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(54) VISUAL REPRESENTATION OF CONTACT LOCATION

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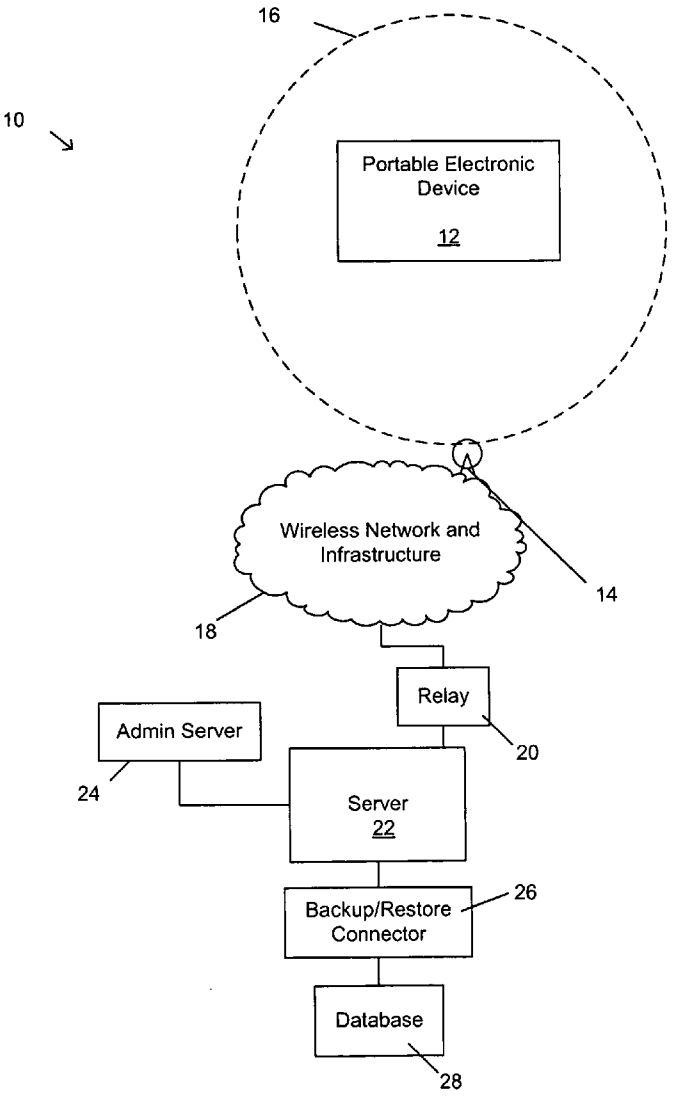
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(57) **ABSTRACT**

A method for visually representing information on a display of a portable electronic device includes receiving location coordinates from at least one other portable electronic device, plotting a visual identifier on a map and displaying the map on the display of the portable electronic device. The position of the visual identifier corresponds to the location coordinates received from the at least one other portable electronic device, which correspond to an actual location of the at least one other portable electronic device. The appearance of the visual identifier is selected to depict the status of the user of the at least one other portable electronic device.



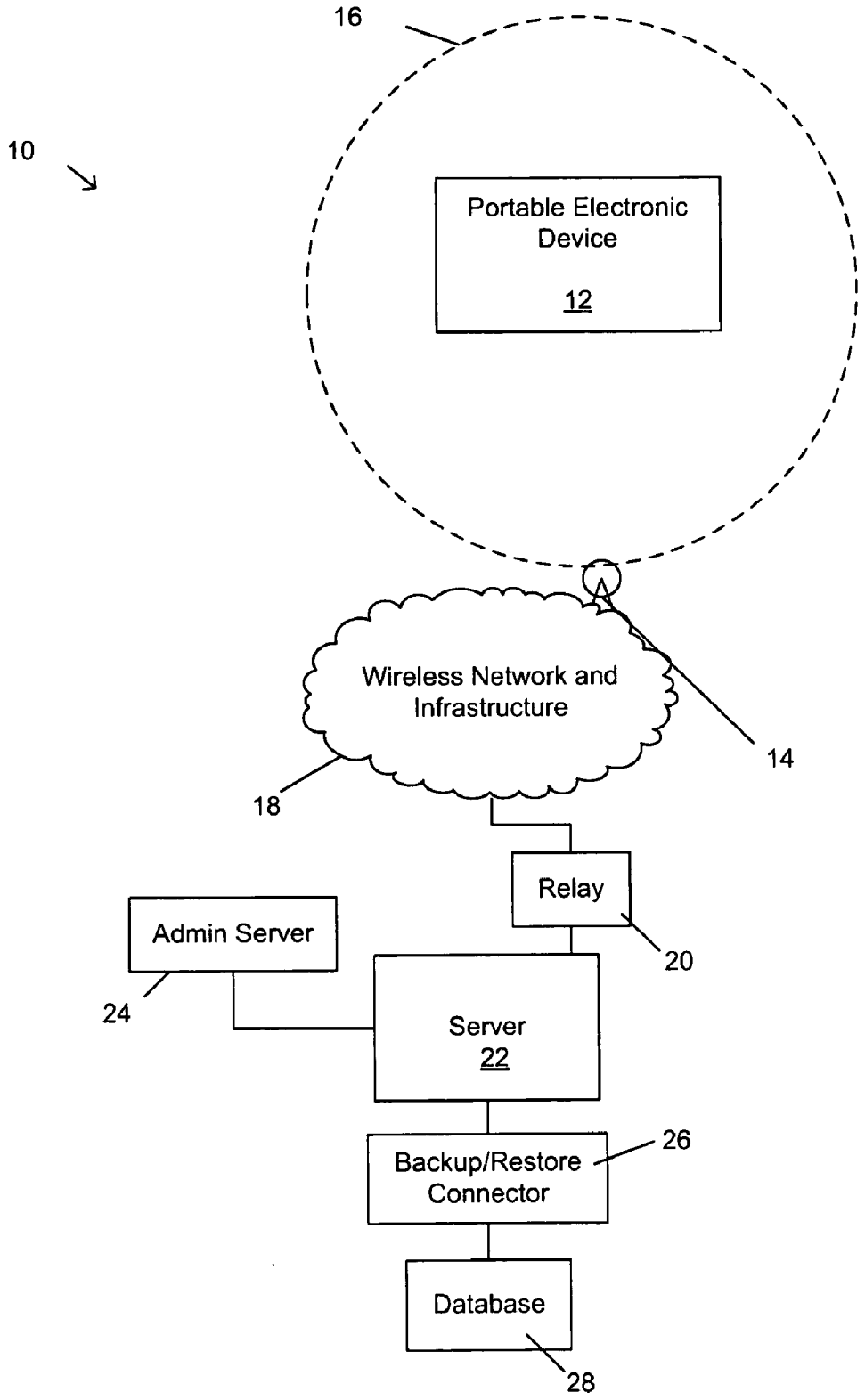

16
10
Portable Electronic Device
12
Wireless Network and Infrastructure
14
18
Relay
20
Admin Server
24
Server
22
Backup/Restore Connector
26
Database
28

Fig. 1

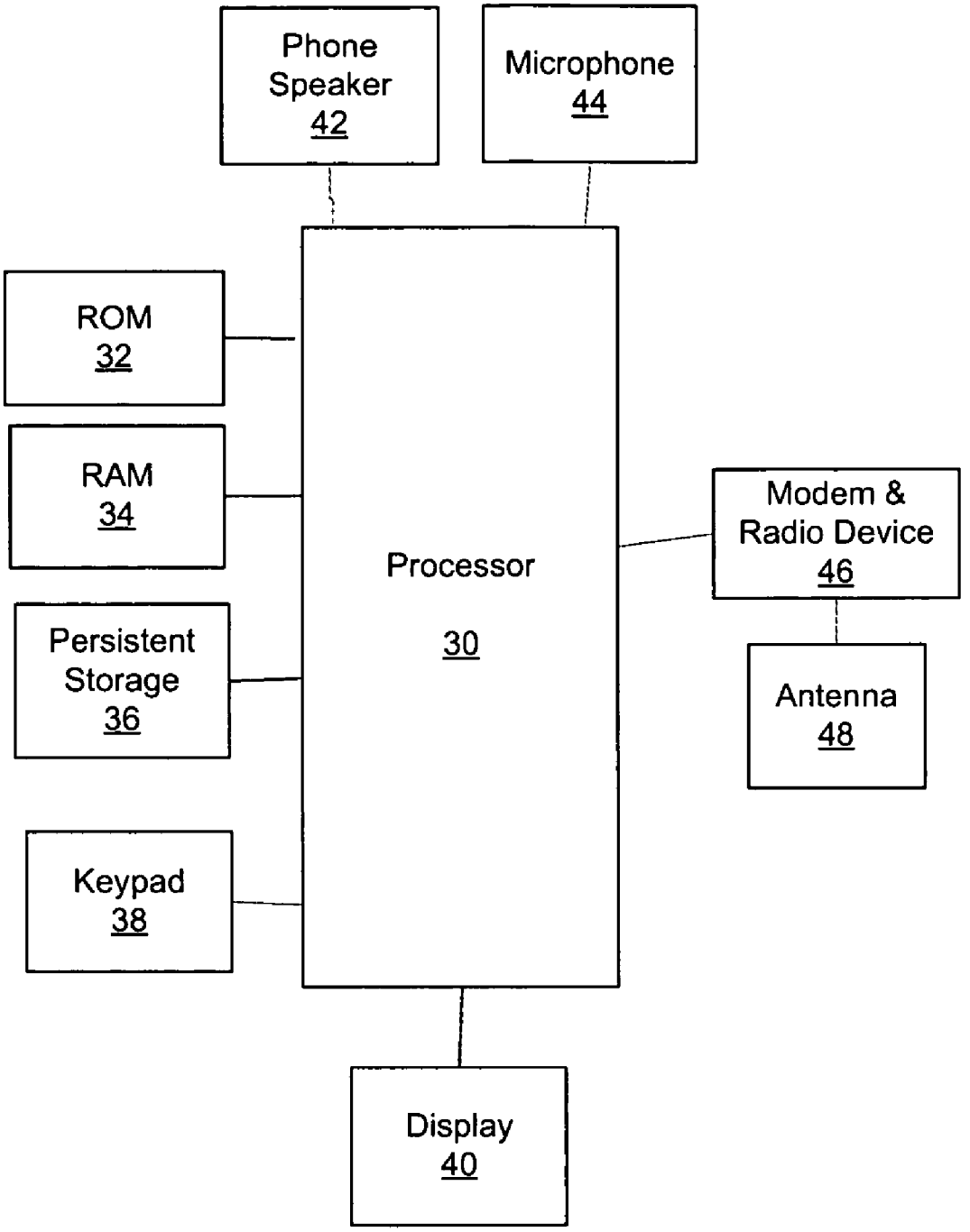

Phone Speaker 42
Microphone 44
ROM 32
RAM 34
Persistent Storage 36
Keypad 38
Processor 30
Modem & Radio Device 46
Antenna 48
Display 40

Fig. 2

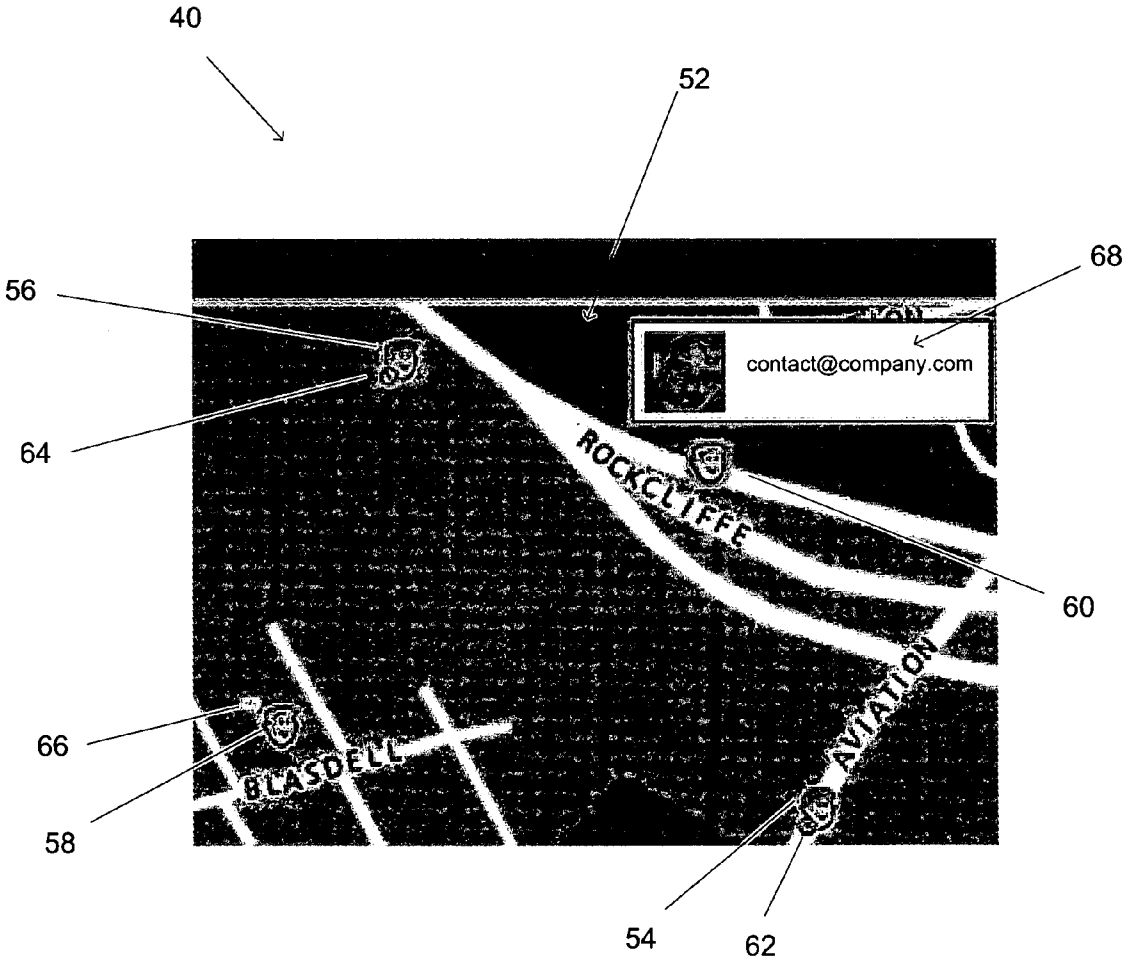

40
52
56
68
64
contact@company.com
ROCKCLIFFE
60
66
BLASDELL
AVIATION
58
54
62

Fig. 3

VISUAL REPRESENTATION OF CONTACT LOCATION

FIELD

[0001] The present specification relates to a mapping application, in particular, a mapping application for visually representing location information.

BACKGROUND

[0002] Mapping software is widely used to provide a user with a visual location on a map that corresponds to a street address. MapQuest and Google each offer free access to their mapping software over the internet. In addition to using the mapping software to plot various addresses, it is also known to integrate the mapping software into other applications. One example of this is a real estate application in which multiple identifiers are plotted on a map of a particular city. In this case, each identifier visually represents a property that is for sale or for rent. By selecting an identifier, additional information about the property may be displayed, including contact information for the real estate agent associated with that property.

[0003] There are many applications that may be suitable for integration with mapping software. In each case, however, the plotted item is limited to being a building, a tourist attraction or a restaurant, for example. It is therefore desirable to plot the location of a movable item whose location may change over time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] The specification will be better understood with reference to the following Figures in which:

[0005] FIG. **1** is a functional block diagram of a communication system for a portable electronic device according to an embodiment;

[0006] FIG. **2** is a functional block diagram of certain components the portable electronic device of FIG. **1**; and

[0007] FIG. **3** is a front view of a display of the portable electronic device of FIG. **2**.

DETAILED DESCRIPTION

[0008] Referring to FIG. **1**, a functional block diagram of a communication system **10** and a portable electronic device **12** is generally shown. The portable electronic device **12** and the communication system **10** are operable to effect communications over a radio communications channel therebetween.

[0009] For the purpose of illustration, the communication system **10** is functionally represented in FIG. **1** and includes a base station **14**. Base station **14** defines a coverage area, or cell **16** within which communications between the base station **14** and the portable electronic device **12** can be effected. It will be appreciated that the portable electronic device **12** is movable within cell **16** and can be moved to coverage areas defined by other cells, including those that are not illustrated in the present example.

[0010] The base station **14** is part of a wireless network and infrastructure **18** that provides a link to the portable electronic device **12**. The wireless network and infrastructure **18** includes additional base stations (not shown) that provide the other cells referred to above. Data is delivered to the portable electronic device **12** via wireless transmission from base station **14**. Similarly, data is sent from the portable electronic device **12** via wireless transmission to the base stations **14**.

[0011] Wireless networks and infrastructures include, for example, data-centric wireless networks, voice-centric wireless networks, or dual-mode wireless networks. For the purpose of the present exemplary embodiment, the wireless network and infrastructure **18** includes a dual-mode wireless network that supports both voice and data communications over the same physical base stations.

[0012] The communication system **10** further includes a relay device **20** that is connected to the wireless network and infrastructure **18** and to a server **22**. It will be understood that the functions provided by the relay device **20** and the server **22** can be embodied in the same device. The server **22** is also connected to an administration server **24**, as shown. The administration server **24** provides administrative services to and control over the server **22**.

[0013] The server **22** is also functionally coupled through a connector **26** to a backup/restore database **28**. Other connectors and databases can be provided, for example, for synchronization purposes. The connector **26** receives commands from the server **22**. It will be understood that the connector **26** is a functional component and can be provided by way of an application on the server **22**. The backup/restore database **28** is used for storing data records, including, for example, copies of Short Message Service (SMS) or Personal Identification Number (PIN) messages sent from the portable electronic device **12**.

[0014] Referring now to FIG. **2**, a block diagram of certain components within the portable electronic device **12** is shown. In the present embodiment, the portable electronic device **12** is based on the computing environment and functionality of a wireless personal digital assistant (PDA). It will be understood, however, that the portable electronic device **12** is not limited to a wireless personal digital assistant. Other portable electronic devices are possible, such as cellular telephones, smart telephones, and laptop computers. Referring again to the present embodiment, the portable electronic device **12** is based on a microcomputer including a processor **30** connected to a read-only-memory (ROM) **32** that contains a plurality of applications executable by the processor **30** that enables the portable electronic device **12** to perform certain functions including, for example, PIN message functions, SMS message functions and cellular telephone functions. The processor **30** is also connected to a random access memory unit (RAM) **34** and a persistent storage device **36** which are responsible for various non-volatile storage functions of the portable electronic device **12**. The processor **30** receives input from various input devices including a keypad **38**. The processor **30** outputs to various output devices including an LCD display **40**. A microphone **44** and phone speaker **42** are connected to the processor **30** for cellular telephone functions. The processor **30** is also connected to a modem and radio device **46**. The modem and radio device **46** is used to connect to wireless networks using an antenna **48**. The modem and radio device **46** transmits and receives voice and data communications to and from the portable electronic device **12** through the antenna **48**.

[0015] The portable electronic device **12** is operable to effect two way communication of voice and data. Thus, the portable electronic device **12** transmits and receives voice and data communications over the wireless network and infrastructure **18** via wireless communications with the base station **14** over a radio communications channel.

[0016] Referring to FIG. **3**, display screen **40** of portable electronic device **12** of a first user, is generally shown. A map **52** appears on the display **40**. Avatars **54**, **56**, **58** and **60**, which are located at various positions on the map **52**, are also shown on the display **40**. Each avatar **54**, **56**, **58**, **60** is a visual identifier that represents a different portable electronic device user.

[0017] The map **52** is generated using a mapping software application, which uses mapping software to provide worldwide map data. The worldwide map data may be provided by NAVTEQ, Tele Atlas or another provider.

[0018] The position at which each avatar **54**, **56**, **58**, **60** is plotted on the map **52** corresponds to the global location coordinates of each user's portable electronic device at a particular time. The location coordinates are determined locally in each portable electronic device using Global Positioning System (GPS) technology that is integrated into each portable electronic device. The location coordinates may alternatively be determined locally based on signal strength from cell towers, for example, or any other suitable type of positioning technology. Further, it will be appreciated by those skilled in the art that if a user's portable electronic device does not support GPS technology, the user may manually input location information into the portable electronic device.

[0019] Once the location coordinates have been determined locally, the coordinates are sent to the portable electronic device **12** of the first user, whose display **40** is shown in FIG. **3**. The coordinates may be sent following a request from the first user or at regular intervals without a request from the first user. Alternatively, the coordinates may be sent every time there is a change in the coordinates.

[0020] The status of each user is also visually represented on the display **40**. As shown, avatar **54** is grayed out and includes a picture of a bee **62** to indicate that the user associated with this avatar **54** is busy; avatar **56** is grayed out and includes a picture of a do not disturb sign **64** to indicate that the user is not available; avatar **58** includes a picture of a callout **66** to indicate that the user is typing a message and avatar **60** is available. The status of each user is determined locally using algorithms on the portable electronic device. Determining the status of a portable electronic device user is well known in the art. For example, a user's status may be determined to be unavailable if the user does not respond to active notifications, which include emails, calendar events and instant messages, for a predetermined period of time.

[0021] Similar to the location coordinates, the status may be sent to the first user following a request from the first user, at regular intervals, or every time there is a change in the user status. The status information is generally sent to the portable electronic device of the first user at the same time as the location information, however, may alternatively be sent at a different time.

[0022] The portable electronic device users that are displayed on the map **52** are members of a contact list of the first user. The first user is authorized to receive and view information about each member and therefore is a member of the contact list of each of the other users. Similarly, the other users are authorized to receive and view information about the first user. The authorization process between a pair of portable electronic device users is well known in the art and therefore will not be described here.

[0023] The contact list is divided into a number of groups. The first user may not want to display the location of every contact in his/her contact list all of the time so it is possible to select one or more groups to display. For example, one group may be called "Project Leaders" and contain only those colleagues who are in charge of projects. It may be useful to plot only this group on a map in order to determine their respective locations at the time a meeting is scheduled to start. Similarly, other groups may be created and plotted on a map.

[0024] The information that is stored in the contact list with respect to a particular user typically includes: email address, phone number(s), facsimile number(s) and physical address(es). A profile including a preferred avatar of the contact may also be stored with the contact information.

[0025] The contact list is not limited to including only contacts who have completed an authorization process. Contacts for whom location and status information cannot be obtained may also be included on the contact list. In addition, if a user who is an authorized contact of the first user does not wish to have his/her location or status made available at a particular time, the user may block transmission of such information, if desired.

[0026] The first user is able to view additional information associated with an avatar **54**, **56**, **58**, **60** by focusing on the avatar **54**, **56**, **58**, **60** using a mouse or other selection device. As shown in FIG. **3**, avatar **60** is "in focus". This launches a window **68** that provides additional information from the contact list about the contact. In this case, a photograph and email address is provided, however, other information may alternatively be provided.

[0027] In use, the first user powers up portable electronic device **12** if it is not already powered up. The user then selects a group of contacts from a list of predefined groups that is provided. Following selection of the desired group, a location and status request is sent from the first user's portable electronic device to the portable electronic devices of each member of the selected group. When the requested information has been received, a map **52** is presented on the display **40** including the avatars **54**, **56**, **58**, **60** of the respective contacts as shown in FIG. **3**. As previously described, the location and status may alternatively be broadcast from the portable electronic devices of the other users and received by the portable electronic device of the first user without a request.

[0028] Once the avatars **54**, **56**, **58**, **60** have been plotted on the map **52**, the first user may focus on any one of the avatars **54**, **56**, **58**, **60** to bring up window **68**, which includes further information associated with the avatar **54**, **56**, **58**, **60**.

[0029] The map **52** may be maintained on the display **40** at all times or alternatively, the map **52** may be launched each time the first user selects a "Map my Contacts" application from a menu. In the embodiment in which the map **52** is maintained on the display **40**, the location

coordinates and status are updated at regular intervals. The timing of the intervals may be set by the portable electronic device **12** of the first user. Alternatively, the location coordinates and status may only be updated when the first user clicks a "refresh" button.

[**0030**] In another embodiment, the avatars **54**, **56**, **58**, **60** are replaced with customized avatars that are easily differentiable from one another. One type of customized avatar is a photograph of the respective user. The customized avatars may be associated with each user's profile. Alternatively, avatars may be assigned by the first user to override the avatars associated with the user profiles.

[**0031**] The status of a user may be represented in various ways. For example, if the avatar is a photograph of the user, a busy status may be indicated by graying out the photograph; a not available status may be indicated by drawing an X over the photograph, a typing status may be indicated by coloring the photograph yellow or another suitable color; and an available status may be indicated by simply displaying the original photograph. It will be appreciated by persons skilled in the art that other types of status may also be visually represented. For example, if a user has manually set their portable electronic device to "do not disturb" this may be represented in a different manner than a user who has simply not responded to calls or electronic messages for a period of time.

[**0032**] It will be appreciated that the location and status information of the other users is displayed on the map **52** regardless of the actual distance between the other users and the first user. As long as the portable electronic device **12** of the first user is able to receive signals from the other users, the information will be displayed.

[**0033**] A specific embodiment has been shown and described herein. However, modifications and variations may occur to those skilled in the art. For example, although only a small number of avatars have been described, there are many types of avatars for differentiating users from one another and for indicating the status of each user that could be used. In addition, the map **52** that appears on the display **40** may be drawn from location source data using vector graphics. Other modifications and variations may occur to those skilled in the art. All such modifications and variations are believed to be within the sphere and scope of the present embodiment.

What is claimed is:

1. A method for visually representing information on a display of a portable electronic device of a first user, said method comprising:

receiving location coordinates from at least one other portable electronic device, a user associated with said at least one other portable electronic device being a member of a list of contacts of said first user;

plotting a visual identifier on a map and displaying said map on said display of said portable electronic device of said first user, a position of said visual identifier corresponding to said location coordinates received from said at least one other portable electronic device;

receiving a status of said user of said at least one other portable electronic device; and

wherein said location coordinates correspond to an actual location of said at least one other portable electronic device.

2. A method as claimed in claim 1, wherein said location coordinates are determined using Global Positioning System technology.

3. A method as claimed in claim 1, wherein said map is generated using mapping software.

4. A method as claimed in claim 1, wherein said visual identifier is selected to depict said status of said user of said at least one other portable electronic device.

5. A method as claimed in claim 4, wherein said status of said user is selected from the group consisting of: busy, not available, typing and available.

6. A method as claimed in claim 1, wherein said visual identifier is an avatar that is unique to said user.

7. A method as claimed in claim 1, wherein focusing on said visual identifier launches a window displaying contact information associated with said user of said at least one other portable electronic device.

8. A method as claimed in claim 1, wherein a distance between said portable electronic device of said first user and said at least one other portable electronic device is unlimited.

9. A method for visually representing information on a display of a portable electronic device comprising:

receiving location coordinates from at least one other portable electronic device;

receiving status information from said at least one other portable electronic device;

displaying a map on a display of said portable electronic device;

displaying a visual identifier on said map, said location of said visual identifier corresponding to said location coordinates; and

wherein an appearance of said visual identifier is selected to depict a status of said at least one other portable electronic device.

10. A method as claimed in claim 9, wherein said location coordinates and said status information are continuously updated.

11. A method as claimed in claim 10, wherein said status of said user is selected from the group consisting of: busy, not available, typing and available.

12. A portable electronic device comprising:

a processor for receiving location coordinates and status information from at least one other portable electronic device, said location coordinates and said status information being continuously updated;

a display for displaying a visual identifier on a map, a location of said visual identifier corresponding to said location coordinates; and

wherein an appearance of said visual identifier is selected to depict a status of said at least one other portable electronic device.

13. A portable electronic device as claimed in claim 12, wherein said location coordinates are determined using Global Positioning System technology.

14. A portable electronic device as claimed in claim 12, wherein said status information corresponds to a user status is selected from the group consisting of: busy, not available, typing and available.

15. A portable electronic device as claimed in claim 12, wherein said visual identifier is an avatar that is unique to a user of said at least one other portable electronic device.

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