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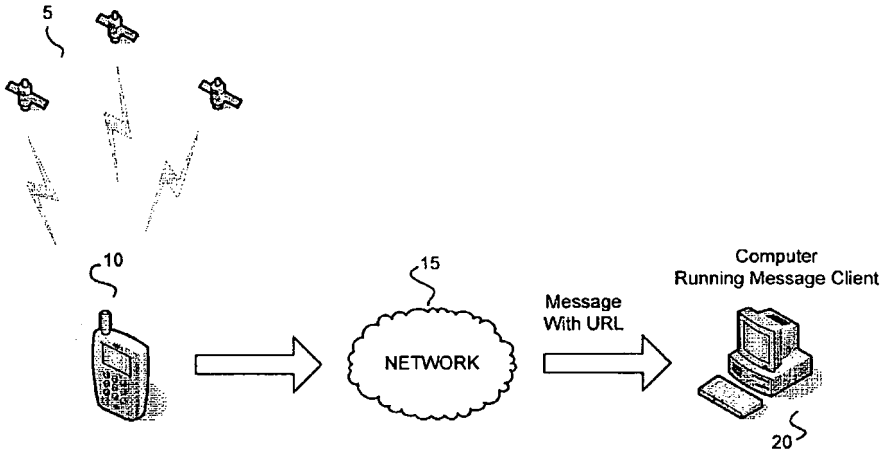

(57) Abstract: Systems and methods for user-initiated location-based services through messaging. Using a messaging client running on a communication device, a user transmits location information via a text and/or instant message to a recipient. The location information may be obtained from a GPS program or other location determining program accessible or installed on the user's communication device. A network identifier such as a URL is created based on the location information and is appended into the message. When the recipient selects the network identifier, electronic content such as a graphic map including the sender's location is displayed on the recipient's communication device.

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SYSTEMS AND METHODS FOR USER-INITIATED LOCATION-BASED SERVICES THROUGH MESSAGING

BACKGROUND INFORMATION

[0001] Since the United States Government made the NAVSTAR satellite constellation's timing signals available for civilian use in the 1980s, location-based services have become increasingly popular. Many automobile manufacturers now offer global positioning satellite (GPS)-based locator devices as an option. These units are typically integrated into the vehicles' dashboard console. Also, other companies make aftermarket GPS devices for mounting in automobiles, boats and other vehicles, and even hand held devices for hiking, exploring or other recreational uses. Such GPS devices offer relatively high accuracy and universal availability and thus provide an acceptable solution for relatively inexpensive, precise positioning.

[0002] In order to meet FCC enhanced 911 (E911) requirements and to provide consumers with a mechanism for accessing location information using an appliance they already, own, commercial mobile radio service providers (CMRSPs) have prompted their device manufacturers to integrate GPS receivers into phones, PDAs and other communication appliances supported by their networks. As a result, users are able to view map and location information directly on their phones, PDAs, etc.. The capability and accuracy of the devices are constrained by native memory of the device. Also, the data used by the devices is static and therefore becomes outdated quickly.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Figure 1 is a schematic diagram of a system for implementing user-initiated location-based services through messages according to an exemplary embodiment;

[0004] Figure 2 is a message-based map output to a user computing device including a sender location according to an exemplary embodiment;

[0005] Figure 3 is a flow chart of an exemplary method for performing user-initiated location-based services through messaging from a user perspective according to an exemplary embodiment;

[0006] Figure 4 is a flow chart of an exemplary method for providing user-initiated location-based services through messaging from a provider perspective according to an exemplary embodiment;

[0007] Figure 5 is block diagram illustrating components of a system for providing user-initiated location-based services through messaging according to an exemplary embodiment;

[0008] Figure 6 is an exemplary interface window of a messaging client according to an exemplary embodiment; and

[0009] Figure 7 is an exemplary interface window of a content viewer plug-in for displaying location-based services according to an exemplary embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0010] The following description is intended to convey a thorough understanding of the embodiments described by providing a number of specific embodiments and details involving user-initiated location-based services through messaging. It should be appreciated, however, that the present invention is not limited to these specific embodiments and details, which are exemplary only.

[0011] As used herein, the term "messaging" will be interpreted broadly to include sending a message through an instant messaging client, such as AOL Instant Messenger, Yahoo Messenger, etc., as well as sending messages through short message service (SMS) such as with a mobile phone or other communication device. Therefore, sending a message in the context of this disclosure and claims may include sending either type of message with a phone, PDA, computer or other communication device.

[0012] Referring now to Figure 1, a schematic diagram of a system for implementing user-initiated location-based services through messages according to an exemplary embodiment. The system comprises a first user communication device 10 in communication with a second user computer 20 via a communication network 15. In a preferred embodiment, the first user communication device may be a mobile communication device such as a mobile phone, PDA, messaging device or other portable communication device. In a preferred embodiment, the user communication device 10 may be equipped with a locator function such as, for example, a GPS receiver that is operable to determine a location of the first user communication device 10 at an instant in time based on timing signals received from the GPS satellite constellation 5. In various other embodiments, the first user communication device 10 may not comprise a locator function itself, but rather may be capable of requesting location information from a locator device, such as GPS device (not shown), that is in electrical communication with the first user communication device 10, or a location service which may be available through network 15 (e.g., location service using wireless tower triangulation techniques). In various embodiments, the first user communication device 10 may be equipped with a software client, such as an instant messaging client. Alternatively, or in combination, the first user communication device 10 may send messages using SMS protocol.

[0013] In at least one exemplary embodiments, the first user communication device 10 includes a send location function that may be configured to send the device's 10 location upon request in a message to a designated recipient. This may be done during a messaging session, automatically at the start of a session, or as a means of starting a messaging session/sending a message. That is, if the first user communication device 10 is running a messaging client, the client may have a "send location" control for permitting a user to selectively cause the client to send the user's location. If the first user communication device is messaging using SMS, "send location" may be an option available when sending text messages. That is, the user may be prompted "Send location?" or alternatively, the user may select "send location" from a list of available message attributes.

[0014] It should be appreciated that although, for ease of illustration purposes, the network 15 depicted in Figure 1 is shown as a single network path between the first user

communication device 10 and the second user computer 20, the network 15 may actually be comprised of various combinations of radio (e.g., cellular), landline and/or satellite-based PSTN or IP networks. For example, the first user communication device 10 may broadcast an RF signal containing a message to a cellular tower. The tower in turn may pass this signal to a land or satellite-based network for delivery to the intended recipient. The recipient may interface to the network 15 using a DSL, cable, fiber, T1 or T3 landline, an 802.11x, RF, IR, or other wireless connection, or using another connection protocol as is well known.

[0015] Furthermore, although the second user computer 20, that is, the recipient's terminal, is shown in the Figure as a desktop computer, it should be appreciated that this device 20 may also be a mobile device, a laptop computer or other network-enabled device that is configured to run a compatible messaging client or to receive SMS compliant messages.

[0016] In various embodiments, the message from the sender may include a network identifier that is generated based on the sender's location. In a preferred embodiment, a URL may be generated either at the sender's device 10 or at an intermediary site on the network 15. The URL preferably contains data fields that allow a graphic map to be created and displayed in a browser client of the recipient device 20 upon selection by the recipient. In various embodiments, the graphic map may include an icon or other graphic representation of the location of the sender's device 10 along with information corresponding to the geographic area surrounding the sender.

[0017] Referring now to Figure 2, a message-based map output 25 to a user computing device including a sender location according to an exemplary embodiment is depicted in this Figure. As discussed above, in various embodiments, when a sender sends a message including the sender's location to a recipient, a URL may be generated and appended to the message based on the location data. In various embodiments, the message may include a hypertext link with a label such as "click here to view sender's location" or "click here to access map." In a preferred embodiment, selecting the provided link may invoke a content browser, such as an Internet content browser, that opens a window on the recipient's device displaying a map, such as the map output 25 depicted in the Figure. In various embodiments, the map may provide a graphic image, such as the name "Ed" and corresponding

male icon shown in the map output 25 of Figure 2. In various embodiments, the map may include the location of businesses, assets, features or other items that are in the area surrounding the sender's location. In various embodiments, the map output 25 may include user controls that allow the viewer to zoom in or out, pan, and even to obtain directions to various features listed on the map, such as, for example, driving directions.

[0018] Referring now to Figure 3, this Figure provides a flow chart of an exemplary method for performing user-initiated location-based services through messaging from a user perspective according to an exemplary embodiment. The method begins in block 100. In block 105, the user captures his/her location. In various embodiments the user may select a control on his/her communication device that causes his device to obtain the current location of the device. In a preferred embodiment, this may be accomplished by obtaining location information from a GPS receiver in the user's device. Alternatively, the user's device may obtain the location information from another GPS-enabled device in communication with the user's device. In block 110, the location information is sent in a message to the recipient. In various embodiments, the steps in blocks 105 and 110 may be merged into a single step. That is, when the user selects a "send location" function, the device may obtain its location and send the location in a message to a designated recipient.

[0019] In block 115, a network identifier may be created based on the location captured in block 105. In various embodiments, if GPS is the source of the location data, the data is typically in a national marine electronics association (NMEA) 0183 format. Thus, in block 115, the GPS-generated data may be reformatted into a URL. That is, using a mapping program that accepts latitudinal and longitudinal inputs, a URL may be generated that causes graphic map content to be generated when selected and that may contain an area include the sender's location information. In various embodiments, the URL may be generated at the sender's communication device and simply placed in the message. In various other embodiments, the GPS information may be forwarded to an intermediate party along the network, either in its native NMEA 0183 format or after reformatting. The intermediate party may be a network-based map content provider. The intermediate party may generate a URL based on the location information, append the URL to the message and pass

the message on to the recipient over the network in accordance with the sender's instructions. In various embodiments, the URL may contain additional information, such as an address of the map content provider (e.g., www.rmapcompany.com), and an identifier associated with the sender (e.g., a phone number). This additional information may be automatically inserted into the message (from local storage at the sender's device 10) or may be manually specified by the sender in the course of sending the message.

[0020] In block 120, the recipient receives the message. This may comprise receiving a new message notification if the message is an SMS-based message, or the message itself may appear in the user's messaging client if the sender and recipient are communicating over one or more well known instant messaging clients. In various embodiments, the network identifier may be visible to the recipient in a portion of the message. In a preferred embodiment, the network identifier may be a URL. In block 125, the recipient selects the network identifier. In a preferred embodiment, the recipient selects the URL with his mouse, stylus or other input device, thereby invoking a browser client and transmitting the information in the URL to the service provider specified in the URL. In various embodiments, in block 130, the services provider may generate a graphic map display based on information in the URL and transmit this graphic map display to the recipient for output in a window of the browser client. In various embodiments, the graphic map may comprise a dynamic web page including interactive elements (e.g., Javascript). This graphic map may include a terrain and/or street map and may preferably show the location of the sender as an icon, or other identifiable character so that the recipient can pinpoint the sender's location with sufficient specificity. In various embodiments, the graphic map may be a map similar to that depicted in Figure 2. The method stops in block 135.

[0021] Referring now to Figure 4, this Figure is a flow chart of an exemplary a method for providing user-initiated location-based services through messaging from a provider perspective according to an exemplary embodiment. While the flow chart of Figure 3 details the steps from the perspective of the service user, this flow chart by contrast does so from the perspective of the provider.

[0022] The method begins in block 200. In block 205, a message including location information may be received by the service provider. In various embodiments, the

message includes raw GPS data that may be incompatible with service provider-based mapping programs. Thus, in block 210, the location information in the received message may be reformatted into a format that is supported by dynamic network-based mapping programs. In block 215, a network identifier may be generated based on the formatted location information and may be appended to the message. In a preferred embodiment, the system creates a URL based on the location information so that when the URL is selected, a query may be run to generate a map based on the location information in the received message. In some embodiments, the URL further includes an identifier of the network-based map provider and an identifier of the sender (e.g., a phone number). In some embodiments, blocks 210 and 215 may be performed at the sender's device (e.g., using software available at the sender's device) prior to sending the message to the service provider.

[0023] In block 220, the message is delivered to the recipient. As discussed above, this may comprise delivering an SMS-based message or simply another message in an instant messaging session. In block 225, upon receipt of a request from the recipient (for example, a request that includes the information from the URL), electronic content may be created and output to the device that sent the request. In a preferred embodiment, this comprises outputting a graphic map containing an area surrounding the location specified in the location information and more preferably it comprises an icon or other visible character representative of that location. A name, telephone number or instant messaging ID of the sender associated with the location information may also be displayed on the graphic map in relation to the icon or other visible character. This may be provided based on the sender identification in the URL, and may include retrieval of sender-designated display information (e.g., specified text, icon, etc.). Information associated with items of interest in the region displayed by the graphic map may also be retrieved by the service provider and displayed using various icons on the graphic map. The graphic map may include dynamic elements which permit the recipient to exchange control information with the service provider to control the displayed region of the graphic map and/or the types of information displayed by the graphic map. The method stops in 230.

[0024] It should be appreciated that in the method of Figure 4, the service provider may perform one or all of the steps recited therein. For example, in various embodiments, the sending user's communication device may generate a properly formatted message including a URL to be delivered directly to the recipient, either as an SMS message or an instant message. In such embodiments, the service provider may typically provide the functionality that allows the communication device to generate the URL and may provide the content when the recipient selects the network identifiers as well as the actual wireless connection to the network when applicable. However, in other embodiments, the service provider may merely provide the functionality, *i.e.*, application, plug-in or software that enables the sender to generate messages including location information but a third party, such as geographic information service (GIS). Internet content providers such as a Yahoo, Google, Mapquest, etc., may generate the electronic content including the graphic map when the recipient selects the network identifier from the delivered message. As is well known, a wireless service provider typically only provides the portion of the service that is charged for. For example, in sending a text message, the wireless provider may charge for the data bytes sent or a per message charge. However, if the recipient is not one of the provider's subscribers, the provider does not receive revenue for delivering the message. Similarly, if the sender is using an instant message client, the provider may typically charge either on a byte or time basis for data sent from and received by the user's device. Thus, from this it can be inferred that the provider may be providing services only to the extent that it can be involved in the movement of the message. Thus, in the context of block 220 in Figure 4, delivering the message to the recipient may actually comprise delivering the message from the provider's network to another network, such as a PSTN or Internet backbone network which handles the final delivery of the message.

[0025] Referring now to Figure 5, this Figure depicts a block diagram illustrating components of a system 300 for providing user-initiated location-based services through messaging according to an exemplary embodiment. The system 300 may be comprised of a plurality of modules for performing various system functionality. Each module may comprise a separate software program, a sub-program of a single program, hardware executing software, one or more application specific integrated circuits (ASICs), components of an integrated device, or distributed components in

one or more distinct devices. Moreover, the modules depicted in Figure 5 are exemplary only. Various embodiments may utilize additional or fewer modules and may even use different modules than those shown in the Figure. These modules are meant to be exemplary of the functionality performed by system according to the various embodiments of the disclosure.

[0026] The system 300 depicted in Figure 5 includes a location identifier module 305, a network identifier module 310, a messaging client module 315, a content generator module 320, a control module 325 and a communication module 330. The control module 325 may comprise a central processing unit (CPU) of a computer system, a digital signal processor (DSP), an ASIC, a combination of hardware and software and may even be representative of a real time kernel of a control program for facilitating user-initiated location-based services through messaging.

[0027] In various embodiments, the location identifier module 305 may be adapted to provide a location of a user's communication device upon request. As discussed herein, the location identifier module 305 may communicate with a GPS transceiver communicatively coupled to the user's communication device and through one or more communication protocols may request the location information from the locator device. In various embodiments, the location identifying module 305 may format the location information into a suitable format for use with the system. In various other embodiments the request for the location information may specify a format.

[0028] The network identifier module 310 may take the information supplied by the location identifier module 305 and convert that information into a network identifier, such as a URL, that when selected may cause a content provider to output content in the form of a graphic map based on the location information obtained by the location identifier module 305. In various embodiments, this network identifier module 310 may append this network identifier directly into a message destined for a specified recipient. The network identifier may have access to a data store which includes information such as the address of the mapping service provider and/or an identifier associated with the sending device (e.g., a phone number or user ID).

[0029] In various embodiments, the messaging client module 315 may permit the user to send messages over the provider's network. The messaging client module 315 may be a plug-in capable messaging client such as are well known. Alternatively, the messaging client module 315 may be an SMS protocol supported by the user's communication device.

[0030] In various embodiments, the content generator module 320 may comprise a network-based content portal, such as in the preferred embodiment, a Internet-based map content provider. In various embodiments the content generator module 320 may be controlled by the messaging service provider, while in various other embodiments, a third party may maintain the content generator module 320. In such embodiments, where the module 320 is maintained by a third party, the network identifier module 310 may format the network identifier in a manner that is compatible with the third party's content generator module 320. In various embodiments, when a message recipient selects a network identifier contained in the message, a content viewing client may be invoked and the recipient may be directed to a network site associated with the identifier. In various embodiments, the identifier may act as a query to the content generator module 320, which, in response may generate content in accordance with one or more field specified in the identifier. However, in other embodiments, the content may already be created — that is after the network identifier is created — so that the identifier may be simply a network reference to static content and therefore contains only an address to the content. In a preferred embodiment, the content generator module 320 may generate a graphic map and output the map to the recipients client application, the map including a location encompassing the location information specified in the network identifier and a visual indicator of the location of the sender within the area encompassed by the graphic map.

[0031] The communication module 330 may permit communication between networks such as between a radio (cellular) network and a landline network (PSTN, ATM, etc.). Thus, the communication module 330 may comprise a network interface, gateway, router and/or other suitable hardware and combinations of hardware and software. The communications module 330 may relay messages between subscribers on the same provider network or may merely facilitate a portion of the communication path between the sender and the recipient, such as the wireless

portion only if the recipient is connected to a land-based network or another provider's network.

[0032] Referring now to Figure 6, this Figure depicts an exemplary interface window 400 of a messaging client according to an exemplary embodiment. The window 400 in the Figure illustrates an exemplary embodiment in which messages are sent via an instant messaging client. Such clients are well known. The messaging client may be running on a computer, mobile telephone, PDA or other wired or wireless communication device. The interface window 400 includes a new message notification and a message requesting the recipient to click a link 410 in the message to view the sender's location. It should be appreciated that in various embodiments, the link 410 may not display the full URL, but rather may be a word, graphic image or other object. As is well known, in hypertext markup language (HTML) any object may be coded to a particular URL in a manner transparent to the user. The exemplary URL 410 depicted in the Figure illustrates how the URL itself may be encoded to contain one or more parameters or input fields (e.g., delimited by "+" sign) thereby enabling it to function as query to the target domain when selected.

[0033] Figure 7 is an exemplary interface window 500 of a content viewer plug-in for displaying location-based services according to an exemplary embodiment. In various embodiments, the interface window 500 may be an Internet browser if the recipient is using a computer to access the message. In various other embodiments, the interface window 500 may be a WAP, or other type of standardized or proprietary mobile device content browser that supports graphic images. In various embodiments, the browser client interface window 500 may be invoked automatically when the recipient selects the network identifier (URL) included in the received message, such as in the example of Figure 6. In a preferred embodiment, the window 500 displays a graphic map 505. The graphic map 505 may preferably include an icon 510 or other identifier that shows the location of the message sender relative to the other area shown on the graphic map 505. This may also display other items of interest such as businesses, landmarks, or other assets that are in proximity to the sender. Also, in various embodiments the recipient can access typical map functionality through the content viewer plug-in's interface

window such as zooming in and out, panning, obtain directions to/from one or more locations displayed on the map 505, etc.

[0034] It should be appreciated that although the various embodiments discussed here have been described in the context of messages being sent from a mobile communication device to an computer device, that the principles set forth herein are equally applicable to environments where users are sending messages from a non-mobile computer to another non-mobile computer or when messages are sent between two mobile devices only.

[0035] It should also be appreciated that although in the preferred embodiments, location may be derived from a GPS device, in various other embodiments, a different mechanism may be used for locating purposes. For example, various commercial mobile radio service providers (CMRSPs) may use triangulation between transceiver towers, or even a single transceiver tower, or other non-satellite based methods for obtaining location information. In various embodiments, GPS-type precision may not be required.

[0036] In the preceding specification, various preferred embodiments have been described with reference to the accompanying drawings. It will, however, be evident that various modifications and changes may be made thereto, and additional embodiments may be implemented, without departing from the broader scope of the invention as set forth in the claims that follow. The specification and drawings are accordingly to be regarded in an illustrative rather than a restrictive sense.

CLAIMS

1. A method comprising:

receiving a user-initiated text message over a network from a first node that is destined for a second node, the message containing location information corresponding to the first node;

generating a network identifier associated with the location information; and

delivering the text message including the network identifier to the second node,

2. The method according to claim 1, further comprising generating electronic content based on the location information and outputting the electronic content to the second node when the network identifier is selected by an operator at the second node.

3. The method according to claim 1, wherein the location information comprises a geographical coordinates associated with the first node.

4. The method according to claim 3, wherein the geographical coordinates are supplied by a GPS receiver in communication with the first node.

5. The method according to claim 1, wherein the location information comprises timing information.

6. The method according to claim 5, further comprising determining a location of the first node based on the timing information.

7. The method according to claim 2, where generating a network identifier associated with the location information comprises generating a uniform resource locator (URL).

8. The method according to claim 7, wherein generating electronic content based on the location information comprises generating browser supported content based on information specified in the uniform resource locator.

9. The method according to claim 8, wherein generating browser supported content comprises generating content selected from the group comprising maps, location-based advertising, landmarks, and combinations thereof.

10. A messaging system comprising:

a message input interface adapted to receive an electronic message from a first user, the electronic message including location information corresponding to the first user;

a network identifier generating module communicatively coupled to the message input module and adapted to generate a network identifier based at least in part on the location information; and

a communication module communicatively coupled to the network identifier generating module and adapted to forward the electronic message to a second user specified by the first user, the electronic message including the network identifier.

11. The messaging system according to claim 10, further comprising a content generating module adapted to generate electronic content based on information specified in the network identifier in response to the second user selecting the network identifier.

12. The messaging system according to claim 11, wherein the content generating module comprises computer readable code stored in an electronic storage medium adapted to cause a processor to generate electronic content based on one or more input fields specified in the network identifier.

13. The messaging system according to claim 11, wherein the network identifier comprises a URL.

14. The messaging system according to claim 11, wherein the content generating module is adapted to generate a navigation map including a geographic location specified by the location information.

15. The messaging system according to claim 11, wherein the content generating module is adapted to generate content for the first user based on an instruction from the second user and to provide that content to a communication device of the first user.

16. A method comprising:

determining a location of a first network node;

generating a network identifier based on the location; and

sending an electronic message to a second network node, the electronic message including the network identifier.

17. The method according to claim 16, wherein determining a location of a first network node comprises determining geographic coordinates of the first network node.

18 The method according to claim 17, further comprising presenting electronic content based on information in the network identifier in response to a request sent to the service provider.

19. The method according to claim 18, wherein generating a network identifier comprises generating a URL.

20. The method according to claim 19, wherein presenting electronic content comprises generating a graphic map of including the location of the first network node and outputting the graphic map to the second network node.

21. The method according to claim 16, wherein determining a location of a first network node comprises receiving location information from a GPS device in communication with the first network node.

Figure 1

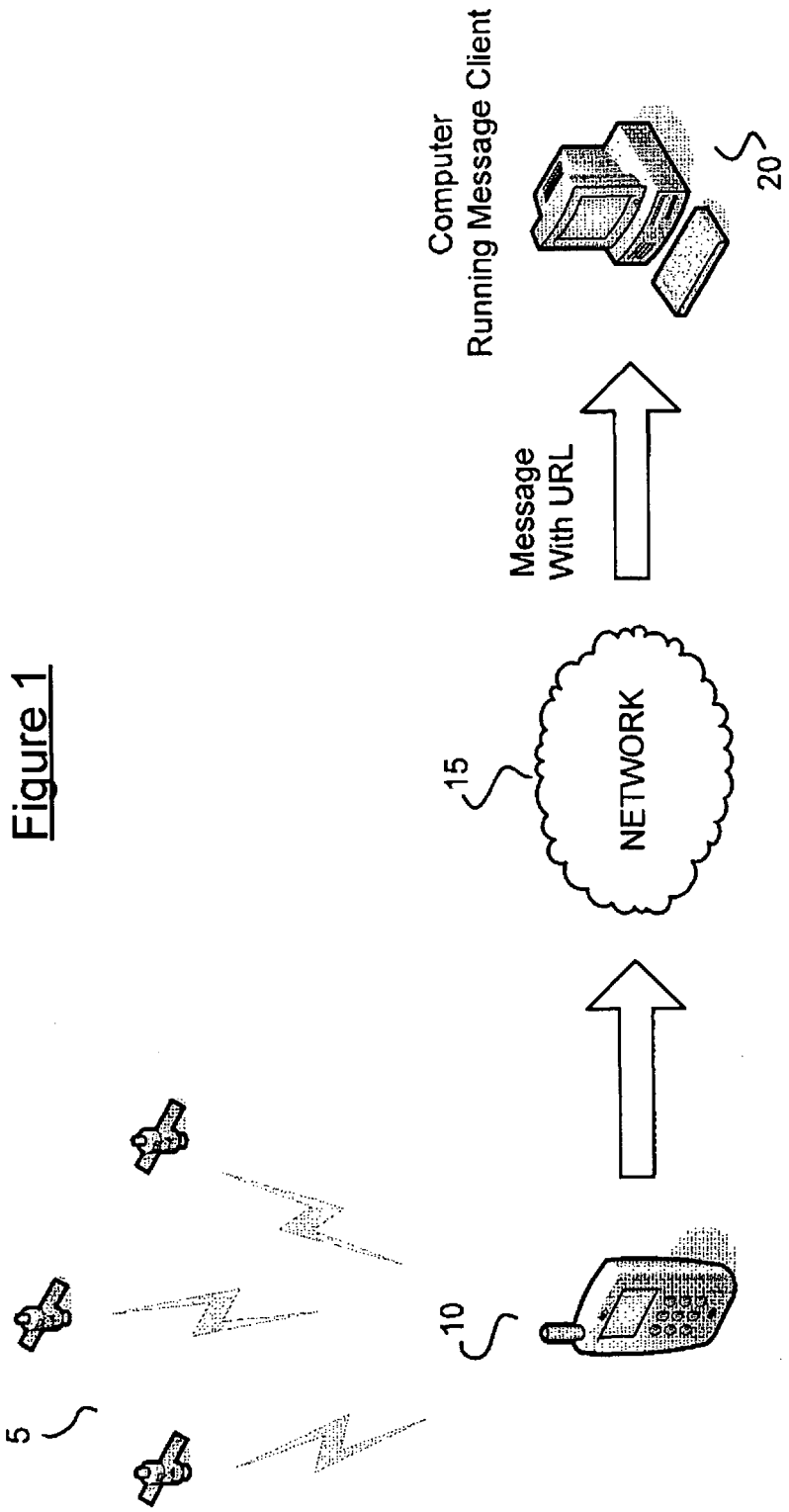
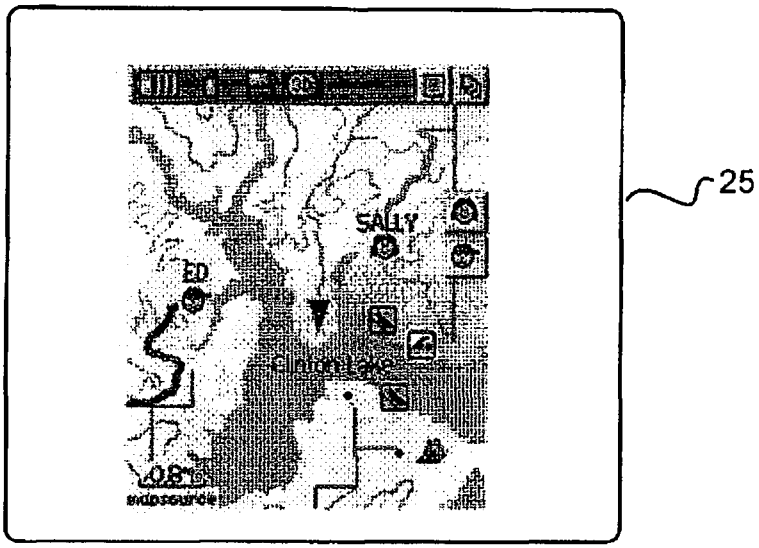

5
10
15
NETWORK
Message
With URL
Computer
Running Message Client
20

Figure 2



Map Output

Figure 3

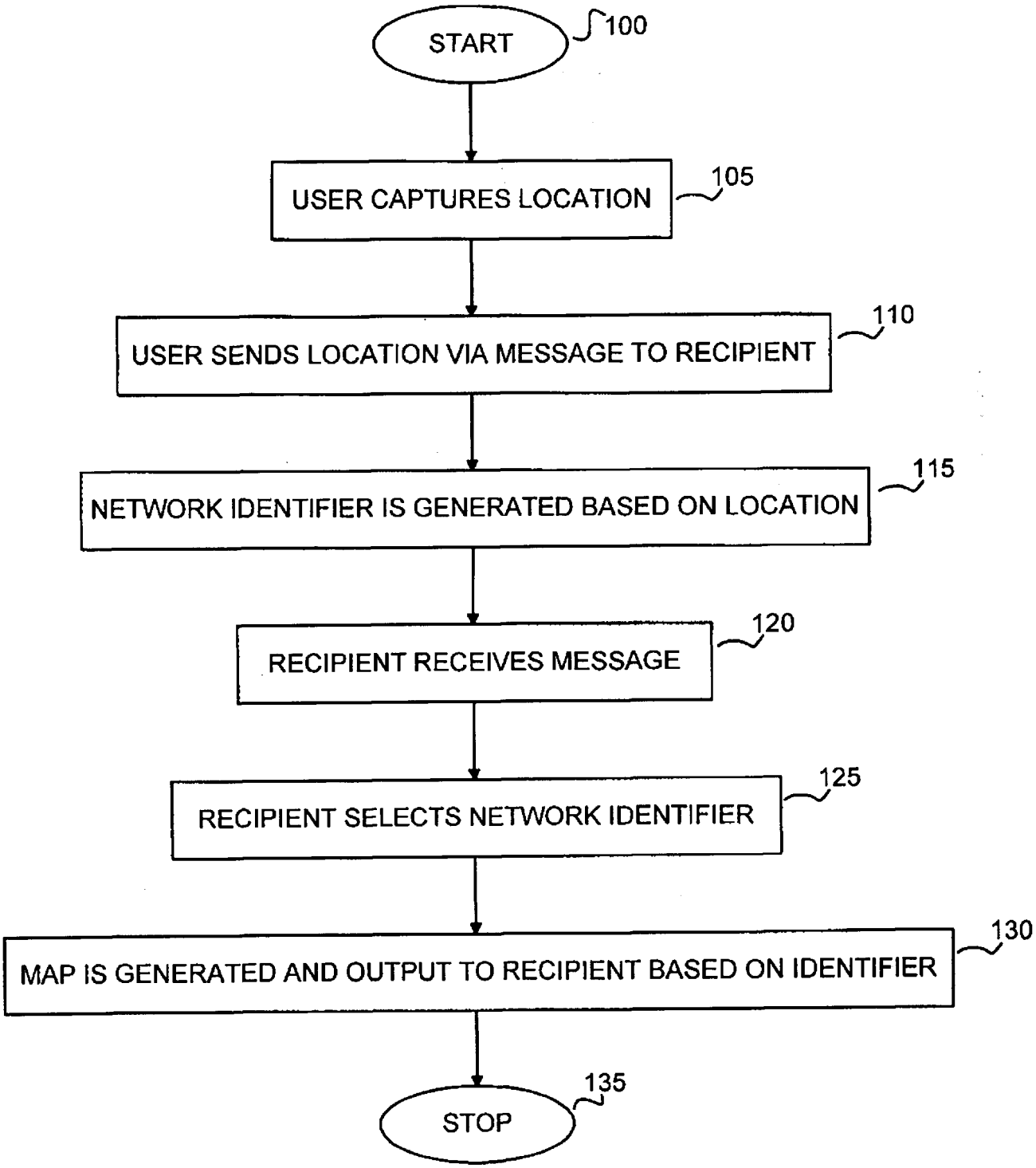

START
100
USER CAPTURES LOCATION
105
USER SENDS LOCATION VIA MESSAGE TO RECIPIENT
110
NETWORK IDENTIFIER IS GENERATED BASED ON LOCATION
115
RECIPIENT RECEIVES MESSAGE
120
RECIPIENT SELECTS NETWORK IDENTIFIER
125
MAP IS GENERATED AND OUTPUT TO RECIPIENT BASED ON IDENTIFIER
130
STOP
135

Figure 4

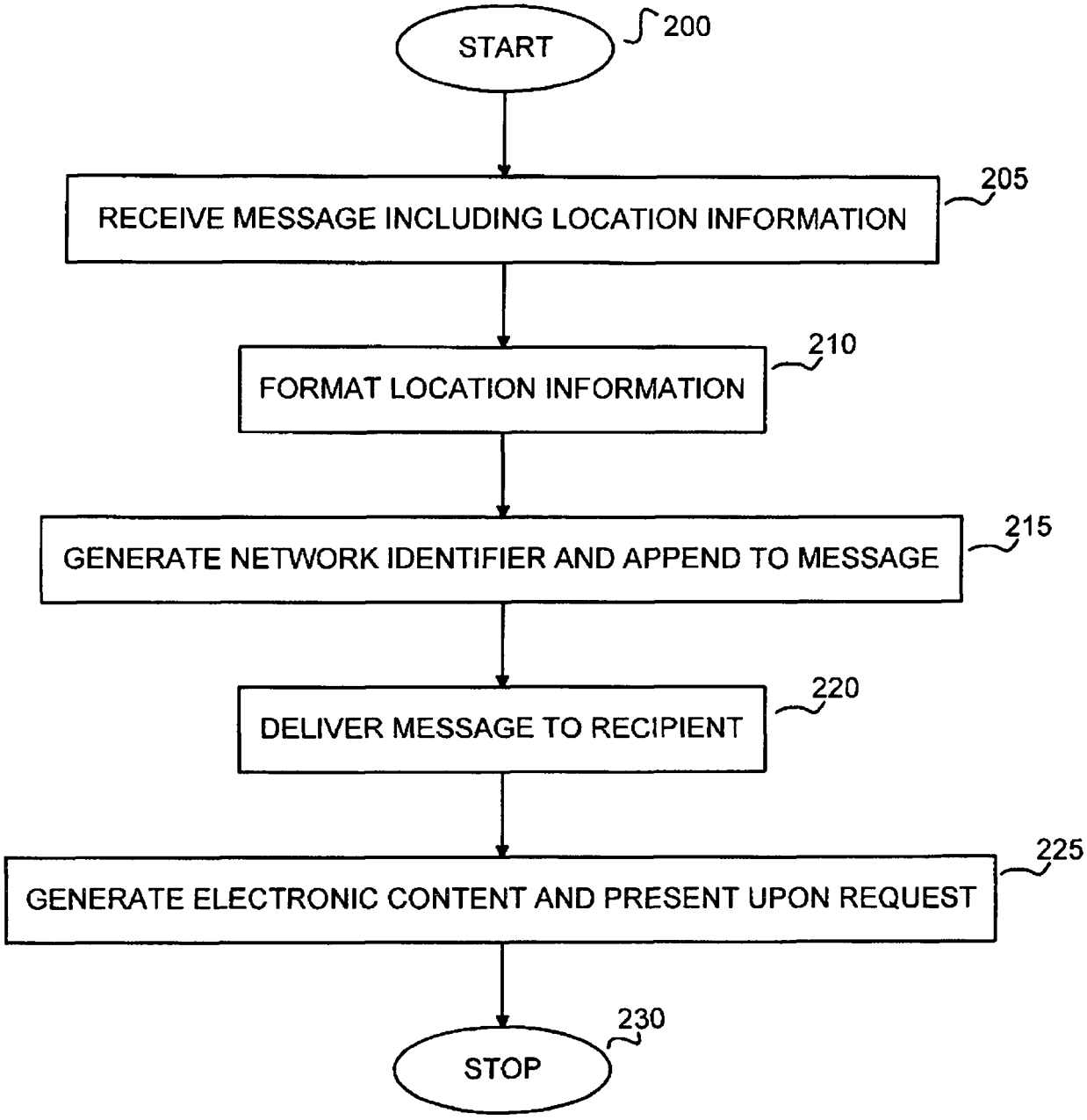

START
200
RECEIVE MESSAGE INCLUDING LOCATION INFORMATION
205
FORMAT LOCATION INFORMATION
210
GENERATE NETWORK IDENTIFIER AND APPEND TO MESSAGE
215
DELIVER MESSAGE TO RECIPIENT
220
GENERATE ELECTRONIC CONTENT AND PRESENT UPON REQUEST
225
STOP
230

Figure 5

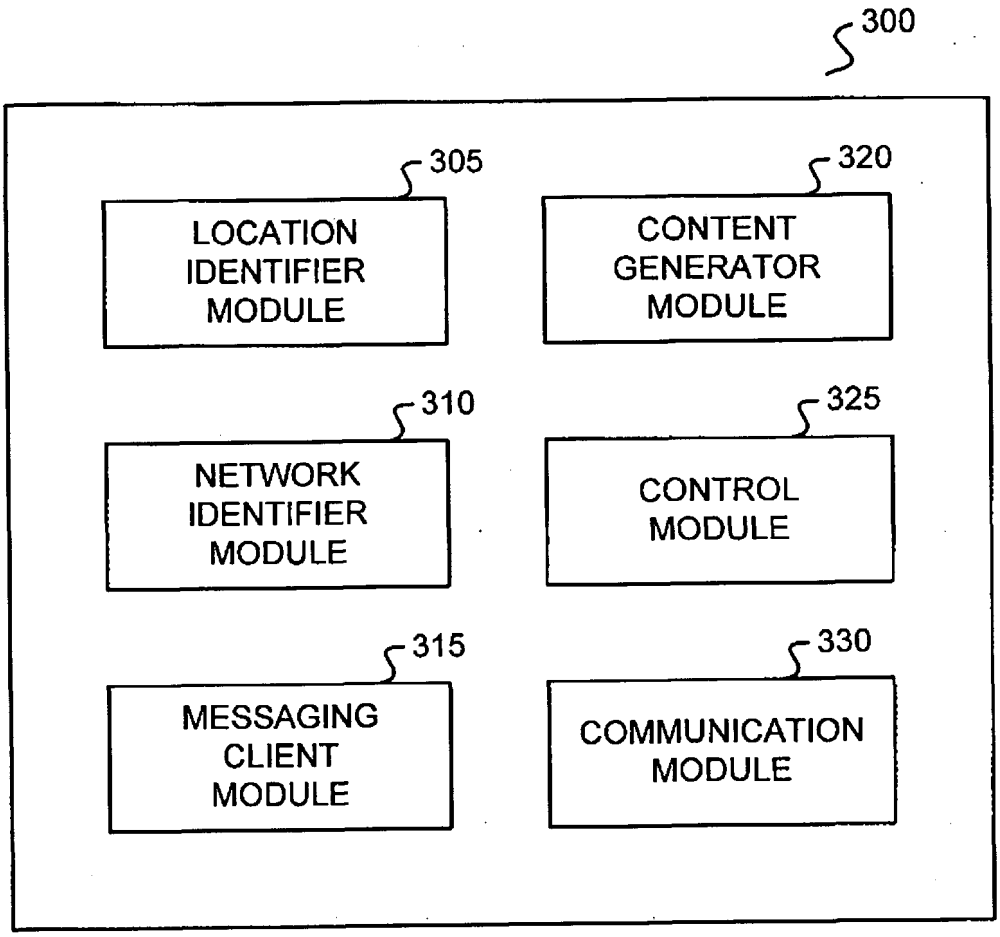

300
305
LOCATION IDENTIFIER MODULE
320
CONTENT GENERATOR MODULE
310
NETWORK IDENTIFIER MODULE
325
CONTROL MODULE
315
MESSAGING CLIENT MODULE
330
COMMUNICATION MODULE

Figure 6

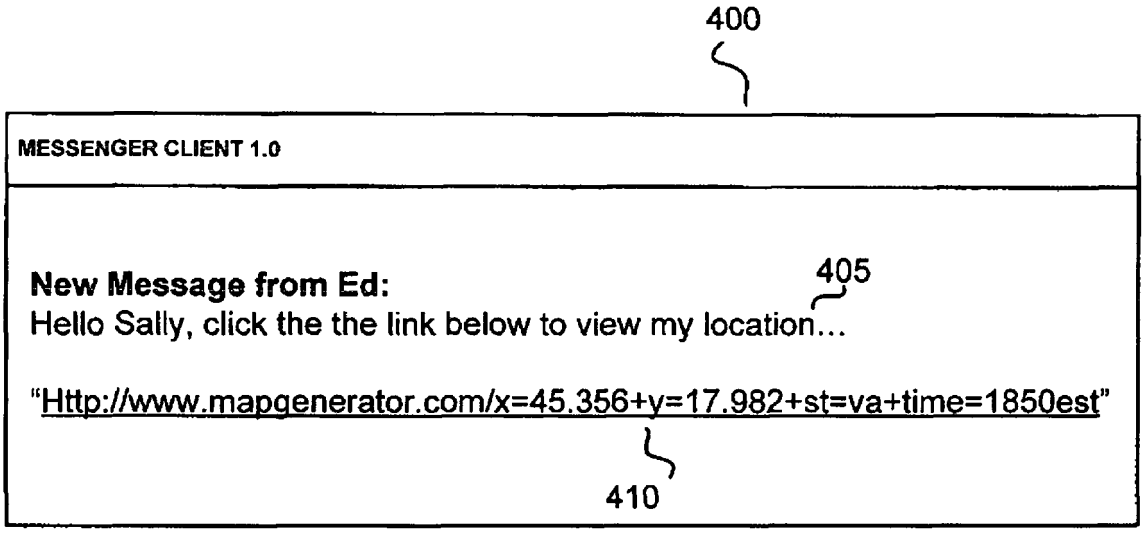
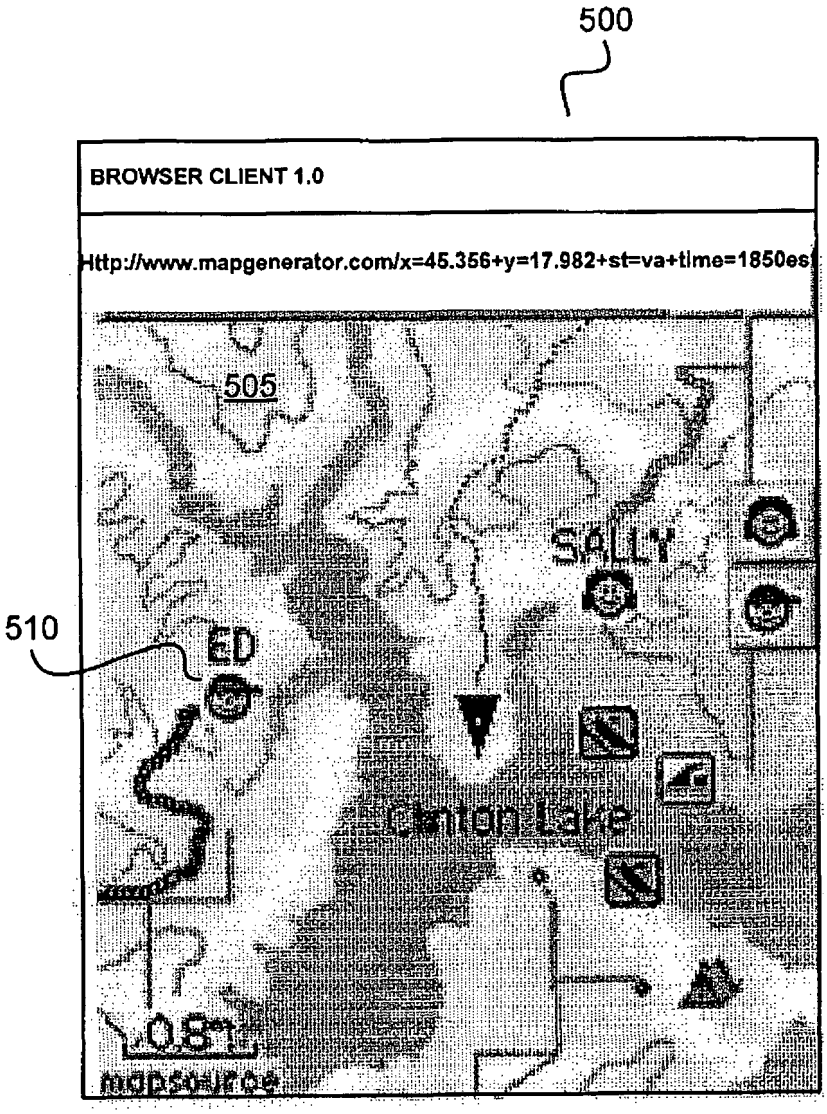

400
MESSENGER CLIENT 1.0
New Message from Ed:
405
Hello Sally, click the the link below to view my location...
"Http://www.mapgenerator.com/x=45.356+y=17.982+st=va+time=1850est"
410

Figure 7


500
BROWSER CLIENT 1.0
Http://www.mapgenerator.com/x=45.356+y=17.982+st=va+time=1850es
505
SALLY
510
ED
Canton Lake
0.8mi
mapsource

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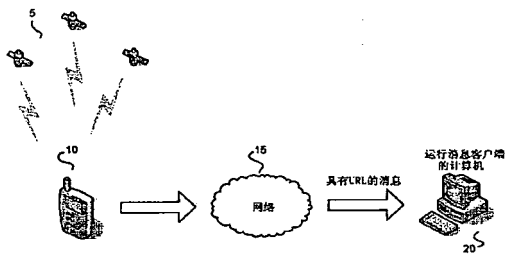
权利要求书 3 页 说明书 11 页 附图 7 页

[54] 发明名称

通过发消息进行用户发起的基于位置的服务的系统和方法

[57] 摘要

用于通过发消息进行用户发起的基于位置的服务的系统和方法。 利用运行在通信设备上的发消息客户端，用户经由文本和/或即时消息将位置信息传送到接收者。 该位置信息可以从 GPS 程序或者用户通信设备可访问的或安装在用户的通信设备上的其他位置确定程序获得的。 根据该位置信息创建了诸如 URL 的网络标识符并且将该网络标识符附加到消息上。 当接收者选择了该网络标识符时，在接收者的通信设备上显示诸如包括发送者位置的图形地图的电子内容。



1. 一种方法包括：

通过网络从第一节点接收目的地是第二节点的用户发起的文本消息，所述消息包含与所述第一节点相对应的位置信息；

生成与所述位置信息相关联的网络标识符；以及

将包括所述网络标识符的所述文本消息传递到所述第二节点。

2. 根据权利要求 1 所述的方法，进一步包括：当在所述第二节点处由操作员选择了所述网络标识符时，根据所述位置信息生成电子内容并且将该电子内容输出到所述第二节点。

3. 根据权利要求 1 所述的方法，其中，所述位置信息包括与所述第一节点相关联的地理坐标。

4. 根据权利要求 3 所述的方法，其中，由与所述第一节点进行通信的 GPS 接收机提供所述地理坐标。

5. 根据权利要求 1 所述的方法，其中，所述位置信息包括定时信息。

6. 根据权利要求 5 所述的方法，进一步包括根据所述定时信息确定所述第一节点的位置。

7. 根据权利要求 2 所述的方法，其中，生成与所述位置信息相关联的网络标识符包括生成统一资源定位符（URL）。

8. 根据权利要求 7 所述的方法，其中，根据所述位置信息生成所述电子内容包括根据在所述统一资源定位符中指定的信息来生成浏览器支持的内容。

9. 根据权利要求 8 所述的方法，其中，生成浏览器支持的内容包括生成从包括地图、基于位置的广告、地标及其组合的组中选择的内容。

10. 一种发消息系统，包括：

消息输入界面，所述消息输入界面适于接收来自第一用户的电子消息，该电子消息包括与所述第一用户相对应的位置信息；

网络标识符生成模块，所述网络标识符生成模块通信地耦合到所述消息输入模块，并且适于至少部分地根据所述位置信息生成网络标识符；以及

通信模块，所述通信模块通信地耦合到所述网络标识符生成模块，并且适于将所述电子消息转发到由所述第一用户指定的第二用户，所述电子消息包括所述网络标识符。

11. 根据权利要求 10 所述的发消息系统，进一步包括内容生成模块，所述内容生成模块响应于第二用户选择了所述网络标识符而根据在所述网络标识符中指定的信息生成电子内容。

12. 根据权利要求 11 所述的发消息系统，其中，所述内容生成模块包括存储在电子存储介质中的计算机可读代码，所述电子存储介质适于使处理器根据在所述网络标识符中指定的一个或多个输入字段而生成电子内容。

13. 根据权利要求 11 所述的发消息系统，其中，所述网络标识符包括 URL。

14. 根据权利要求 11 所述的发消息系统，其中，所述内容生成模块适于生成包括由所述位置信息指定的地理位置的导航地图。

15. 根据权利要求 11 所述的发消息系统，其中，所述内容生成模块适于根据来自所述第二用户的指令而生成用于所述第一用户的内容并且将该内容提供给所述第一用户的通信设备。

16. 一种方法，包括：

确定第一网络节点的位置；

根据所述位置生成网络标识符；以及

将电子消息发送到第二网络节点，所述电子消息包括所述网络标识符。

17. 根据权利要求 16 所述的方法，其中，确定第一网络节点的位置包括确定第一网络节点的地理坐标。

18. 根据权利要求 17 所述的方法，进一步包括响应于发送到服务提供商的请求，根据在所述网络标识符中的信息而呈现电子内容。

19. 根据权利要求 18 所述的方法，其中，生成网络标识符包括生成 URL。

20. 根据权利要求 19 所述的方法，其中，呈现电子内容包括生成包括所述第一网络节点的位置的图形地图并且将所述图形地图输出到所述第二网络节点。

21. 根据权利要求 16 所述的方法，其中，确定第一网络节点的位置包括接收来自与所述第一网络节点进行通信的 GPS 设备的位置信息。

通过发消息进行用户发起的基于位置的服务的系统和方法

背景技术

[0001]因为美国政府在二十世纪八十年代使得 NAVSTAR 卫星星座的定时信号可用于民用，因此基于位置的服务变得日益流行。许多汽车制造商现在提供了基于全球定位卫星（GPS）的定位器设备选项。通常将这些单元集成到车辆的仪表板控制台中。而且，其他公司制造用于安装在汽车、船、以及其他车辆中的车体组件（aftermarket）GPS 设备以及甚至用于徒步旅行、勘探、或者其他娱乐性使用的手持式设备。这样的 GPS 设备提供了相对高的精确度和普遍可用性，并且因此提供了对相对便宜且精确定位的可接受的解决方案。

[0002]为了满足 FCC 增强 911（E911）要求并且向客户提供用于利用他们已有的装置来访问位置信息的机构，商用移动无线电服务提供商（CMRSP）已经促使他们的设备制造商将 GPS 接收机集成到电话、PDAs、以及他们的网络所支持的其他通信装置中。结果，用户能够在他们的电话、PDA 等等上直接查看地图和位置信息。设备的能力和精确度受到该设备的本地内存的限制。而且，设备所使用的数据是静态的并且因此很快过时。

附图说明

[0003]图 1 是根据示例性实施例的用于通过消息来实现用户发起的基于位置的服务的系统的示意图；

[0004]图 2 是根据示例性实施例的到用户计算设备的包括发送者位置的基于消息的地图输出；

[0005]图 3 是根据示例性实施例的从用户的视角来看用于通过发消息(messaging)来执行用户发起的基于位置的服务的示例性方法的流程图；

[0006]图 4 是根据示例性实施例的从提供商的视角来看用于通过发消息来提供用户发起的基于位置的服务的示例性方法的流程图；

[0007]图 5 是图示根据示例性实施例的用于通过发消息来提供用户发起的基于位置的服务的系统的组件的框图；

[0008]图 6 是根据示例性实施例的发消息客户端的示例性界面窗口；以及

[0009]图 7 是根据示例性实施例的用于显示基于位置的服务的内容查看器插件的示例性界面窗口。

具体实施方式

[0010]以下描述意在传达对通过提供多个特定实施例所描述的实施例以及涉及通过发消息来进行用户发起的基于位置的服务的细节的透彻理解。然而，应当理解，本发明并不局限于这些特定实施例和细节，它们仅是示例性的。

[0011]如在这里所使用的，术语"发消息"将被广义地解释成包括通过即时消息客户端来发送诸如 AOL 即时信使、雅虎信使等的消息以及诸如利用移动电话或者其他通信设备通过短消息服务（SMS）来发送消息。因此，在该公开和权利要求的上下文中发送消息包括利用电话、PDA、计算机、或者其他通信设备来发送任一类型的消息。

[0012]现在参考图 1，图 1 是根据示例性实施例的用于通过消息来实现用户发起的基于位置的服务的系统的示意图。该系统包括第一用户通信设备 10，第一用户通信设备 10 经由通信网络 15 与第二用户计算机 20 进行通信。在优选实施例中，第一用户通信设备可以是诸如移动电话、PDA、发消息设备、或者其他便携式通信设备的移动通信设备。在优选实施例中，用户通信设备 10 可以配备有定位器功能，诸如可操作的根据从 GPS 卫星星座 5 接收到的定时信号来确定第一用户通信设备 10 的即时位置的 GPS 接收机。在各种其他实施例中，第一用户通信设备 10 可以不包括定位器功能本身，而是能够从诸如 GPS 设备（未

示出）的与第一用户通信设备 10 进行电子通信的定位器设备请求位置信息或者请求通过网络 15 可获得的位置服务（例如，利用无线塔三角测量技术的位置服务）。在各种实施例中，第一用户通信设备 10 可以配备有诸如即时发消息客户端的软件客户端。替代地或者组合地，第一用户通信设备 10 可以利用 SMS 协议发送消息。

[0013]在至少一个示例性实施例中，第一用户通信设备 10 包括发送位置功能，该发送位置功能可以被配置成在请求时在消息中将设备 10 的位置发送到指定接收者。这可以在发消息会话期间进行、在开始会话时自动进行、或者作为开始发消息会话/发送消息的方式进行。也就是说，如果第一用户通信设备 10 正在运行消息客户端，那么该客户端可以具有用于允许用户选择性地使该客户端发送用户的位置的"发送位置"控制。如果第一用户通信设备利用 SMS 发消息，那么当发送文本消息时"发送位置"可以是可用的选项。也就是说，可以提示用户"发送位置?"，或者替代地，用户可以从可用消息属性列表中选择"发送位置"。

[0014]应当理解，虽然为了便于说明的目的，图 1 中图示的网络 15 仅被示为在第一用户通信设备 10 与第二用户计算机 20 之间的单个网络路径，但是网络 15 实际上可以包括基于无线电（例如蜂窝）、地面通信线、和/或卫星的 PSTN 或 IP 网络的各种组合。例如，第一用户通设备 10 可以将包含消息的 RF 信号广播到蜂窝塔。该塔可以进而将该信号传递到基于地面或卫星的网络以传递至期望接收者。该接收者可以利用 DSL、电缆、光纤、T1 或 T3 地面通信线、802.11x、RF、IR、或者其他无线连接或者利用众所周知的另一连接协议而与网络 15 对接。

[0015]此外，虽然第二用户通设备 20 即接收者终端在图中被示为桌上型计算机，但是应当理解，该设备 20 还可以是移动设备、膝上型计算机、或者被配置成运行兼容发消息客户端或接收 SMS 相容消息的其他网络使能设备。

[0016]在各种实施例中，来自发送者的消息可以包括根据发送者位置生成的网络标识符。在优选实施例中，可以在发送者的设备 10 处或者网络 15 上的中间点处生成 URL。该 URL 优选包含数据字段，该数据字段允许在接收者选择时在接收者设备 20 的浏览器客户端上创建并显示图形地图。在各种实施例中，图形地图可以包括发送者的设备 10 的位置的图标或者其他图形表示以及与该发送者周围的地理区域相对应的信息。

[0017]现在参考图 2，在该图中图示了根据示例性实施例的到用户计算设备的包括发送者位置的基于消息的地图输出 25。如上所讨论的，在各种实施例中，当发送者将包括发送者的位置的消息发送到接收者时，可以生成 URL 并且根据位置数据将 URL 附加到消息上。在各种实施例中，该消息可以包括具有诸如"点击这里以查看发送者的位置"或者"点击这里以访问地图"的标记的超文本链接。在优选实施例中，选择所提供的链接可以调用诸如因特网内容浏览器的内容浏览器，该内容浏览器在显示地图的接收者的设备上打开窗口，诸如该图中所述的地图输出 25。在各种实施例中，该地图可以提供诸如图 2 的地图输出 25 中所示的姓名"Ed"和相应男性图标的图形图像。在各种实施例中，该地图可以包括在发送者的位置周围区域中的商业、资产、特征、或者其他项目的位置。在各种实施例中，地图输出 25 可以包括用户控制，该用户控制允许查看器放大或缩小、平移、并且甚至获得诸如例如驱动方向的指向地图上所列的各种特征的方向。

[0018]现在参考图 3，该图提供了根据示例性实施例的从用户的视角来看用于通过发消息来执行用户发起的基于位置的服务的示例性方法的流程图。该方法开始于框 100。在框 105 中，用户捕获他的/她的位置。在各种实施例中，用户可以选择对使他的设备获得该设备的当前位置的他的/她的通信设备的控制。在优选实施例中，这可以通过从在用户的设备中的 GPS 接收机获得位置信息来实现。替代地，用户的

设备可以从与该用户的设备进行通信的另一 GPS 使能设备获得位置信息。在框 110 中，在消息中将该位置信息发送到接收者。在各种实施例中，可以将框 105 和 110 中的步骤合并成单个步骤。也就是说，当用户选择了"发送位置"功能时，该设备可以获得它的位置并且在消息中将该位置发送到指定接收者。

[0019]在框 115 中，网络标识符可以根据在框 105 捕获的位置来创建。在各种实施例中，如果 GPS 是位置数据的源，那么该数据通常是国家海洋电子协会（NMEA）0183 格式。因此，在框 115 中，可以将 GPS 生成的数据重新格式化成 URL。也就是说，利用接收纬度和经度输入的绘图程序，可以生成 URL，该 URL 使在选择时生成图形地图并且可以包含包括发送者的位置信息的区域。在各种实施例中，URL 可以在发送者的通信设备处生成并且仅放入消息中。在各种其他实施例中，可以将 GPS 信息以其原有的 NMEA 0183 格式或者在重新格式化之后沿着网络转发到中间方。该中间方可以是基于网络的地图内容提供商。该中间方可以根据位置信息生成 URL、将该 URL 附加到消息上、并且根据发送者的指令通过网络将该消息传递到接收者。在各种实施例中，URL 可以包含诸如地图内容提供商（例如，www.rmapcompany.com）的附加信息以及与发送者相关联的标识符（例如，电话号码）。该附加信息可以自动插入到消息（来自发送者的设备 10 的本地存储器）中或者可以在发送该消息的过程中由发送者手动指定。

[0020]在框 120 中，接收者接收该消息。这可以包括如果该消息是基于 SMS 的消息则接收新消息通知，或者如果发送者和接收者正在通过一个或多个众所周知的即时发消息客户端进行通信则该消息本身可以出现在用户的发消息客户端中。在各种实施例中，网络标识符在该消息一部分中可以为接收者可见。在优选实施例中，网络标识符可以是 URL。在框 125 中，接收者选择网络标识符。在优选实施例中，接收者利用他的鼠标、指示笔、或者其他输入设备来选择 URL，从而调

用浏览器客户端并且将该信息在 URL 中传送到在该 URL 中指定的服务提供商。在各种实施例中，在框 130 中，服务提供商可以根据 URL 中的信息生成图形地图显示，并且将该图形地图显示传送到接收者用于在浏览器客户端的窗口中输出。在各种实施例中，该图形地图可以包括含有交互元素（例如，Java 脚本）的动态网页。该图形地图可以包括地形和/或街道地图并且优选地将发送者的位置示为图标或者其他可标识的字符，以便接收者可以以足够的特定性精确定位发送者的位置。在各种实施例中，该图形地图是与图 2 中所图示的地图相似的地图。该方法在框 135 结束。

[0021]现在参考图 4，该图是根据示例性实施例的从提供商的视角来看用于通过发消息来提供用户发起的基于位置的服务的示例性方法的流程图。虽然图 3 的流程图对从服务用户的视角来看的步骤进行了详述，但是相反该流程图是从提供商的视角进行的。

[0022]该方法开始于框 200。在框 205 中，包括位置信息的消息可以由服务提供商来接收。在各种实施例中，该消息包括可以与基于服务提供商的绘图程序不兼容的原始 GPS 数据。因此，在框 210 中，可以将所接收到的消息中的位置信息重新格式化成由基于动态网络的绘图程序所支持的格式。在框 215 中，网络标识符可以根据所格式化的位置信息而生成并且可以被附加到该消息上。在优选实施例中，系统根据位置信息创建 URL，使得当选择了 URL 时，可以进行查询以根据在所接收到的消息中的位置信息生成地图。在一些实施例中，URL 进一步包括基于网络的地图提供商的标识符以及发送者的标识符（例如，电话号码）。在一些实施例中，在将消息发送到服务提供商之前，可以在发送者的设备处执行框 210 和 215（例如，利用在发送者的设备处可用的软件）。

[0023]在框 220 中，将该消息传递到接收者。如以上讨论的，这可以包括在即时发消息会话中传递基于 SMS 的消息或者仅仅另一消息。

在框 225 中，在接收到来自接收者的请求（例如，包括来自 URL 的信息的请求）时，那么可以创建电子内容并且将该电子内容输出到发送该请求的设备。在优选实施例中，这包括输出包含在位置信息中指定的位置周围的区域的图形地图，并且更优选地它包括表示该位置的图标或者其他可见字符。关于该图标或者其他可见字符，在图形地图上也可以显示与该位置信息相关联的发送者的电话号码或者即时发消息 ID。这可以根据在 URL 中的发送者标识来提供，并且可以包括检索发送者指定的显示信息（例如，特定文本、图标等等）。与在图形地图所显示的区域中的感兴趣的项目相关联的信息也可以被服务提供商检索并且利用各种图标被显示在图形地图上。该图形地图可以包括动态单元，该动态单元允许接收者与服务提供商交换控制信息，以对图形地图的所显示的区域和/或由图形地图显示的信息类型进行控制。该方法在 230 停止。

[0024]应当理解，在图 4 的方法中，服务提供商可以执行其中所述的一个或所有步骤。例如，在各种实施例中，发送用户的通信设备可以生成包括 URL 的适当格式化的消息，以作为 SMS 消息或者即时消息直接传递到接收者。在这样的实施例中，服务提供商通常可以提供允许通信设备生成 URL 的功能，并且当接收者选择网络标识符时可以提供该内容并且当无线连接可用时提供与网络的实际无线连接。然而，在其他实施例中，服务提供商可以仅仅提供下述功能，即使得发送者能够生成包括位置信息而并非第三方的消息的应用、插件、或者软件，诸如地理信息服务（GIS）。当接收者从所传递的消息选择了网络标识符时，诸如 Yahoo、Google、Mapquest 等等的因特网内容提供商可以生成包括图形地图的电子内容。众所周知，无线服务提供商通常仅提供收费服务的部分。例如，在发送文本消息的过程中，无线提供商可以对所发送的数据字节收费或者收取每个消息费用。然而，如果接收者不是提供商的用户中的一个，那么提供商不接收用于传递消息的收入。类似地，如果发送者正在利用即时消息客户端，那么提供商通常基于字节或者时间对从用户设备发送的以及由用户的设备接收到的数

据收费。因此，由此可推断出提供商可以仅在该提供商在消息的移动中能够涉及到的服务的程度上提供服务。因此，在图 4 中的框 220 的上下中，将消息传递到接收者实际上可以包括将来自提供商的网络的消息传递到另一网络，诸如用于对消息的最终传递进行处理的 PSTN 或者因特网骨干网。

[0025]现在参考图 5，该图图示了根据示例性实施例的用于对通过发消息来提供用户发起的基于位置的服务的系统 300 的组件进行说明的框图。该系统 300 可以包括用于执行各种系统功能的多个模块。每个模块可以包括独立的软件程序、单个程序的子程序、执行软件的硬件、一个或多个专用集成电路（ASIC）、集成设备的组件、或者在一个或多个不同设备中的分布式组件。此外，图 5 中所示的模块仅仅是示例性的。各种实施例可以利用另外的或者更少的模块并且甚至可使用与图中所示那些不同的模块。这些模块意在是根据该公开的各种实施例的系统所执行的功能的示例。

[0026]图 5 中所示的系统 300 包括位置标识符模块 305、网络标识符模块 310、发消息客户端模块 315、内容生成器模块 320、控制模块 325、以及通信模块 330。控制模块 325 可以包括计算机系统的中央处理单元（CPU）、数字信号处理器（DSP）、ASIC、硬件和软件的组合，并且甚至可以表示用于通过发消息促进用户发起的基于位置的服务的控制程序的实时内核。

[0027]在各种实施例中，位置标识符模块 305 可以适于在请求时提供用户的通信设备的位置。如这里所讨论的，位置标识符模块 305 可以与 GPS 收发器进行通信并且可以通过一个或多个通信协议从定位器设备请求位置信息，所述 GPS 收发器通信地耦合到用户的通信设备。在各种实施例中，位置标识模块 305 可以将该位置信息格式化成适当格式用于与该系统一起使用。在各种其他实施例中，对位置信息的请求可以指定格式。

[0028]网络标识符模块310可以获得由位置标识符模块305提供的信息并且将该信息转换成诸如URL的网络标识符，当该网络标识符被选择时，它可以使内容提供商根据由位置标识符模块 305 获得的位置信息以图形地图的形式输出内容。在各种实施例中，该网络标识符模块310可以将该网络标识符直接附加到目的地是指定接收者的消息上。网络标识符可以对数据存储进行访问，该数据存储包括诸如绘图服务提供商的地址和/或与发送设备相关联的标识符（例如，电话号码或者用户 ID）的信息。

[0029]在各种实施例中，发消息客户端模块315可以允许用户通过提供商的网络发送消息。发消息客户端模块 315 可以是诸如为公知的能够发消息的客户端的插件。替代地，发消息客户端模块 315 可以是由用户的通信设备支持的SMS协议。

[0030]在各种实施例中，内容生成器模块320可以包括诸如在优选实施例中的基于因特网的地图内容提供上的基于网络的内容门户。在各种实施例中，发消息服务提供商可以对内容生成器模块 320 进行控制，而在各种其他实施例中，第三方可以保持内容生成器模块320。在由第三方保持模块 320 的这样的实施例中，网络标识符模块 310 可以按照与第三方的内容生成器模块 320 兼容的方式对网络标识符进行格式化。在各种实施例中，当消息接收者选择了包含在该消息中的网络标识符时，可以调用内容查看客户端并且可以将接收者引向与该标识符相关联的网站。在各种实施例中，标识符可以起对内容生成器模块320的查询的作用，该内容生成器模块320作为响应可以根据在标识符中指定的一个或多个字段而生成内容。然而，在其他实施例中，内容可以是已被创建——这是在创建了网络标识符之后——使得标识符可以仅仅是对静态内容的网络指涉（reference），并且因此仅包含该内容的地址。在优选实施例中，内容生成器模块 320 可以生成图形地图并且将该地图输出到接收者客户端应用，该地图包括包含在网络标识符

中指定的位置信息的位置以及发送者在图形地图包含的区域之内的位置的视觉指示器。

[0031]通信模块 330 可以允许在诸如无线电（蜂窝）网络和地面线网络（PSTN、ATM 等等）之间的网络之间的通信。因此，通信模块 330 可以包括网络接口、网关、路由器和/或其他适当硬件、以及硬件和软件的组合。通信模块 330 可以在相同提供商网络上的用户之间中继消息，或者可以仅仅促进在发送者与接收者之间的通信路径的一部分，诸如仅当接收者与基于陆线的网络或者另一提供商的网络相连接时的无线部分。

[0032]现在参考图 6，该图图示了根据示例性实施例的发消息客户端的示例性界面窗口 400。在该图中的窗口 400 说明了经由即时发消息客户端来发送消息的示例性实施例。这样的客户端是公知的。发消息客户端可以运行在计算机、移动电话、PDA、或者其他有线或无线通信设备上。界面窗口 400 包括新消息通知以及请求接收者点击该消息中的链接 410 以查看发送者的位置的消息。应当理解，在各种实施例中，链接 410 可以不显示完整的 URL，而可以是词、图形图像、或者其他对象。众所周知，在超文本标记语言（HTML）中可以按照对用户透明的方式将任何对象编码成特定 URL。该图中所示的示例性 URL 410 说明了 URL 本身可以如何被解码成包含一个或多个参数或者输入字段（例如，由"+"符号界定），从而当选择了该 URL 时使得它能够起对目标域的查询的作用。

[0033]图 7 是根据示例性实施例的用于显示基于位置的服务的内容查看器插件的示例性界面窗口 500。在各种实施例中，如果接收者正在利用计算机来访问该消息，那么界面窗口 500 可以是因特网浏览器。在各种其他实施例中，界面窗口 500 可以是 WAP、或者支持图形图像的其他类型的标准化的或者专有的移动设备内容浏览器。在各种实施例中，诸如在图 6 的示例中，当接收者选择了包括在所接收到的消息

中的网络标识符（URL）时可以自动调用浏览器客户端接口窗口 500。在优选实施例中，窗口 500 显示图形地图 505。该图形地图 505 可以优选地包括示出了消息发送者相对于在图形地图 505 上所示的其他区域的位置的图标 510 或者其他标识符。这还显示其他感兴趣的项目，诸如商业、地标、或者接近于发送者的其他资产。而且，在各种实施例中，接收者可以通过内容查看器插件的界面窗口来访问典型的地图功能，诸如放大和缩小、平移、获得去往/来自在地图 505 上显示的一个或多个位置的方向。

[0034]应当理解，虽然在将消息从移动通信设备发送到计算机设备的上下文中已经描述了这里讨论的各种实施例，但是在这里阐述的原理同样适用于用户将消息从非移动计算机发送到另一非移动计算机或者当仅在两个移动设备之间发送消息时的环境。

[0035]还应当理解，虽然在优选实施例中可以从 GPS 设备得到位置，但是在各种其他实施例中，不同机构可以用于定位目的。例如，各种商用移动无线电服务提供商（CMRSPs）可以使用在收发器塔之间的三角测量、或甚至单个收发器塔、或者用于获得位置信息的其他非基于卫星的方法。在各种实施例中，可以不要求 GPS 型精确度。

[0036]在前述说明书中，已参考附图对各个优选实施例进行了描述。然而，很明显的是在不脱离如权利要求所阐述的本发明的更宽广范围的情况下可以对本发明做出各种修改和改变，并且可以实现另外的实施例。因此，该说明书和附图应当视为说明性而非限制性的意义。

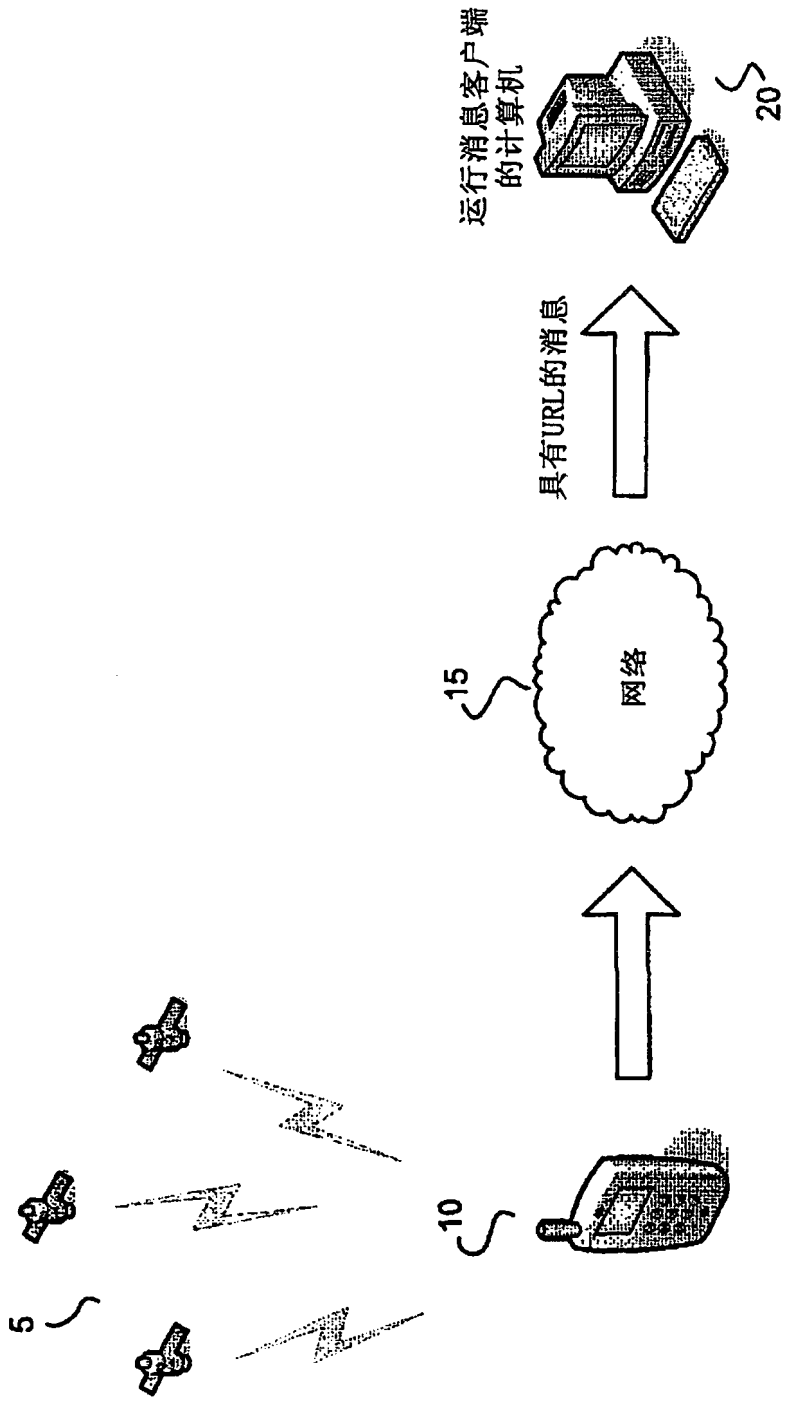
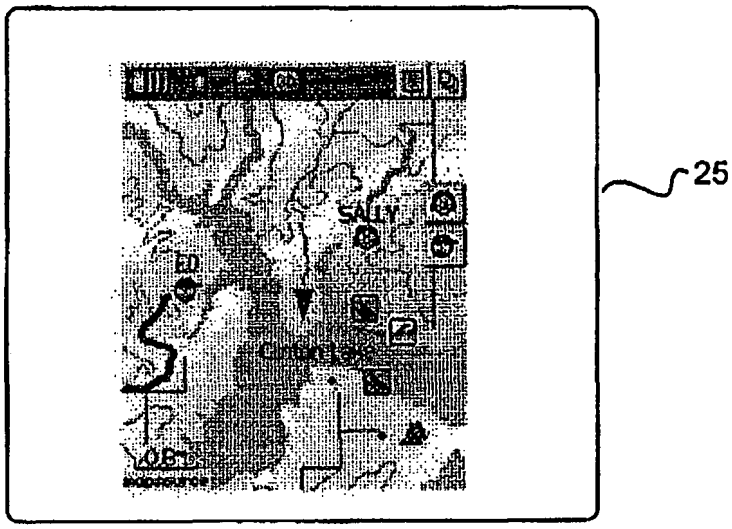


图1



地图输出

图2

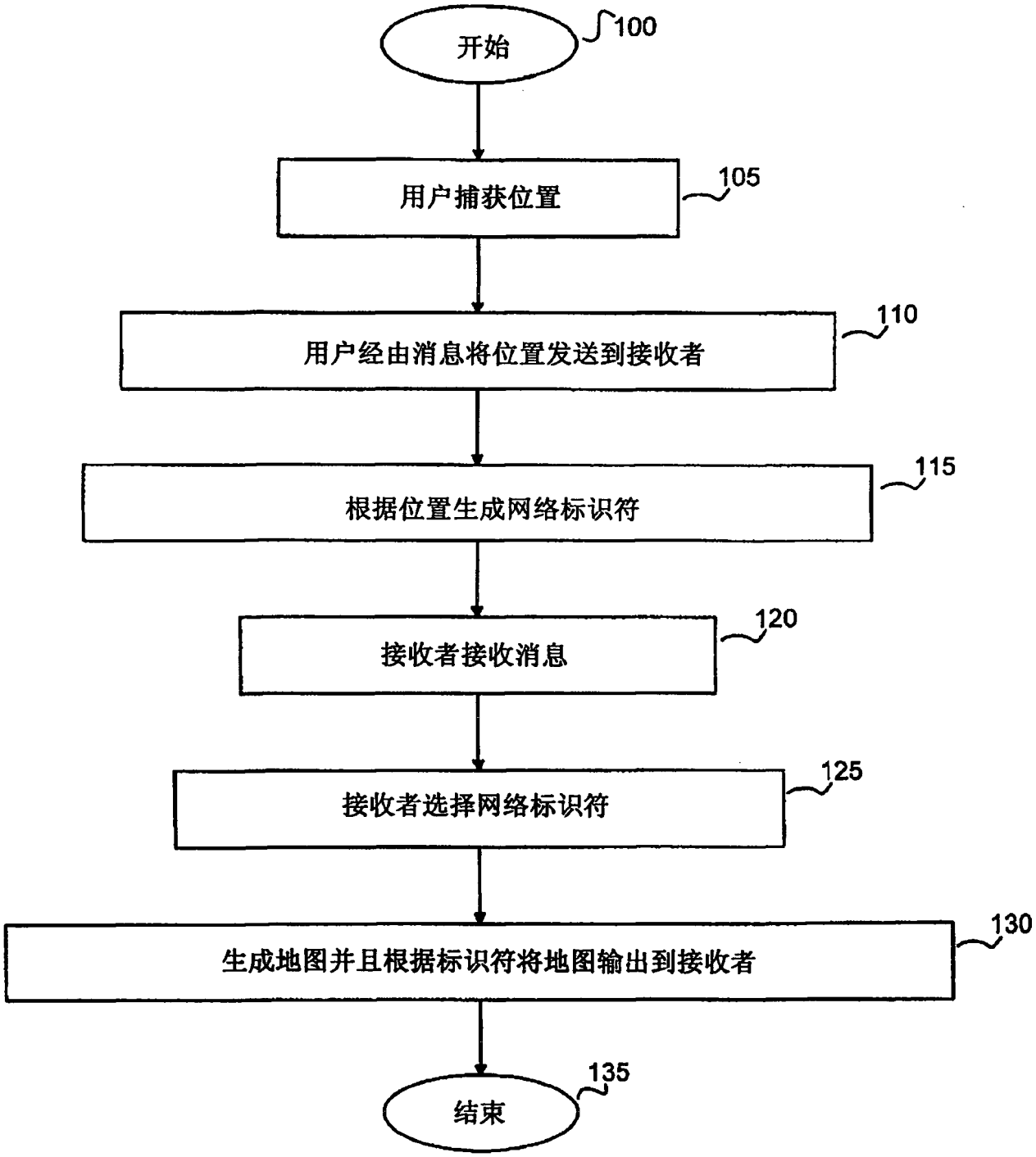

开始
100
用户捕获位置
105
用户经由消息将位置发送到接收者
110
根据位置生成网络标识符
115
接收者接收消息
120
接收者选择网络标识符
125
生成地图并且根据标识符将地图输出到接收者
130
结束
135

图3

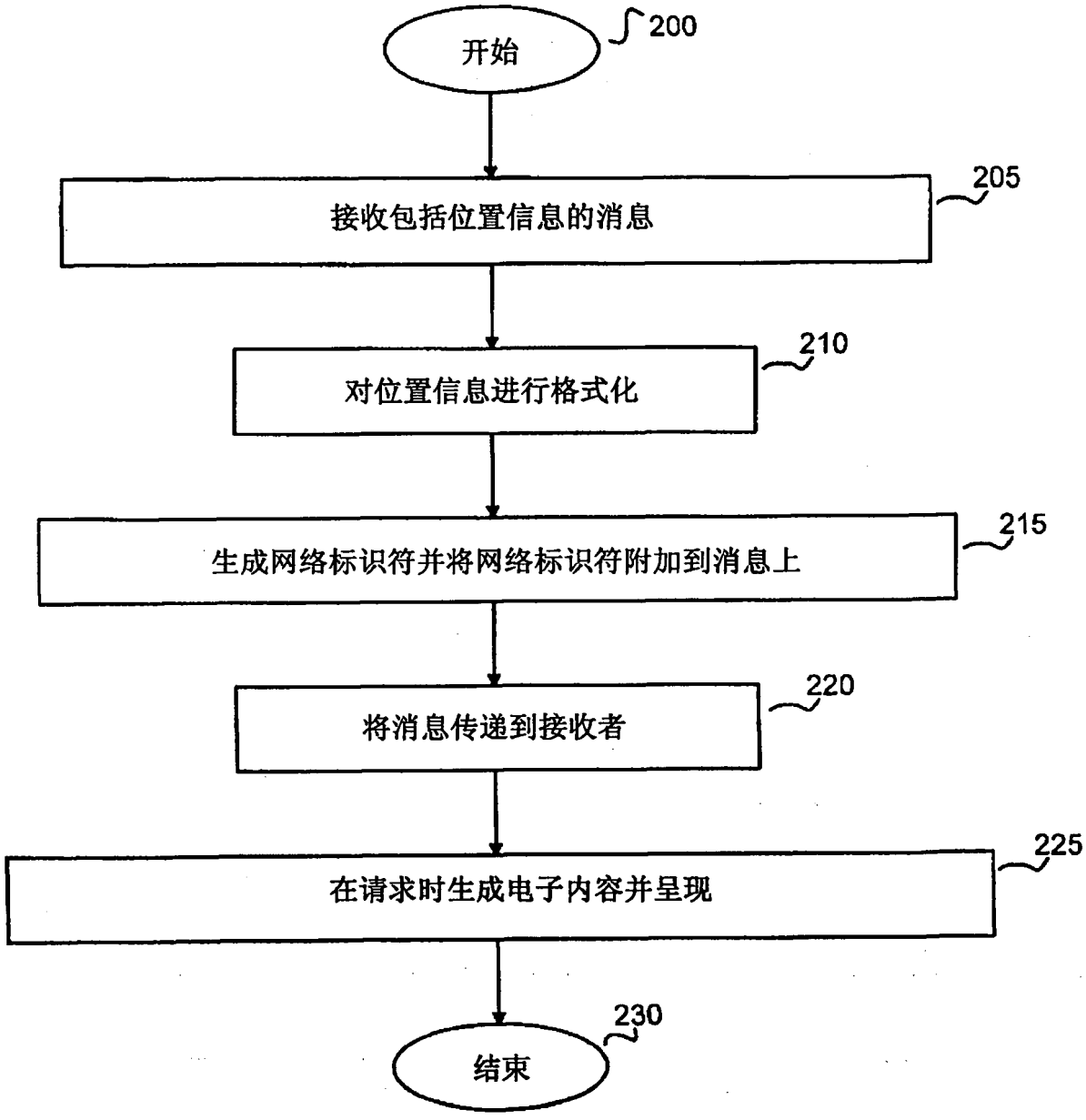

开始
200
接收包括位置信息的消息
205
对位置信息进行格式化
210
生成网络标识符并将网络标识符附加到消息上
215
将消息传递到接收者
220
在请求时生成电子内容并呈现
225
结束
230

图4

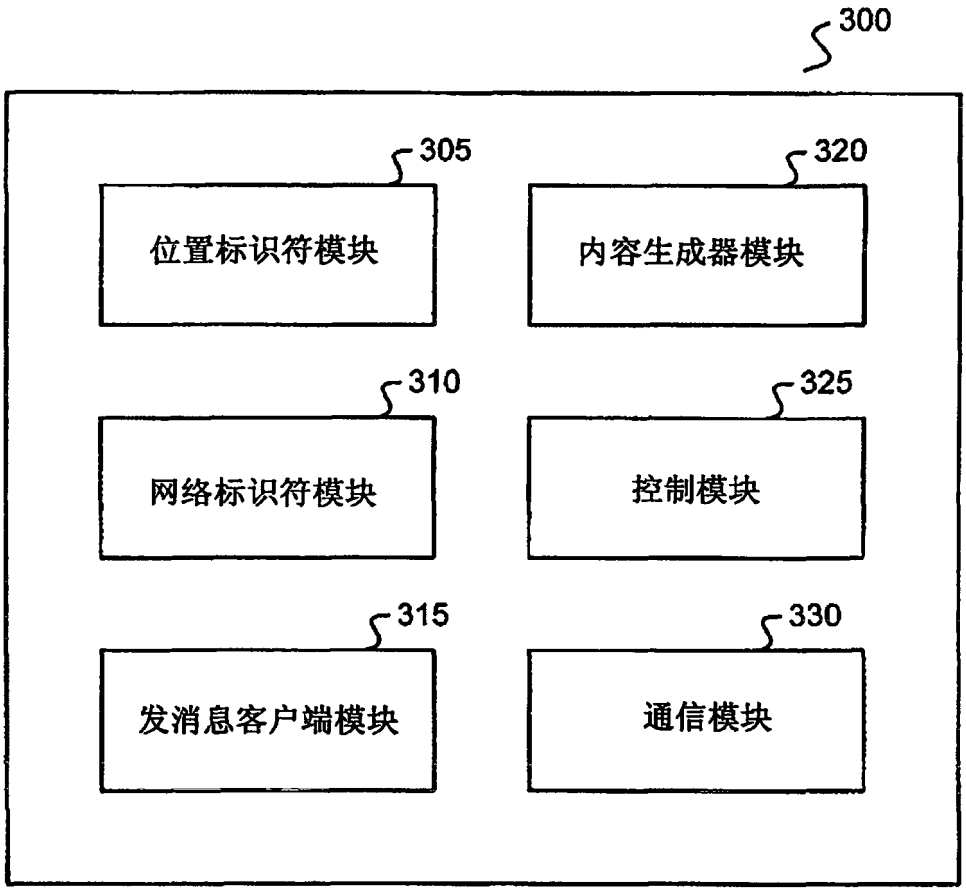

300
305
位置标识符模块
320
内容生成器模块
310
网络标识符模块
325
控制模块
315
发消息客户端模块
330
通信模块

图5

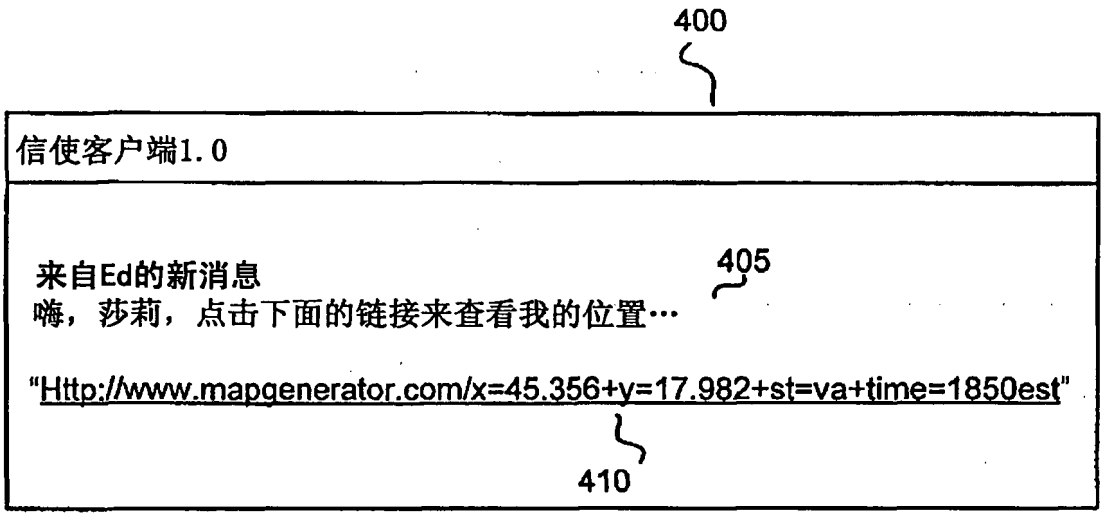

400
信使客户端1.0
来自Ed的新消息
405
嗨，莎莉，点击下面的链接来查看我的位置…
"Http://www.mapgenerator.com/x=45.356+y=17.982+st=va+time=1850est"
410

图6

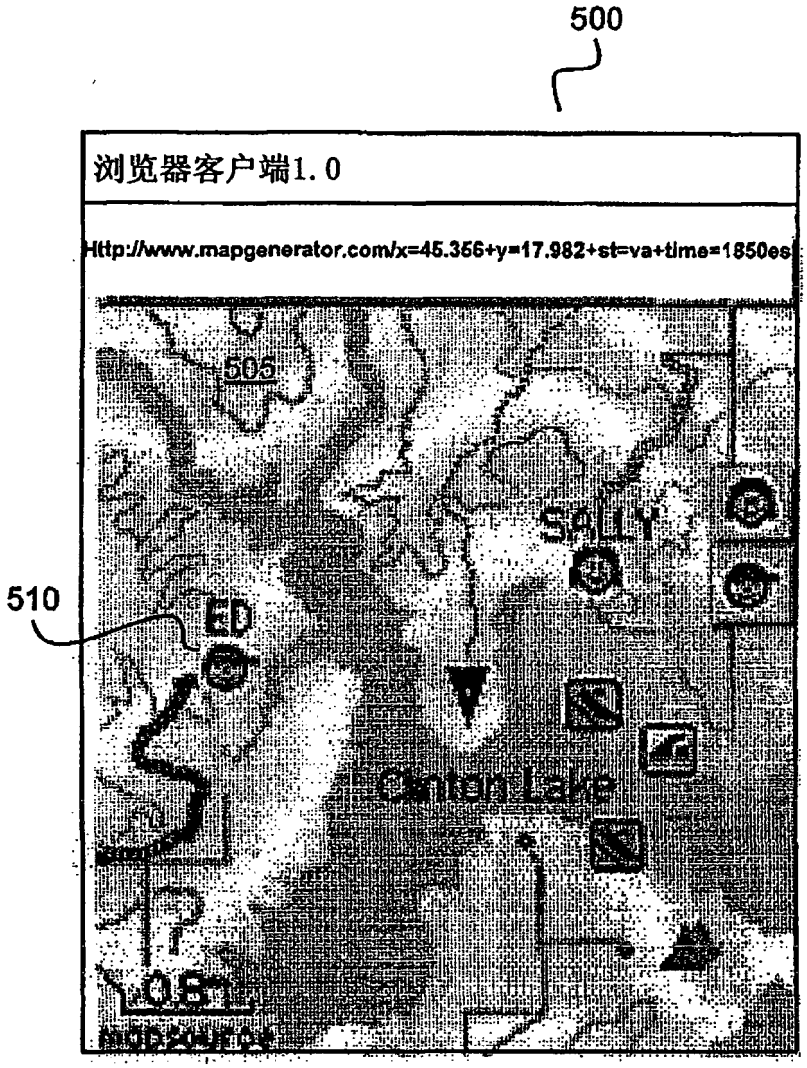

500
浏览器客户端1.0
Http://www.mapgenerator.com/x=45.356+y=17.982+st=va+time=1850es
505
510
ED
Sally
Canton Lake

图7