates a “human” message containing the information; (c) offers the user a one-press option to notify the destination about delay; and/or (d) automatically sends a notification message when a delay occurs.

[0012] The device automates the process of notifying a person about a delayed arrival time. While driving the user has easy access to a feature that offers the name or description of the destination, e.g., the name of the contact. If available, a photo of the destination is visible, e.g., the person that the user is going to visit. In case of a contact from a phone or PDA, this photo can be retrieved from the contacts list. In one implementation, pressing a button on the screen starts a phone call to this destination. After tapping this button, the user directly starts calling the destination.

[0013] The device is capable of automatically generating a message. If the user is delayed, the message contains information about the delay, e.g. “I am delayed by traffic,” and the estimated arrival time, e.g. “I will arrive at approximately 15:30 PM.”

[0014] The message can be written in the first person. Further, the estimated arrival time is the best estimation of the arrival time taking into account the traffic, the time to park the car and to walk from the parking spot to the final destination if this information is available. If the user is not delayed, the message just contains the estimated time of arrival, e.g. “I am on my way. I will arrive at approximately 15:30 PM.”

[0015] Linked to the message is a button that sends the message to the destination. After tapping the button, the message is sent by SMS, or if SMS or the phone number is unavailable, it sends the message by e-mail. In the preferences menu of the device the user can choose to send the default for sending by SMS, e-mail, or some other message format. Thus, the present invention offers the user a quicker, easier and safer way to notify the destination about the arrival time.

[0016] In addition, the system can also generate messages and send them to specific recipients, based on the status of the current route. For example, in the preferences the user can indicate that the application automatically sends a message to his destination (contact, favorite, etc.) whenever he is delayed more than a certain amount of time, i.e., the application could be set to send automatic delay messages whenever the user is delayed more than 15 minutes. If the user is traveling to visit a contact and the route destination increases due to traffic on the route, a text message can be generated and sent to the mobile phone number associated with the contact informing them of the expected arrival time.

[0017] In addition to the message to the destination, the automatic delay message could be sent to other persons. Also, when the user is leaving, an automatically generated message can be sent by the user. After planning the route, the user can be offered a button to send a notification that he is leaving, e.g. "I have left from home and am traveling to meet you at Café Schiller. I expect to arrive at 15:30 PM."

[0018] In addition to sending messages to other people, the same mechanism could be used to automatically update the user's status on social networking sites such as Twitter or Facebook. Over time these status messages would build into a text based record of the user's movements.

[0019] According to these and other aspects of the present invention there is provided a method for automatically generating a journey status message from a navigation device, comprising the steps of displaying on a touch sensitive display a route destination and a visual destination, providing a graphical icon on the display that a user can select to send a journey status message to a device associated with the visual destination informing the visual destination of an estimated time of arrival, and sending a journey status message to the device associated with the visual destination.

The present invention further provides for a navigation device for automatically generating a journey status message including a processor for processing a route between two user-defined places, a position determination module for determining a position between the device and a route destination, and a display operable to display the route destination and a visual destination, wherein the device is operable to generate a journey

status message and send the journey status message to the visual destination informing the visual destination of an estimated time of arrival.

[0020] These and other features, aspects, and advantages of the present invention will become more apparent from the following detailed description of the preferred embodiment relative to the accompanied drawings, in which:

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[0021] Fig. 1 is a screen shot from a navigation device showing a 3-D map view and a status bar running along the bottom of the display;

[0022] Fig. 2 is a screen shot from the navigation device showing a description of the route and a visible destination.

[0023] Fig. 3 is a flowchart illustrating a method of the present invention.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

[0024] As will be described fully herein, the present invention can be applied to all mobile devices that have a positioning technology (GPS, GSM localization, WiFi localization), e.g. personal navigation systems, built-in navigation systems, mobile phones, PDAs. The present invention automates the process of notifying a person about an arrival time. While driving the user has easy access to a feature that offers the name or description of the destination, e.g., the name of the contact. A button starts a phone call to this destination. After tapping this button, the user directly starts calling the destination. An automatically generated message – if the user is delayed, the message contains information about the delay, e.g., “I am delayed by traffic” and the estimated arrival time, e.g., “I will arrive at approximately 15:30 PM.” The message is written in the first person. The estimated arrival time is the best estimation of the arrival time taking into account the traffic, the time to park the car and to walk from the parking spot to the final destination if this information is available. If the user is not delayed, the message just contains the estimated time of arrival (e.g. “I am on my way. I will arrive at approximately 15:30 PM”). Linked to this message is a button that sends the message to the destination. After tapping the button, the user directly sends the message to the destination. It sends the message by SMS or, if SMS or the phone number is unavailable,

it sends the message by e-mail. In the preferences the user can choose to send the default for sending by SMS or e-mail.

[0025] The present invention is implemented in a navigation device from TomTom B.V., such as the TomTom GO, TomTom ONE, TomTom XL, TomTom START, etc ("TomTom devices"). A navigation software application called NavCore is deployed on the TomTom devices and an application called Navigator on PDA's and phones. Navigator and NavCore have an internal GPS receiver. Navigator software can also run on a touch screen, i.e. stylus controlled, Pocket PC powered PDA device, such as the Compaq iPaq. It should be appreciated that it can be used with any device with a screen, input method and GPS (for example, phones, netbooks, PDA's and pocket PC's). It then provides a GPS based navigation system when the PDA is coupled with a GPS receiver. The combined PDA and GPS receiver system is designed to be used as an in-vehicle navigation system.

[0026] Navigation software, when running on the TomTom devices, results in a navigation device 10 that causes the normal navigation mode screen shown in FIG. 1 to be displayed. This view provides a route destination including driving instructions using a combination of text, symbols, voice guidance and a moving map. Key user interface elements include: a 3-D map 12 that occupies most of the screen. The map shows the user's car and its immediate surroundings, rotated in such a way that the direction in which the car is moving is always "up." Running across the bottom quarter of the screen is the status bar 14. The current location of the device, as the device itself determines using conventional GPS location finding and its orientation, as inferred from its direction of travel, is depicted by an arrow 16.

[0027] The route calculated by the device using route calculation algorithms stored in device memory as applied to map data stored in a map database in the device memory is shown as darkened path 18 superimposed with arrows giving the travel direction. On the darkened path 18, all major actions, e.g. turning corners, crossroads, roundabouts etc., are schematically depicted by arrows 22 overlaying path 18.

[0028] Status bar 14 also includes a schematic 24 depicting the next action, here a right turn. The status bar 14 also shows the distance to the next action, i.e. the right turn--and distance of 500 meters, as extracted from a database of the entire route calculated by

the device (i.e. a list of all roads and related actions defining the route to be taken). Status bar 14 also can show the name of the next road, in some cases, the name of the current road (not shown), the estimated time before arrival (not shown), the actual estimated arrival time 26 (10.52 am) and the distance to the destination 28 (13.6 Km).

[0029] While driving the user is offered the screen shown in Fig. 1. Tapping the right bottom of the screen brings the user to the screen shown in Fig. 2. Fig. 2 also gives an overview of the route shown at 30. Below the overview the description of a destination 32 is visible. As shown, the visual destination 32 is a contact from the contacts list of the phone/address book. The address 34 and photo 36 of the contact are retrieved from the contacts list. A graphical icon representing call button 38 is located to the right of visual destination 32. Pressing call button 38 immediately calls the phone number associated with the contact. A graphical icon representing send button 42 is also located on the screen display. When the user presses send button 42 a message 40 as noted to the left of the send button 42 is sent. Message 40 can be a SMS, but it should be appreciated that any other message types, e.g. MMS, email, buddy message, could be used to send the message to the recipient.

[0030] Fig. 3 is a flowchart 50 illustrating a method for implementing the automatic status messages according to the present invention. At processing block 52 the user plans their route and destination location. The system will check whether the destination location has a mobile phone number or e-mail associated with it at processing block 54. If it finds either, the user shall be prompted at processing block 56 to decide if they wish to send journey status messages to the designation.

[0031] As soon as the user begins to travel, i.e. once they start moving along the planned route, a message is generated at block 58, for example, stating “I have left <departure point> and am traveling to meet you at <destination>. I expect to arrive at <ETA>.” “Departure point” being the description of the departure point of the route, “destination” is the description of the destination of the route and “ETA” being the calculated time of arrival. The appropriate journey status message is sent at processing block 60.

[0032] While on route, changes to the ETA are tracked and upon a threshold value, set by the user in 15 min defaults, an additional message is sent to the destination.

If the user will arrive later than the previously communicated ETA, the message will state “I have been delayed. I should arrive around <ETA3>,” where <ETA3> is the new ETA.

[0033] There are other examples of automatically generated messages. If the user will arrive earlier than the previously communicated ETA, the message will state “I will arrive earlier than expected. I should arrive around <ETA2>,” (where <ETA2> is the new ETA). If the user abandons the route entirely, a message stating “I am afraid I will not be able to visit you after all.” will be sent.

[0034] If the recipient of the message has a similar system installed on their device then it would also be possible for the recipient to respond. For example, if they will be present at the <destination> at the <ETA> time, then they can send a reply that includes the location where they will be at this time. This message will be identified by the software running on the 1<sup>st</sup> user’s device (probably by using a specific string at the beginning of the message) and treated differently from normal messages received while the user drives. In the case of a response that indicates a different destination, the 1<sup>st</sup> user will be prompted to calculate a new route to the proposed new location.

[0035] In addition to the messaging aspects above, the same system can be used to automate the process of publishing information on social networking sites. Instead of generating SMS or e-mail messages as the bearer for messages, the system could communicate with a social networking site (e.g. Twitter) using a published Twitter API. The system would “log in” to the social networking site and then change the current status message for the user to a new string, describing their current location or destination. For example, a user on a long tour of Europe could set their device to update their status on Facebook once every day, the system would log onto Facebook and update the status of the user to state the city that they are currently staying in.

[0036] The user could configure such a system to update their status messages. For example, the system could be set up to upload a new message each time the user travels to another town. The system could also be linked to route planning of the navigation application. Each time the user plans a new route, a status message stating “on my way to <destination>” could be uploaded. When the user arrives a message stating “visiting <destination>” could be uploaded.

[0037] In addition, the system can also generate messages and send them to specific recipients, based on the status of the current route. If the user is traveling to visit a contact and the route destination increases due to traffic on the route, a text message can be generated and sent to the mobile phone number associated with the contact informing them of the expected arrival time. In addition to the message to the destination, the automatic delay message could be sent to other persons.

[0038] Also when the user is leaving, an automatically generated message can be sent by the user. After planning the route, the user can be offered a button to send a notification that he is leaving, e.g. "I have left from home and am traveling to meet you at Café Schiller. I expect to arrive at 15:30 PM."

[0039] Additionally, the display could include a photo in the message showing the front view of the car when a camera is connected to or integrated in the navigation system.

[0040] Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art. It is preferred therefore, that the present invention be limited not by the specific disclosure herein, but only by the appended claims.

**What Is Claimed Is:**

1. A navigation device for automatically generating a journey status message, comprising:
  - a processor for processing a route between two user-defined places;
  - a position determination module for determining a position between the device and a route destination; and
  - a display operable to display the route destination and a visual destination, wherein the device is operable to generate a journey status message and send the journey status message to the visual destination informing the visible destination of an estimated time of arrival.
2. The navigation device of claim 1, wherein the display includes a graphical icon that a user can select to send the journey status message to the visual destination.
3. The navigation device of claim 2, wherein the visual destination is a contact from a contacts list of the device.
4. The navigation device of claim 3, wherein if time to the route destination increases a text message is generated and sent to a mobile phone number associated with the contact informing them of the estimated time of arrival.
5. The navigation device of claim 3, wherein if time to the route destination increases an e-mail is generated and sent to the contact informing them of the estimated time of arrival.
6. The navigation device of claim 1, wherein if a user is delayed the journey status message contains information about the delay and the estimated time of arrival.
7. The navigation device of claim 1, wherein if a user is not delayed the journey status message contains the estimated time of arrival.

8. The navigation device of claim 1, wherein the journey status message is an SMS.
9. The navigation device of claim 1, wherein the journey status message is an e-mail.
10. The navigation device of claim 1, wherein the journey status message is a MMS.
11. The navigation device of claim 1, wherein the device is constructed and arranged to send the journey status message by default to either a SMS or e-mail.
12. The navigation device of claim 3, wherein the device is constructed and arranged to send the journey status message to a plurality of predetermined contacts.
13. The navigation device of claim 1, wherein the device is constructed and arranged to automatically send the journey status message to the visual destination if the time to the route destination increases by a predetermined amount of time.
14. The navigation device of claim 1, wherein the device is constructed and arranged to automatically send the journey status message to the visual destination at the time of departure.
15. The navigation device of claim 1, wherein the device is constructed and arranged to automatically send the journey status message to a user's social networking site.
16. The navigation device of claim 1, wherein the journey status message is a message that a user will arrive earlier than a previously communicated estimated time of arrival.
17. The navigation device of claim 1, wherein the journey status message is a message that a user has abandoned a trip entirely.

18. The navigation device of claim 3, wherein the device is constructed and arranged to receive a message from a contact's navigation device.

19. A method for automatically generating a journey status message from a navigation device, comprising the steps of:

- displaying on a display a route destination and a visual destination;
- providing a graphical icon on the display that a user can select to send a journey status message to a device associated with the visual destination informing the visual destination of an estimated time of arrival; and
- sending a journey status message to the device associated with the visual destination.

20. The method of claim 19, further comprising the step of enabling the user to plan the route destination.

21. The method of claim 20, further comprising the step of storing at least one visual destination in the device, wherein the visual destination is a contact stored in the device.

22. The method of claim 21, further comprising the step of determining if the contact has an associated mobile phone number or e-mail.

23. The method of claim 22, wherein the step of sending the journey status message comprises sending an e-mail to the contact.

24. The method of claim 22, wherein the step of sending the journey status message comprises sending a SMS.

25. The method of claim 22, wherein the step of sending the journey status message comprises sending a MMS.

26. The method of claim 22, wherein the step of sending the journey status message comprises sending the journey status message to a plurality of predetermined contacts.

27. The method of claim 22, wherein the step of sending the journey status message comprises sending a journey status message to the contact at the time of departure.

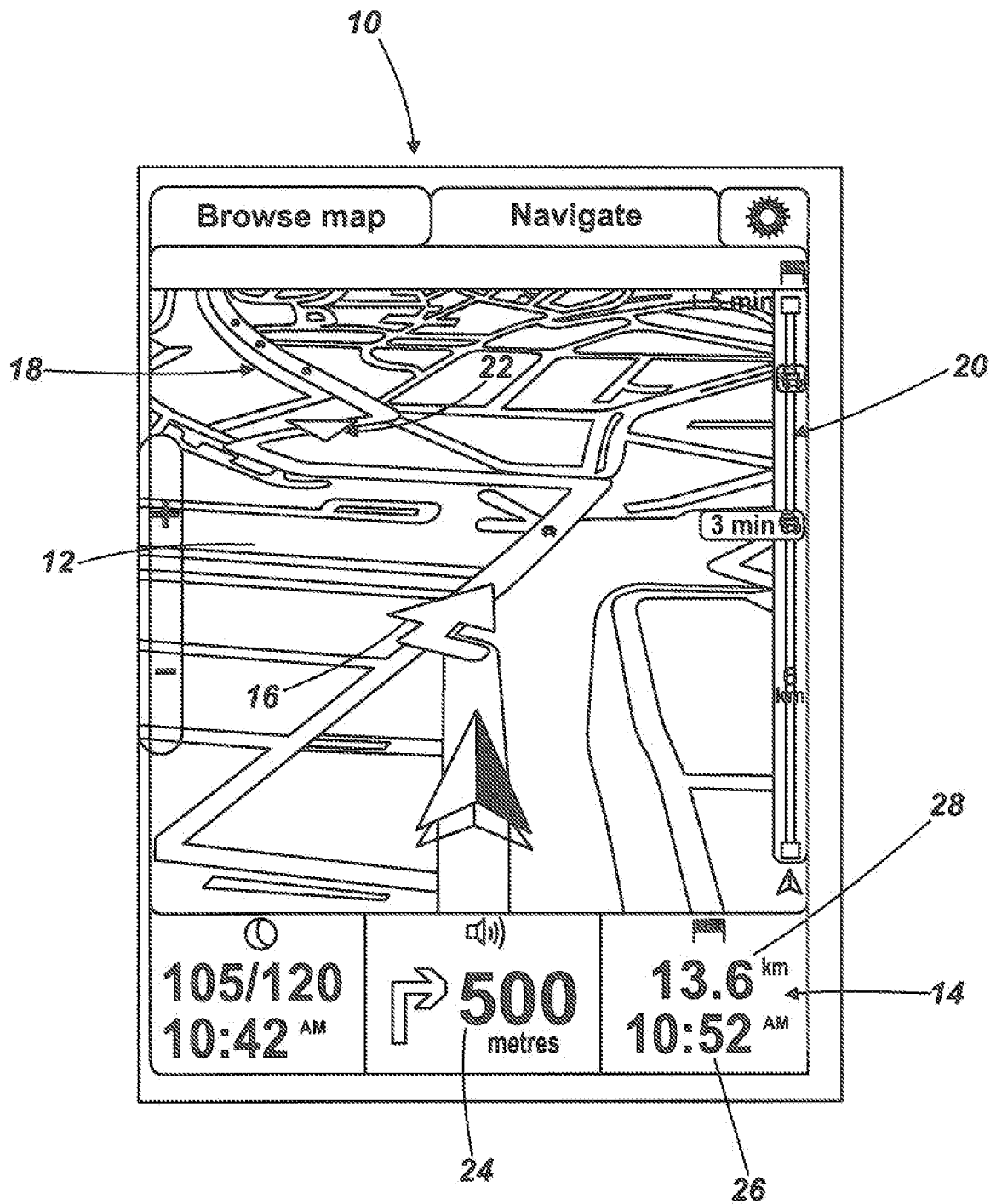
28. The method of claim 22, further comprising the step of tracking changes to the estimated time of arrival.

29. The method of claim 28, wherein the step of sending the journey status message comprises automatically sending a journey status message to the contact if the time to the route destination increases by a predetermined amount of time.

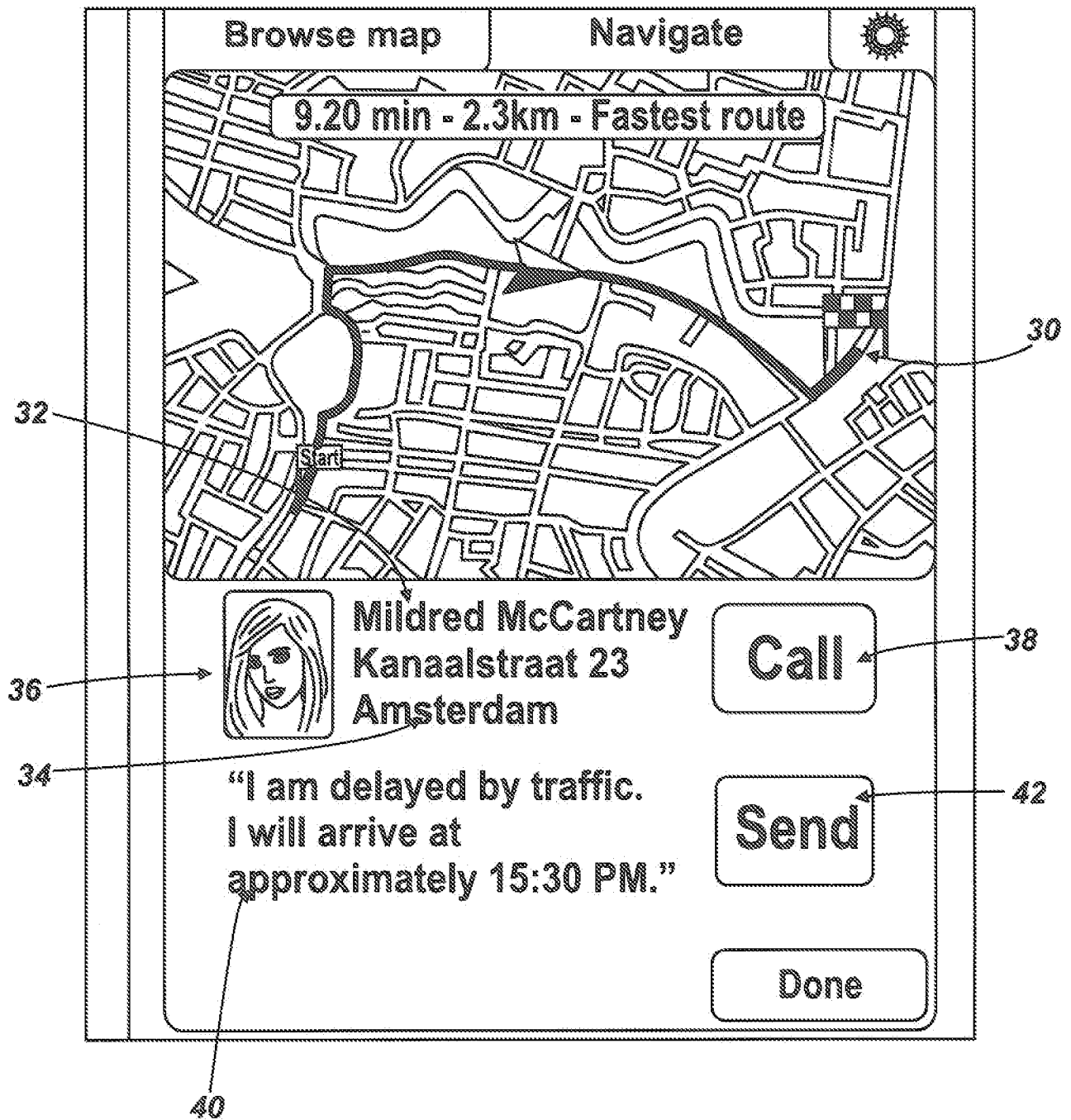
30. The method of claim 29, wherein the step of sending the journey status message comprises automatically sending an updated journey status message to the contact every time a threshold time value passes.

31. The method of claim 20, wherein the step of sending the journey status message comprises automatically sending the journey status message to a user's social networking site.

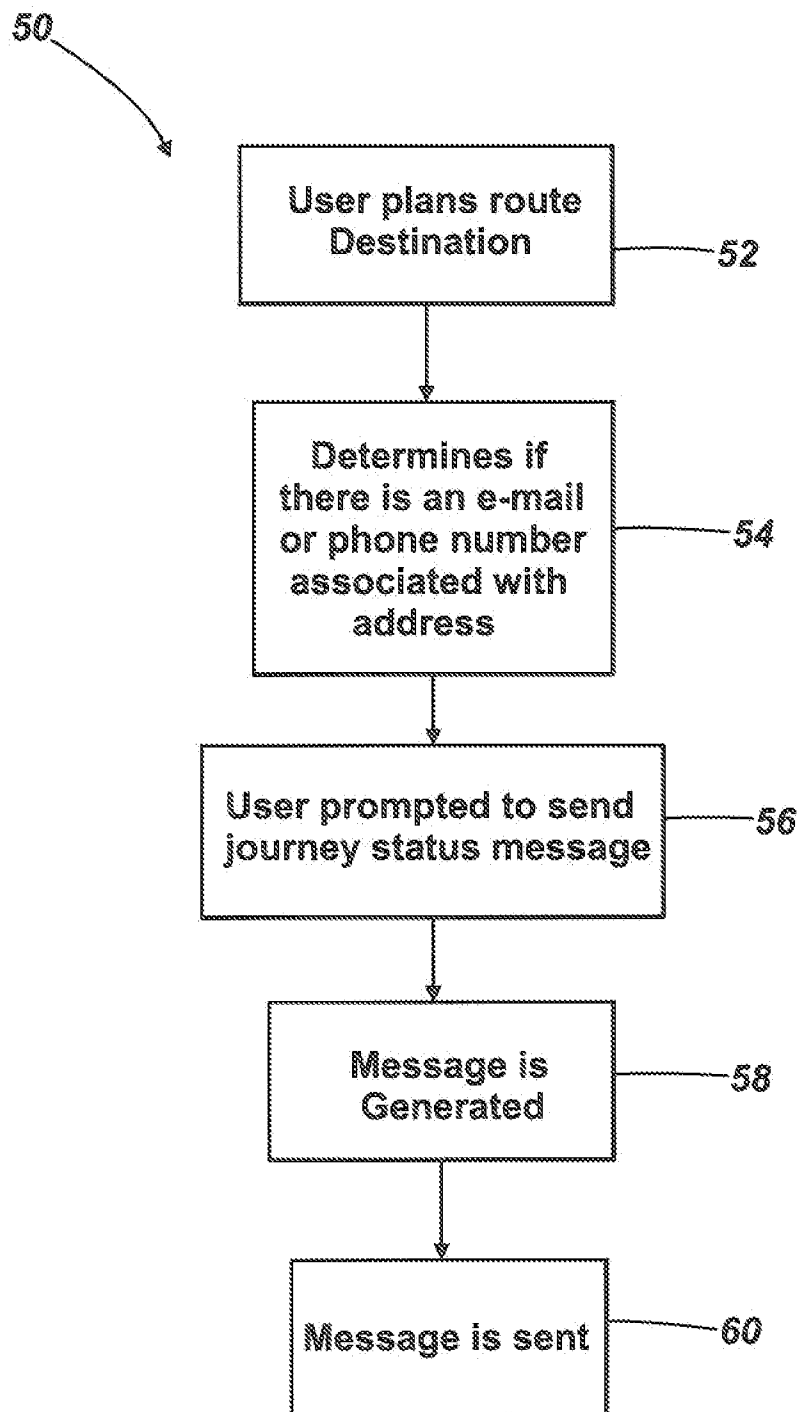
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*Fig. 1*

2/3

*Fig. 2*

3/3

*Fig. 3*

## INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2010/052685

## A. CLASSIFICATION OF SUBJECT MATTER

INV. G01C21/36

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G01C G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                | Relevant to claim No.              |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| X         | EP 2 028 448 A2 (LG ELECTRONICS INC [KR])<br>25 February 2009 (2009-02-25)<br>paragraph [0067] - paragraph [0071];<br>figures 1,10-16<br>page 85 - page 91<br>page 123 - page 153 | 1-15,<br>17-31                     |
| X         | EP 1 944 724 A1 (HARMAN BECKER AUTOMOTIVE<br>SYS [DE]) 16 July 2008 (2008-07-16)<br>paragraph [0002] - paragraph [0019];<br>figure 1                                              | 1-30                               |
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Further documents are listed in the continuation of Box C.



See patent family annex.

## \* Special categories of cited documents:

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Date of the actual completion of the international search

3 November 2010

Date of mailing of the international search report

11/11/2010

Name and mailing address of the ISA/

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Neering, Jan Julius

# INTERNATIONAL SEARCH REPORT

Information on patent family members

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| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) |               | Publication<br>date |
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