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(54) PERSONALIZED LOCATION INFORMATION FOR MOBILE DEVICES

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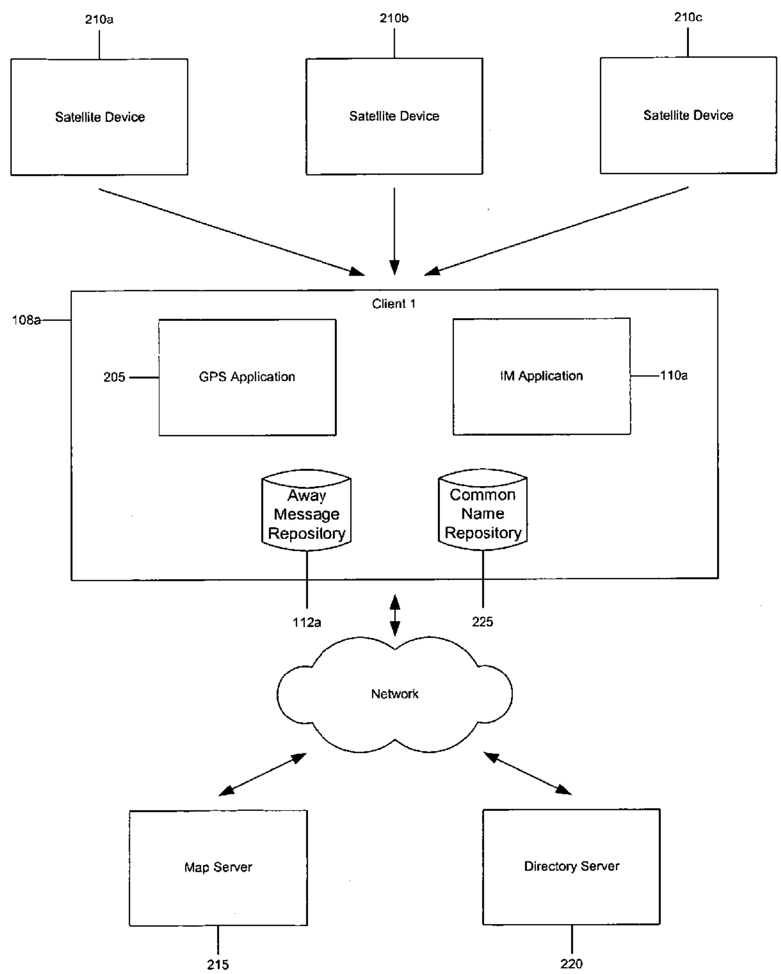
(57) **ABSTRACT**

Providing location information on a mobile device includes receiving signals from external devices. Each signal includes information that specifies a geographic location for the external device that has provided the signal. A geographic location for the mobile device is calculated by using the information contained in each of the received signals. A representation of the geographic location of the mobile device is generated. The representation of the geographic location is included within an electronic message that provides information describing a user of the mobile device to other users of an electronic communications system. The electronic message is transmitted to another device to provide an indication of the geographic location for the user to one of the other users of the electronic communications system.



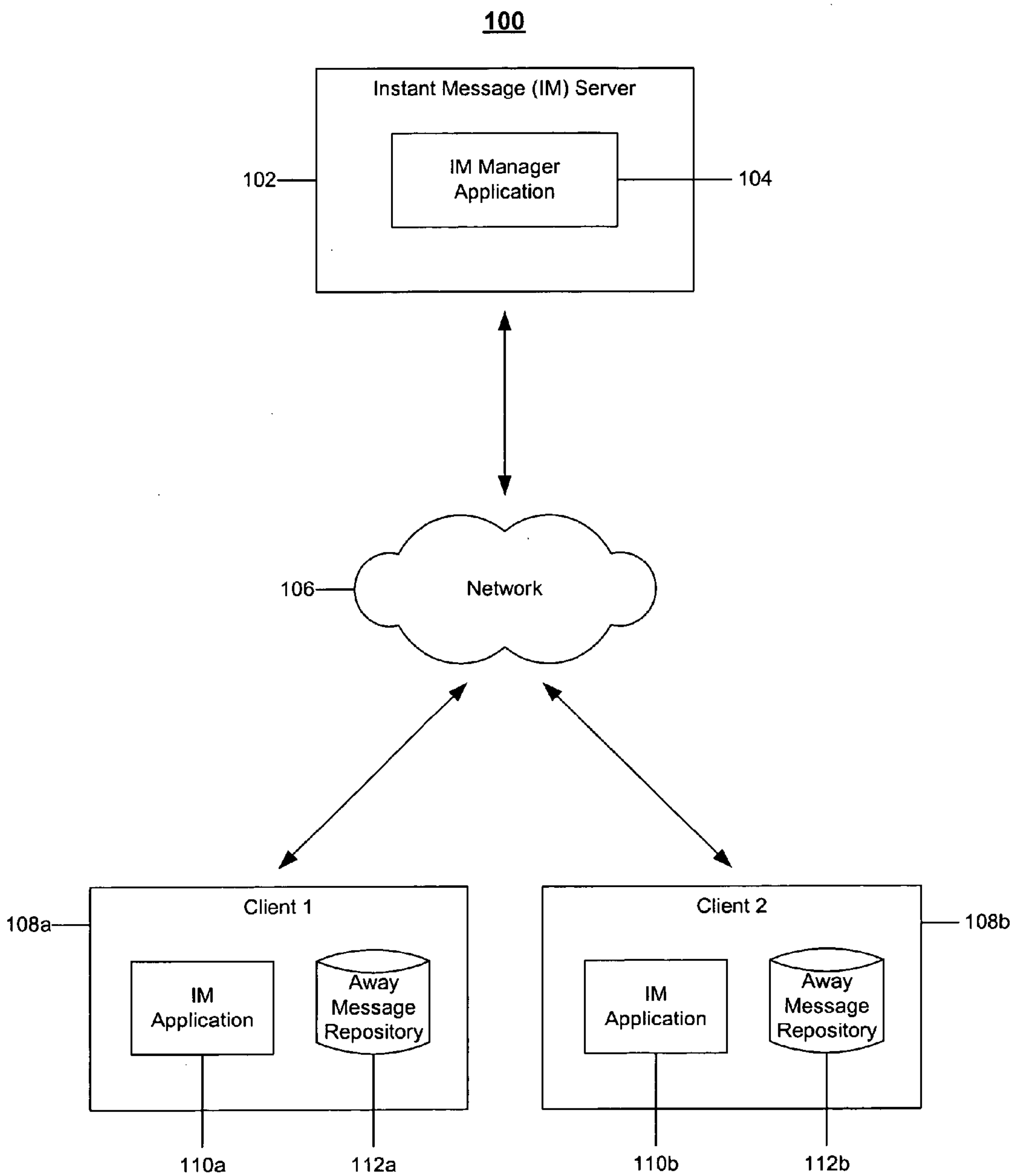

100
Instant Message (IM) Server
IM Manager Application
102
104
Network
106
Client 1
108a
IM Application
Away Message Repository
110a
112a
Client 2
108b
IM Application
Away Message Repository
110b
112b

FIG. 1

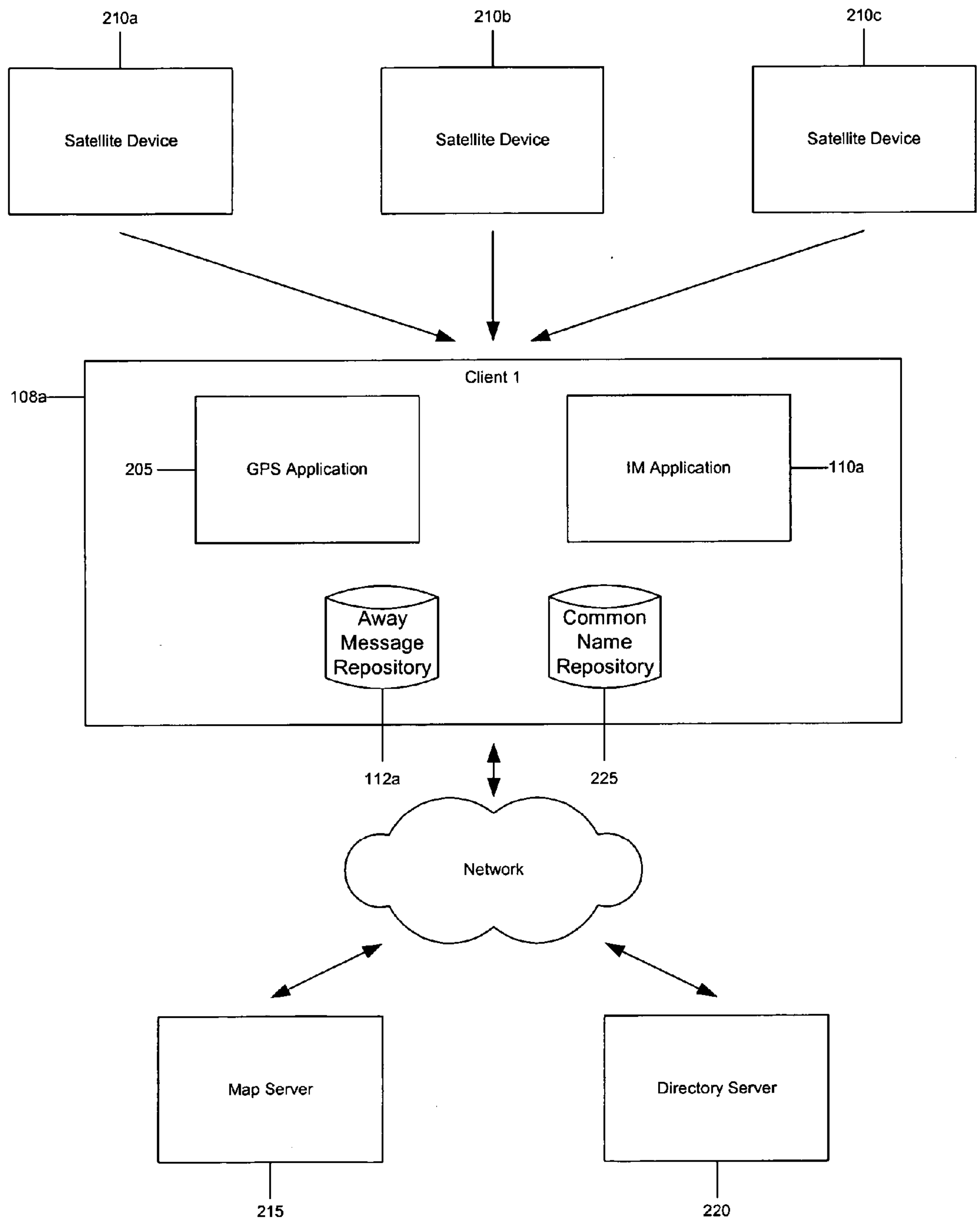

210a
210b
210c
Satellite Device
Satellite Device
Satellite Device
Client 1
108a
205
GPS Application
IM Application
110a
Away Message Repository
Common Name Repository
112a
225
Network
Map Server
Directory Server
215
220

FIG. 2

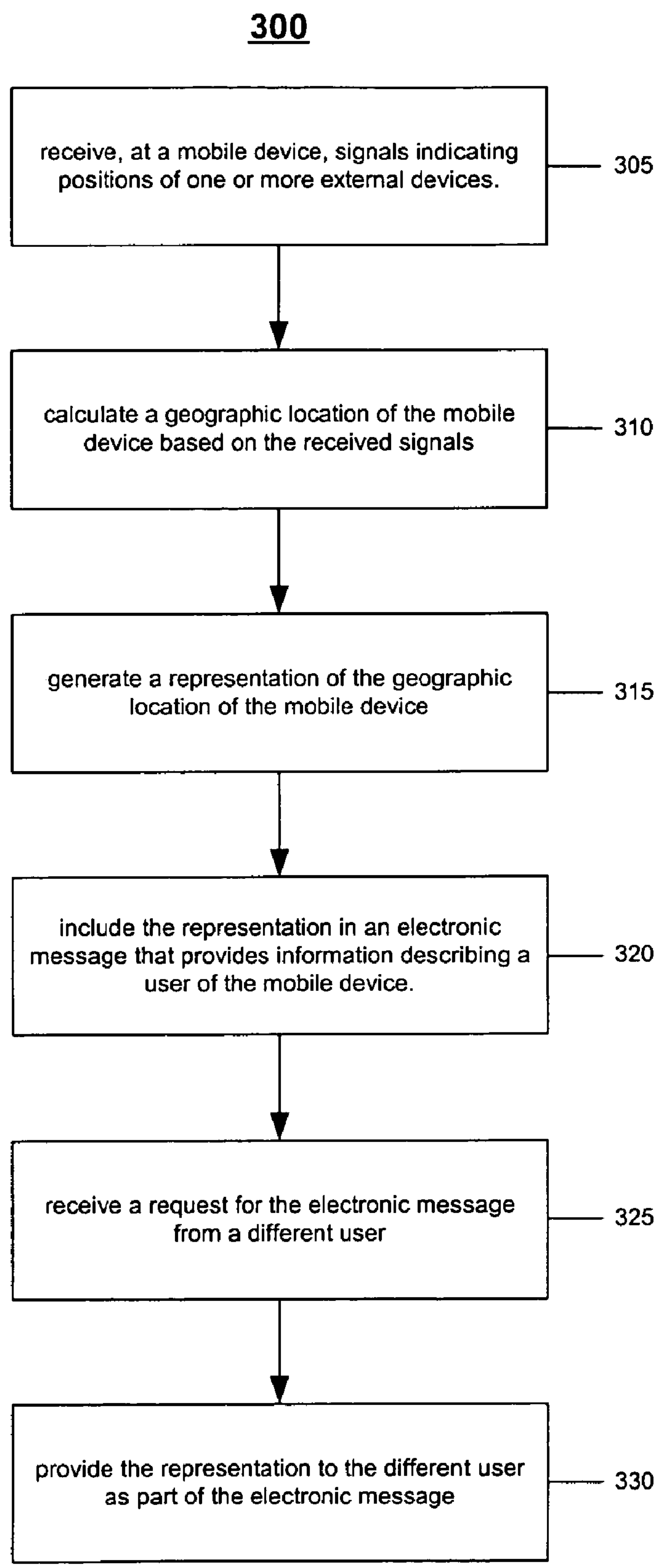

300
receive, at a mobile device, signals indicating positions of one or more external devices.
305
calculate a geographic location of the mobile device based on the received signals
310
generate a representation of the geographic location of the mobile device
315
include the representation in an electronic message that provides information describing a user of the mobile device.
320
receive a request for the electronic message from a different user
325
provide the representation to the different user as part of the electronic message
330

FIG. 3

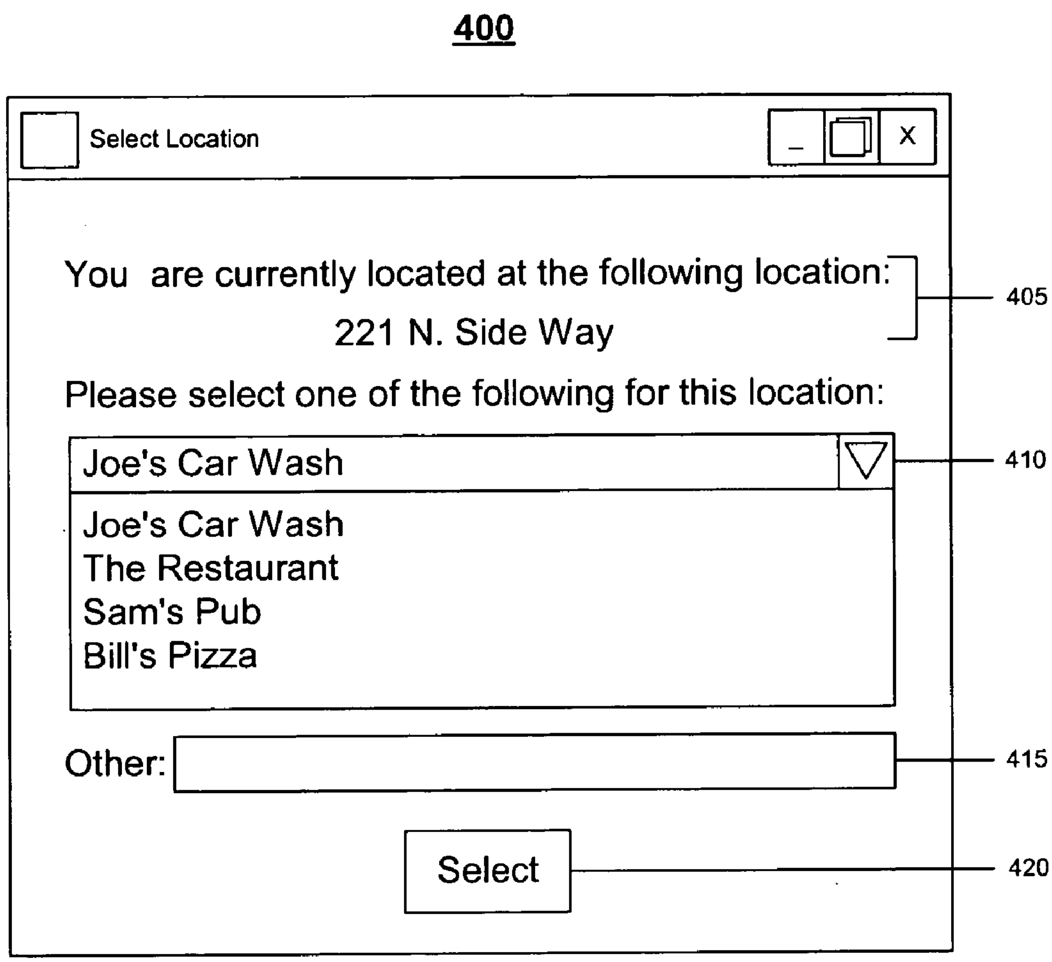

400
Select Location
X
You are currently located at the following location:
221 N. Side Way
405
Please select one of the following for this location:
Joe's Car Wash
410
Joe's Car Wash
The Restaurant
Sam's Pub
Bill's Pizza
Other:
415
Select
420

FIG. 4

500

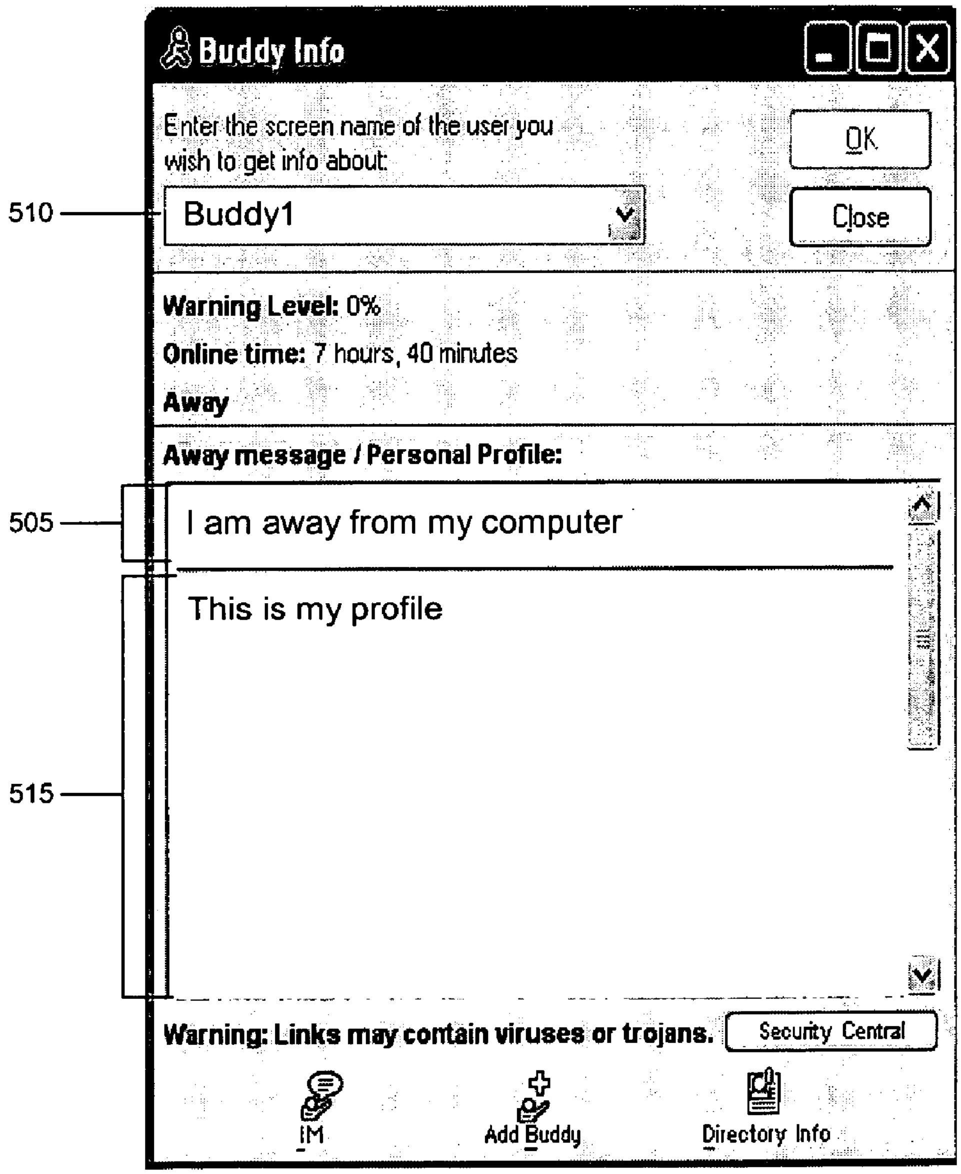

Buddy Info
Enter the screen name of the user you wish to get info about:
OK
Close
510
Buddy1
Warning Level: 0%
Online time: 7 hours, 40 minutes
Away
Away message / Personal Profile:
505
I am away from my computer
This is my profile
515
Warning: Links may contain viruses or trojans.
Security Central
IM
Add Buddy
Directory Info

FIG. 5

500

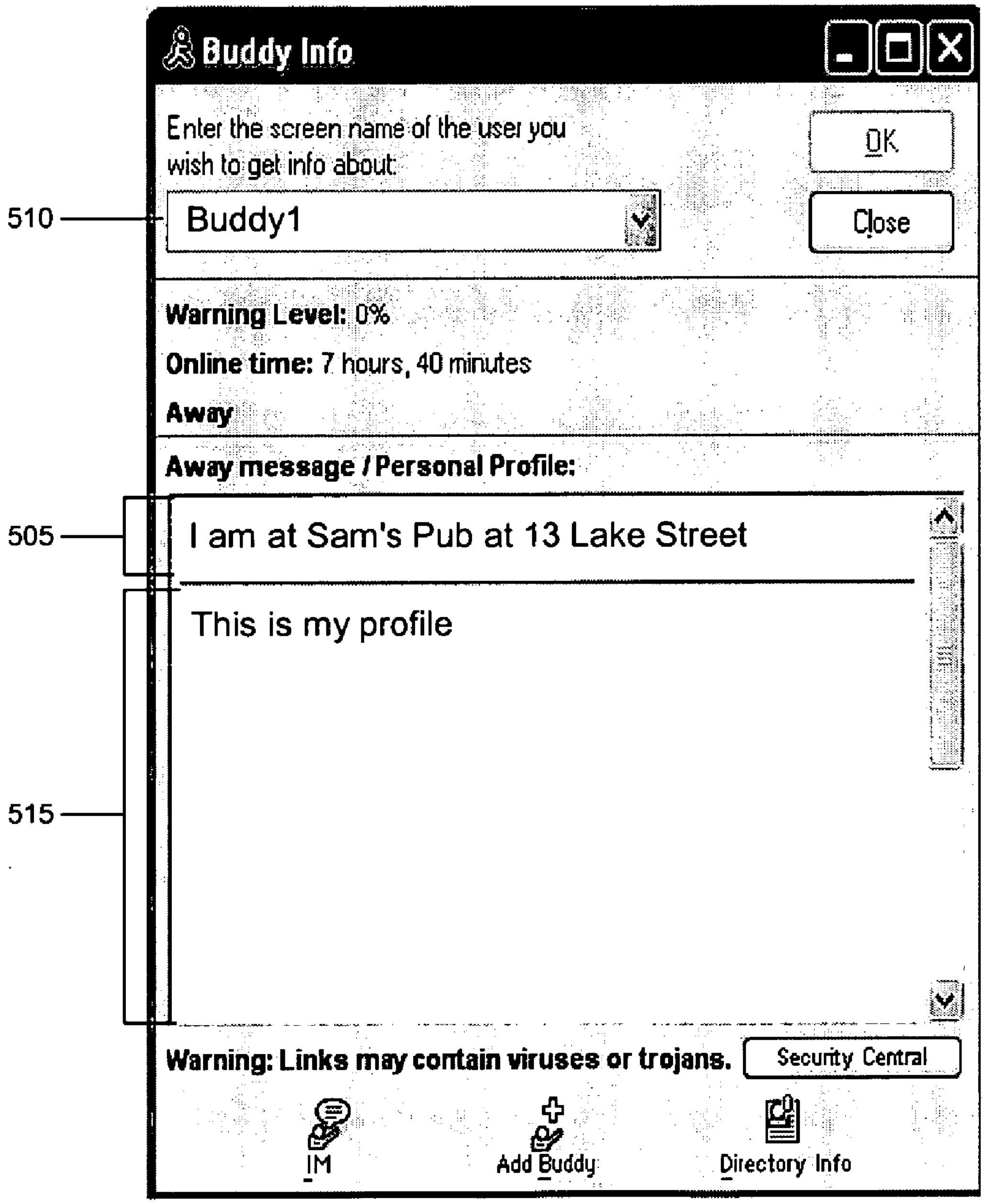

Buddy Info
Enter the screen name of the user you wish to get info about:
OK
510
Buddy1
Close
Warning Level: 0%
Online time: 7 hours, 40 minutes
Away
Away message / Personal Profile:
505
I am at Sam's Pub at 13 Lake Street
This is my profile
515
Warning: Links may contain viruses or trojans.
Security Central
IM
Add Buddy
Directory Info

FIG. 6

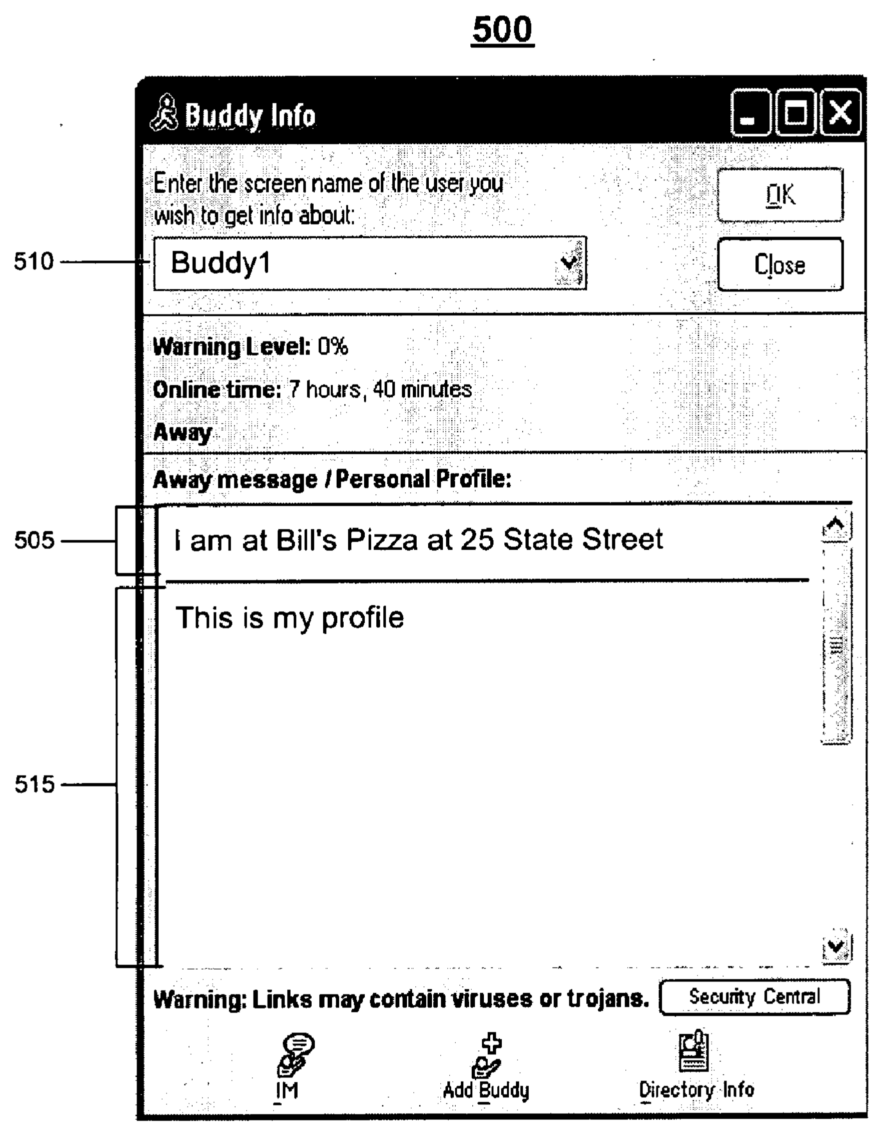

500
Buddy Info
Enter the screen name of the user you wish to get info about:
OK
510
Buddy1
Close
Warning Level: 0%
Online time: 7 hours, 40 minutes
Away
Away message / Personal Profile:
505
I am at Bill's Pizza at 25 State Street
This is my profile
515
Warning: Links may contain viruses or trojans.
Security Central
IM
Add Buddy
Directory Info

FIG. 7

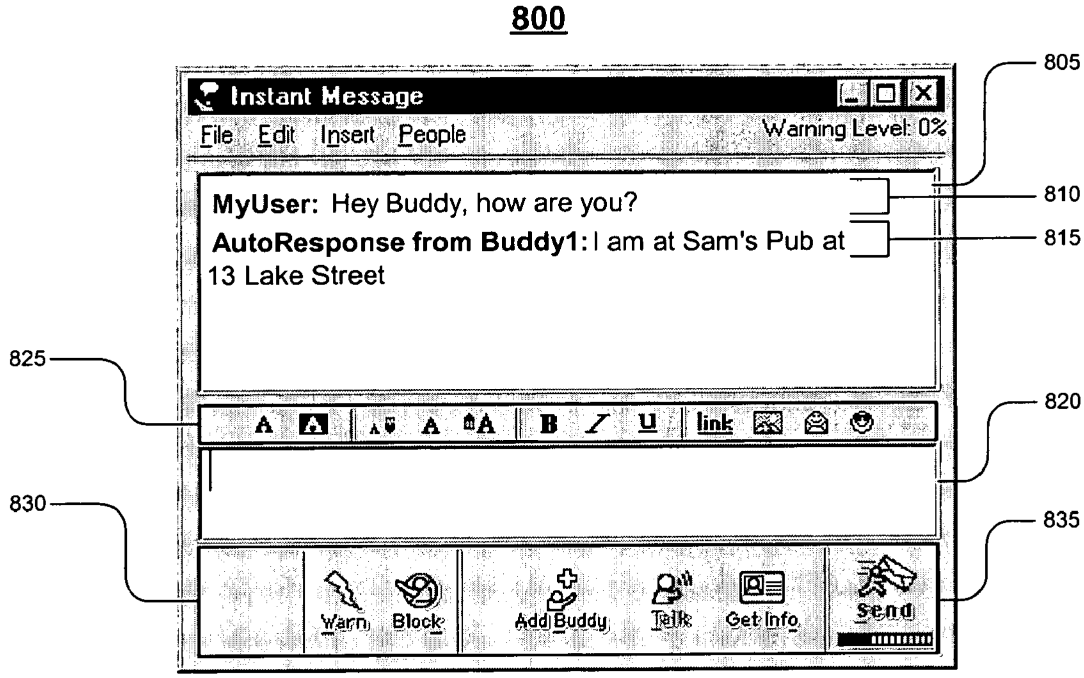

800
805
810
815
820
825
830
835
Instant Message
File Edit Insert People
Warning Level: 0%
MyUser: Hey Buddy, how are you?
AutoResponse from Buddy1: I am at Sam's Pub at 13 Lake Street
link
Warn
Block
Add Buddy
Talk
Get Info
Send

FIG. 8

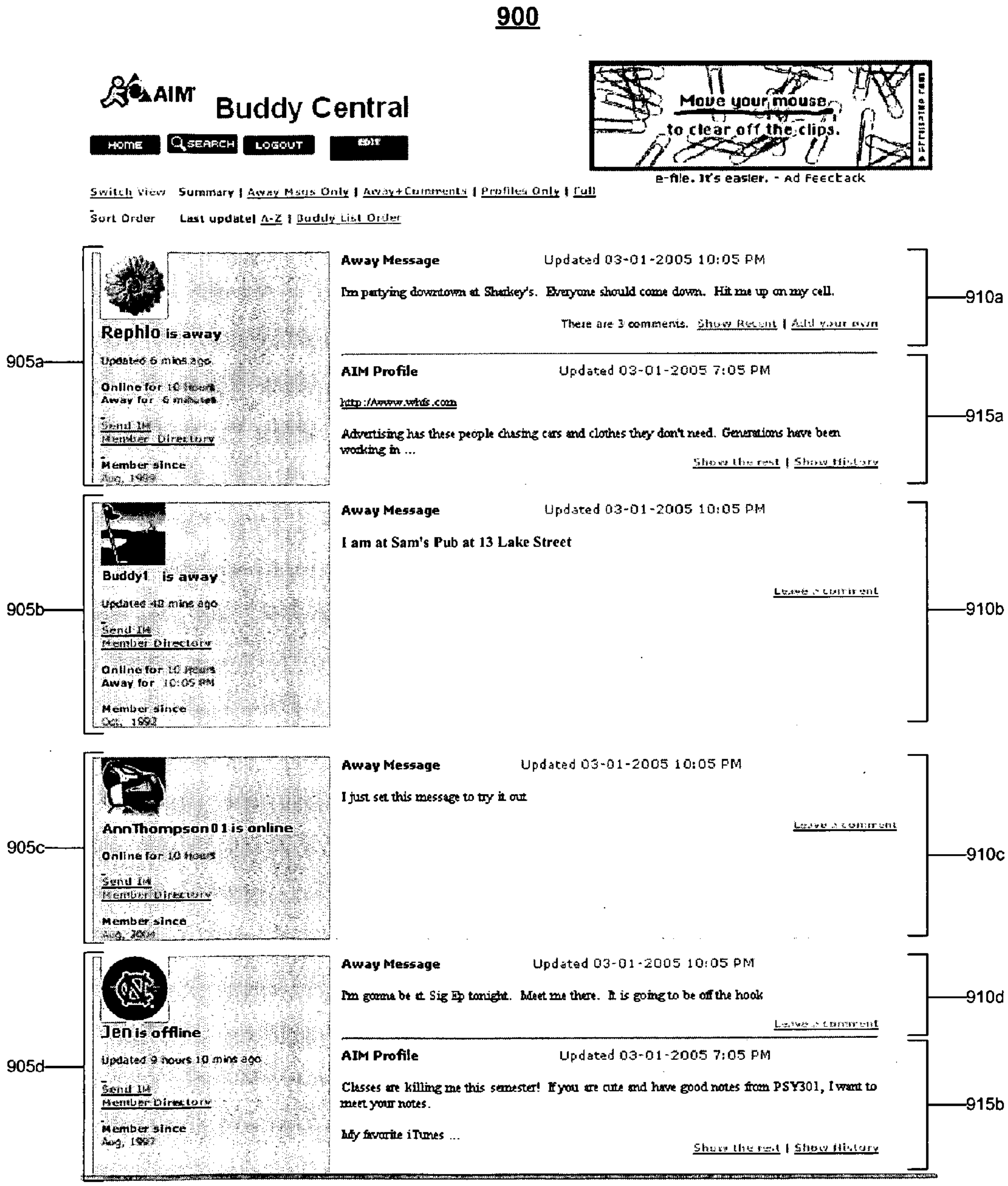

900
AIM Buddy Central
HOME
SEARCH
LOGOUT
EDIT
Move your mouse to clear off the clips.
e-file. It's easier. - Ad Feedback
Switch View Summary | Away Msgs Only | Away+Comments | Profiles Only | Full
Sort Order Last update | A-Z | Buddy List Order
Rephlo is away
Updated 6 mins ago
Online for 10 hours
Away for 6 minutes
Send IM
Member Directory
Member since
Away Message Updated 03-01-2005 10:05 PM
I'm partying downtown at Sharkey's. Everyone should come down. Hit me up on my cell.
There are 3 comments. Show Recent | Add your own
AIM Profile Updated 03-01-2005 7:05 PM
Advertising has these people chasing cars and clothes they don't need. Generations have been working in ...
Show the rest | Show History
Buddy1 is away
Send IM
Member Directory
Online for 10 Hours
Away for 10:05 PM
Member since
Away Message Updated 03-01-2005 10:05 PM
I am at Sam's Pub at 13 Lake Street
Leave a comment
AnnThompson01 is online
Online for 10 Hours
Send IM
Member Directory
Member since
Away Message Updated 03-01-2005 10:05 PM
I just set this message to try it out
Leave a comment
Jen is offline
Updated 9 hours 10 mins ago
Send IM
Member Directory
Member since
Aug, 1997
Away Message Updated 03-01-2005 10:05 PM
I'm gonna be at Sig Ep tonight. Meet me there. It is going to be off the hook
Leave a comment
AIM Profile Updated 03-01-2005 7:05 PM
Classes are killing me this semester! If you are cute and have good notes from PSY301, I want to meet your notes.
My favorite iTunes ...
Show the rest | Show History
905a
905b
905c
905d
910a
915a
910b
910c
910d
915b

FIG. 9

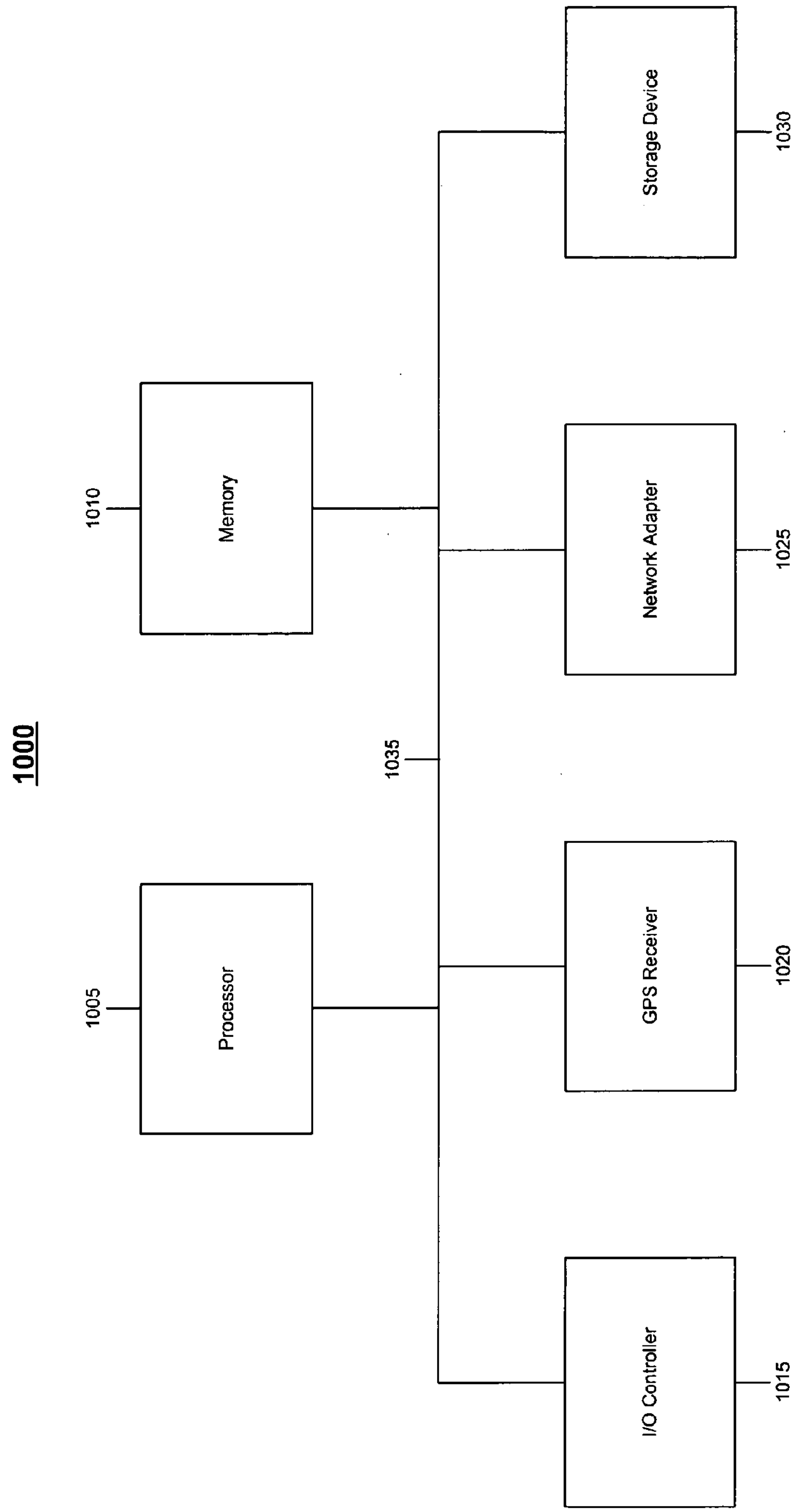

1000
1005
Processor
1010
Memory
1035
I/O Controller
1015
GPS Receiver
1020
Network Adapter
1025
Storage Device
1030

FIG. 10

PERSONALIZED LOCATION INFORMATION FOR MOBILE DEVICES

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application Ser. No. 60/679,652, titled "Processing Information Describing Electronic Messaging Users," and filed May 11, 2005, and U.S. Provisional Application Ser. No. 60/710,616, titled "Personalized Location Information for Mobile Devices," and filed Aug. 24, 2005. This application is related to U.S. Patent Applications being concurrently filed on Sep. 29, 2005, and titled "Searching Electronic Content in Instant-Messaging Applications" and titled "Identifying Users Sharing Common Characteristics." The entire contents of all of the above applications are hereby incorporated by reference in their entirety.

TECHNICAL FIELD

[0002] This application relates to the personalization of location information for mobile devices.

BACKGROUND

[0003] In instant-messaging applications, users may communicate with each other by exchanging instant messages. An individual user may have a buddy list that includes the names of other users, known as "buddies," with whom the user may communicate regularly. The user may send instant messages to any of the buddies, as well as other users not included in the buddy list, that are logged on to their respective computing stations. Any one of these buddies may store electronic content that can be shared with other users. For example, a buddy may store an "away" message that can be provided as an auto-response to other users to indicate that the buddy is presently away from his or her computing station or is otherwise unavailable to send and receive instant messages.

[0004] Away messages can serve several purposes. Many people use them to let others, such as their buddies, know exactly where they are. Others use away messages to provide creative expression, such as by publishing the lyrics of the song they just wrote or a funny quote they just heard in a movie. Recent studies have shown that individuals of certain age groups (such as college-aged adults) not only invest a fair amount of time creating multiple away messages per day, but they also spend a great deal of time reading the away messages of their buddies.

[0005] A very common use of away messages is to post your current location or activity so that buddies can easily keep track of where you are and be informed enough to join in your activity if they are up to it. Users often trust this service as a place to keep their personal information, such as contact information, so their friends can get in touch with them at any time. They use it to share information such as links to pictures, web logs (blogs), funny articles, declarations of love to a boyfriend/girlfriend, a countdown until the day they graduate, and other things of value. It is a quick way to provide a glimpse into the user's life and, in most cases, it also may provide a way to get more information about the user if a buddy wants to spend the time to do so.

SUMMARY

[0006] In one general aspect, providing location information on a mobile device includes receiving signals from external devices. Each signal includes information that specifies a geographic location for the external device that has provided the signal. A geographic location for the mobile device is calculated by using the information contained in each of the received signals. A representation of the geographic location of the mobile device is generated. The representation of the geographic location is included within an electronic message that provides information describing a user of the mobile device to other users of an electronic communications system. The electronic message is transmitted to another device to provide an indication of the geographic location for the user to one of the other users of the electronic communications system.

[0007] Implementations may include one or more of the following features. For example, generating a representation of the geographic location may include generating a representation of a location that is within a threshold distance from the calculated geographic location. Generating a representation of the geographic location also may include identifying a name of the geographic location. Identifying a name of the geographic location may include accessing a data store that includes indications of names of geographic locations.

[0008] Generating a representation of the geographic location may include prompting the user of the mobile device for the representation of the geographic location. Generating a representation of the geographic location also may include generating a commercial or social description of the geographic location.

[0009] Receiving signals from external devices may include receiving signals from one or more GPS satellites. Each signal received from an external device may include information that specifies a previous electronic message that provides information describing the user.

[0010] Including the representation of the geographic location within the electronic message may include overwriting a representation of a previous geographical location of the mobile device with the generated representation of the mobile device.

[0011] The generated representation of the geographic location may be stored such that the representation may be used without being generated again at a later time when the mobile device is at the geographic location. The user of the mobile device may be prompted to select the generated representation of the geographic location for inclusion in the electronic message at a next time at which the mobile device is located at the geographic location.

[0012] The user of the mobile device may be prompted to confirm that the representation of the geographic location should be included in the electronic message. Prompting the user may include prompting the user when the geographic location is more than a threshold distance away from a previous geographic location, or prompting the user when the geographic location has not changed for more than a threshold amount of time.

[0013] Calculating the geographic location may include calculating a latitude, a longitude, or an altitude of the geographic location. Calculating the geographic location may include calculating the geographic location in response to a user request.

[0014] The electronic message may indicate the availability of the user to send and receive electronic messages. The electronic message may include text, audio data, video data, or graphical data.

[0015] The mobile device may be at least one from a group including a personal computer, a mobile phone, and a personal digital assistant.

[0016] Including the representation of the geographic location within an electronic message may include identifying an electronic message based on the representation of the geographic location, or generating an electronic message based on the representation of the geographic location.

[0017] A determination may be made as to whether the geographic location is a geographic location for which the representation of the geographic location should be included in the electronic message. Including the representation of the geographic location in the electronic message may include including the representation of the geographic location in the electronic message when the geographic location is a geographic location for which the representation of the geographic location should be included in the electronic message.

[0018] The details of one or more implementations are set forth in the accompanying drawings and the description below. Other features, objects, and advantages will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

[0019] **FIG. 1** is a block diagram of a networking system that is used for communication of electronic messages.

[0020] **FIG. 2** is a block diagram of a system for identifying a location of a mobile computing device.

[0021] **FIG. 3** is a flow chart of a process for updating electronic content stored in association with a user with information describing a location of the user.

[0022] **FIG. 4** is an illustration of an interface for specifying a location of a mobile computing device.

[0023] **FIG. 5-7** are illustrations of interfaces displaying electronic messages that describe users.

[0024] **FIG. 8** is an interface for displaying an electronic message describing a user as a response to an electronic message to the user.

[0025] **FIG. 9** is an interface for displaying electronic messages describing multiple users.

[0026] **FIG. 10** is a block diagram of a computing device that may be included within the client and server systems shown in **FIG. 1**, according to one implementation.

DETAILED DESCRIPTION

[0027] Electronic content stored in association with a user is updated automatically with an indication of a location of the user. A mobile device used by the user identifies a location of the mobile device, which is assumed to be the location of the user. The user may be made able to name or otherwise identify the location identified by the mobile device. The mobile device stores an indication of the location within the user's electronic content such that the indication of the location is provided to other users that request and receive the electronic content. As the location of the user and the mobile device changes, new locations are identified and stored within the electronic content such that accurate indications of the location of the user are provided. Each time the location of the mobile device changes, or periodically, the user may be notified and asked to confirm that the location is correct and should be included in the electronic content.

[0028] **FIG. 1** is a block diagram of a networking system **100** that is used for transmission of instant messages, according to one implementation. In this implementation, the system **100** includes an instant message (IM) server **102**, a network **106**, and client devices **108***a* and **108***b*. The IM server **102** is coupled to both the client device **108***a* and the client device **108***b* through the network **106**. The network **106** is a wide-area network (WAN) in some implementations, and a local-area network (LAN) in others. The client devices **108***a* and **108***b* may each include a computing device, such as the computing device shown in **FIG. 11**. In certain implementations, the client devices **108***a* and **108***b* may be mobile devices, such as portable computers, cellular telephones, or personal digital assistants (PDAs).

[0029] During operation, the client device **108***a* may initiate an instant-messaging session with the client device **108***b* and send one or more IMs to the client device **108***b* during the instant-messaging session. To do so, the client device **108***a* invokes an IM application **110***a*. In one implementation, a first user manually invokes the IM application **110***a*. In another implementation, the client device **108***a* automatically invokes the IM application **110***a* at start-up. The client device **108***a* also may include various other applications that operate at run-time, such as word-processing applications, web-browser applications, or mail applications. When a first user on the client device **108***a* wishes to begin an instant-messaging session with a second user on the client device **108***b*, the first user initiates a request. This request includes an address associated with the client device **108***b*. The IM application **110***a* on the client device **108***a* sends this request to an IM manager application **104** on the IM server **102** using the network **106**.

[0030] Upon receipt of this request from the client device **108***a*, the IM manager application **104** uses the address contained within the request to locate the client device **108***b*. The IM manager application **104** then routes the request to an IM application **110***b* on the client device **108***b* using the network **106**. The IM application **110***b* then processes this request and initiates a new instant-messaging session with the IM application **110***a* on the client device **108***a*. The second user on the client device **108***b* is then notified by the IM application **110***b* of the new session, and the first and second users of the client devices **108***a* and **108***b* are capable of exchanging IMs during the course of the instant-messaging session. The client device **108***b* also may contain other applications, such as word-processing applications, web-browser applications, or mail applications.

[0031] In one implementation, the client device **108***a* is capable of sending messages to and receiving messages from the client device **108***b* through the network **106** without the use of the IM server **102**. In this implementation, the IM applications **110***a* and **110***b* manage all of the IM functionality on the client devices **108***a* and **108***b*, respectively. Each of the IM applications **110***a* and **110***b* is capable of authenticating and locating other client devices to enable the exchange of messages to and from the client devices **108***a* and **108***b*, respectively.

[**0032**] The client devices **108***a* and **108***b* include away message repositories **112***a* and **112***b*. The away message repository **112***a* includes one or more away messages that have been specified by a user of the client device **108***a*. Each of the away messages may include information describing the user. For example, an away message may include an indication of a current location or activity of the user. In addition, the away message may include an indication of the availability of the user to send and receive instant messages. Furthermore, the away message may be identifiable by a title that may be considered to be part of the away message. In one implementation, the away message may include a profile of the user. The away messages included in the away message repositories **112***a* and **112***b* may include audio data, video data, graphical data, emoticons, and/or text.

[**0033**] The away message repositories **112***a* and **112***b* may include multiple types of away messages. For example, the repositories **112***a* and **112***b* may include online away messages for a user that are provided when the user is available to send and receive electronic messages. Similarly, the repositories **112***a* and **112***b* may include offline away messages for a user, which are away messages that are provided when the user is not available to send and receive electronic messages. The repositories also may include profiles that include information describing the user. Location away messages, which specify only user location, and mobile away messages, which are used when the client devices **112***a* and **112***b* are mobile devices, also may be stored within the repositories **112***a* and **112***b*.

[**0034**] The user of the client device **108***a* may make one of the away messages stored in the away message repository **112***a* accessible to the client device **108***b* such that the away message may be transferred to the client device **108***b* for processing or for presentation to a user of the client device **108***b*. The user of the client device **108***a* may select one of the away messages from the away message repository **112***a* based on the information included in the away message. If none of the stored away messages include desirable information, then the user may specify a new away message including the desirable information for storage in the repository **112***a*. In some implementations, the user of the client device **108***a* may make multiple away messages included in the repository **112***a* accessible for transfer to the client device **108***b* and other client devices. The away message that is provided to the other client device may depend on an identity of a user of the other client device. For example, a first away message may be provided when the user of the other client device is a mother of the user of the client device **108***a*, and a second away message may be provided when the user of the other client device is a friend of the user of the client device **108***a*.

[**0035**] In one implementation, the away message repositories **112***a* and **112***b* may include old away messages that are no longer applicable to the corresponding users. For example, when the user of the client system **108***a* modifies an original away message, the away message repository **112***a* may maintain a copy of the original away message as well as the modified away message. The old away messages may be made accessible, for example, in the form of a web log (e.g., blog) such that more than just a most recent away message is accessible. Consequently, other users or systems that access the web log may be provided with indications of previous events, activities, locations, or characteristics of the user, as well as indications of more recent events, activities, locations, or characteristics of the user.

[**0036**] In some implementations, the IM application **110***a* or the IM application **110***b* may be configured to respond automatically to instant messages received at the client devices **108***a* and **108***b*. In addition, the IM applications **110***a* and **110***b* may be configured to perform some function identified by the received instant messages. For example, the client device **108***a* may represent a mobile device used by a user, and the client device **108***b* may be a desktop computer used by the user. In such a case, the mobile device may not include the away message repository **112***a*, due to limited storage and processing capabilities. Instead, away messages for the user may be provided from the away message repository **112***b* included in the desktop computer. The user may send an instant message from the mobile device to the desktop computer identifying an away message included in the away message repository **112***b* to be made available to other users. The automatic response to the received instant message may indicate that the identified away message has been made available to the other users.

[**0037**] In some implementations, the users of the client devices **108***a* and **108***b* may specify user information feeds that periodically provide to other users information relating to the users. Alternatively or additionally, the IM server **102** may be configured to aggregate the information relating to the users into the user information feeds on behalf of the users. The user information feed for a user may include any information related to the user, such as entries included in an online journal of the user, an away message of the user, a profile of the user, media files of interest to the user, a playlist specifying an order in which the user listens to or watches the media files, recent communications sent and received by the user, and RSS feeds of interest to the user. The client devices **108***a* and **108***b* or the IM server **102** may periodically provide the user information feeds to other users who have subscribed to the information feeds. Alternatively or additionally, the client devices **108***a* and **108***b* or the IM server **102** may provide only portions of a user information feed that have been added or changed since a previous distribution of the user information feed.

[**0038**] Referring to **FIG. 2**, a system **200** is used to identify a geographic location of a client system **108***a* for use with an IM application **110***a*. A GPS application **205** of the client system **108***a* communicates with satellite devices **210***a*-**210***c* to identify a location of the client system **108***a*. The client system **108***a* also may communicate with a map server **215** and a directory server **220** through a network **106**. The client system **108***a* also includes an away message repository **112***a* and a common name repository **225**. The network **106**, the client system **108***a*, the IM application **110***a*, and the away message repository **112***a* are similar to corresponding components from **FIG. 1**.

[**0039**] The GPS application **205** is configured to determine a location of the client system **108***a*. The GPS application **205** may include a GPS receiver and a location determination module. The GPS receiver is configured to communicate with the satellite devices **210***a*-**210***c*. Based on the signals received from the satellite devices **210***a*-**210***c*, the location determination module calculates a distance to each of the satellite devices **210***a*-**210***c*. The location determination module then may determine the location of the client system **108***a* based on the calculated distances to the satellite devices **210***a*-**210***c*. The GPS application **205** may determine the location of the client system **108***a* as latitude and longitude coordinates, which are also known as GPS coordinates.

[**0040**] The map server **215** provides addresses or other representations of locations identified by the GPS application **205**. For example, the GPS application **205** may provide the map server **215** with the latitude and longitude coordinates identifying the location of the client system **108***a*. In response, the map server may identify an address, a name, or another representation of the location of the client system **108***a*. In some implementations, the functionality provided by the map server **215** may be included in the GPS application **205**.

[**0041**] The directory server **220** also provides information about the location of the client system **108***a*. More particularly given GPS coordinates or an address from the GPS application **205** or the map server **215**, the directory server **220** may provide a name of the location. For example, if the client system **108***a* is located at a business, the directory server **220** may provide a name of the business in response to the address. As another example, if the client system **108***a* is located at a residence, the directory server **220** may provide the name of a person that lives at the residence. In some implementations, the directory server also may be configured to provide additional information describing the location, such as a phone number of the location. In some implementations, the functionality provided by the directory server **220** may be included in the GPS application **205**.

[**0042**] The common name repository **225** stores alternative representations of the locations of the client system **108***a* that were identified by the GPS application **110**. For example, the common name repository **225** may store names and other information describing the locations that were provided by the map server **215** or the directory server **220**, or by a user of the client system **108***a*. The stored names and descriptive information for the previous locations may be used when the client system **108***a* is subsequently located at one of the previous locations without having to identify the name or descriptive information again.

[**0043**] Referring to **FIG. 3**, a process **300** is used to identify and provide an indication of a location of a user based on a location of a mobile device used by the user. The process **300** may be executed by a mobile device, such as implementations of the client device **108***a* of **FIGS. 1 and 2** that are mobile devices.

[**0044**] The mobile device first receives signals indicating positions of one or more external devices (**305**). For example, the mobile device may receive signals indicating the position of the satellite devices **215***a*-**215***c* of **FIG. 2**. More particularly, a GPS application of the mobile device, such as the GPS application **205** of **FIG. 2**, may receive the signals. Alternatively or additionally, the mobile device may receive the signals from other systems with which the mobile device communicates, such as cellular telephone towers. The signals also may indicate an address of the mobile device, such as an Internet Protocol (IP) address of the mobile device. The mobile device calculates a geographic location of the mobile device based on the received signals (**310**). More particularly, the GPS application may calculate the geographic location of the mobile device based on the received signals. Calculating the geographic location may include calculating a latitude measurement, a longitude measurement, and/or an altitude measurement for the geographic location. The mobile device may use triangulation to calculate the position based on the signals received from the satellite devices **215***a*-**215***c* or the cellular telephone towers.

[**0045**] The mobile device may generate a representation of the geographic location of the mobile device (**315**). Alternatively, the mobile device may generate a representation of a location that is within a threshold distance from the geographic location. For example, if the mobile device is located in a parking lot of a business, the mobile device may generate a representation of the business instead of the parking lot if the business is within the threshold distance from the parking lot. The representation may be a name or another commercial or social description of the geographic location. For example, the representation of a business named "Bill's Bar" on Lake Street may be "Bill's,""the bar,""Bill's pub,""Bill's on Lake," or another variation of the name and location of the business. The representation of the geographic location also may include an indication of the geographic location itself. For example, a representation of a geographic location may include "Bill's Bar at 13 Lake Street," in which case "Bill's Bar" is the representation of the geographic location, which is "13 Lake Street."

[**0046**] In one implementation, the mobile device may contact a map server, such as the map server **215** of **FIG. 2**, or a directory server, such as the directory server **220** of **FIG. 2**, to identify the representation of the geographic location. For example, the mobile device may provide an indication of the geographic location to the map server or the directory server, and the map server of the directory server may generate and provide the representation of the geographic location to the mobile device in response.

[**0047**] In another implementation, the mobile device prompts a user of the mobile device for a representation of the geographic location. For example, a user interface displayed on the mobile device may include an indication of the geographic location that was identified by the mobile device, the map server, or the directory server. The user may use the user interface to specify the representation of the indicated geographic location. The mobile device may store a representation of the geographic location for later use when the mobile device returns the geographic location.

[**0048**] In another implementation, the mobile device may identify the representation automatically and may prompt the user for confirmation of the automatically identified representation. The mobile device may prompt the user for confirmation, for example, if the mobile device determines that the geographic location of the mobile device has changed substantially (e.g., by more than a threshold distance), or if the geographic location has not changed for longer than a threshold amount of time.

[**0049**] The mobile device includes the representation in an electronic message that provides information describing the user of the mobile device (**320**). For example, the mobile device may include the representation of the geographic location in an away message of the user. The away message may be stored in an away message repository that is local to the mobile device, such as the away message repository **112***a* of **FIGS. 1 and 2**. Alternatively, the away message may be stored at an IM server through which the user communicates with other users. If the electronic message already includes a representation of a previous geographic location of the mobile device, the mobile device may overwrite the representation of the previous geographic location with the newly identified geographic representation. If the representation of the geographic location includes an indication of the geographic location itself, the representation and the geographic location may be included in different parts of the electronic message.

[**0050**] In some implementations, the user of the mobile device may maintain multiple electronic messages, and each electronic message may be made available to only a subset of other users. For example, the user may maintain a first electronic message that is provided to family members and a second electronic message that is provided to friends. In such a case, the representation of the geographic location may be included in only a subset of the electronic messages. For example, if the user is located at a bar, the representation of the geographic location may be included only in the second electronic message that is provided to friends of the user. Alternatively or additionally, multiple representations of the geographic location may be generated for inclusion in particular ones of the electronic messages. For example, a first representation indicating that the user is "out with friends" may be generated for inclusion in the first electronic message, and another representation indicating that the user is "at the bar" may be generated for inclusion in the second electronic message.

[**0051**] The mobile device then receives a request for the electronic message from a different user (**325**). For example, the mobile device receives the request from a client system used by the different user, such as the client system **108***b* of **FIG. 1**. In response to the received request, the mobile device provides the representation of the geographic location to the different user as part of the electronic message (**330**). The mobile device may provide the electronic message from the local away message repository, or from the IM server. For example, the mobile device may provide the electronic message to the different user directly. Alternatively, the mobile device may request that the IM server provide the electronic message to the different user. As a result, the different user is made aware of the geographic location of the user of the mobile device.

[**0052**] In one implementation, a server side process, such as a process running on the IM server **102** of **FIG. 1**, receives GPS coordinates or another indication of the location of the mobile device from the mobile device. The server side process identifies a common name (e.g. Starbucks on 9th and M, or RFK stadium, or "GMU computer lab") based on the indicated location received from the mobile device, for example, using the map server **215**, the directory server **220**, or the common name repository **225** of **FIG. 2**, as described above. The server side process may make the common name available in away messages, participant lists, or the common name repository **225** for access by other users. This common name location information can also be used for purposes of grouping by location, searching by location, or other location-based activities.

[**0053**] The process **300** may be executed by the mobile device multiple times. For example, the mobile device may periodically determine the location of the mobile device (**305**, **310**). If the location has changed substantially from a previously determined location, then the electronic message of the user of the mobile device may need to be updated. Consequently, the mobile device may complete execution of the process **300** to update the electronic message and to provide the electronic message to other users after the electronic message has been updated. Even if the location of the mobile device has changed, the user may be prompted before the electronic message is updated, in case that the user does not desire to update the electronic message, for example, because the user anticipates that the location of the mobile device will change again soon.

[**0054**] Furthermore, the user may be enabled to indicate when the process **300** should be executed. For example, the user may be enabled to manually request execution of the process **300**. Alternatively or additionally, the user may be enabled to specify a set of locations in which the electronic message of the user should be updated with the location of the user. The mobile device may begin execution of the process **300** periodically to determine its location. If the location of the mobile device matches one of the previously specified locations, then execution of the process **300** completes to update the electronic message describing the user.

[**0055**] Some implementations of the process **300** may be executed by an IM server, such as the IM server **102** of **FIG. 1**. In such implementations, rather than identifying the geographic location of the mobile device, the IM server simply receives the location from the mobile device. The IM server may generate the representation of the geographic location locally (**315**), or the IM server may receive the representation from the mobile device. The IM server then includes the representation in the electronic message describing the user of the mobile device (**320**). The IM server may receive a request for the electronic message (**325**) and may provide the representation as part of the electronic message (**330**). The IM server may access and provide the electronic message from the away message repository of the mobile device, or from a local copy of the electronic message.

[**0056**] Other implementations of the process **300** may not include the representation of the geographic location in the electronic message describing the user of mobile device (**320**). Instead, the representation of the geographic location may be used to identify an appropriate electronic message from a set of previously specified electronic messages. The appropriate electronic message may not explicitly indicate the geographic location of the mobile device. However, the electronic message is only an appropriate description of the user when the mobile device is at the geographic location. For example, the representation of the geographic location may indicate that the mobile device is at a workplace of the user. Consequently, an electronic message that includes the text "earning my paycheck" may be identified as an appropriate description of the user, based on the geographic location.

[**0057**] Alternatively or additionally, the appropriate electronic message may be generated automatically based on the representation of the geographic location. The automatically generated electronic message may include audio data, video data, graphical data, emoticons, or text. For example, if the representation of the geographic location indicates that the user is at his gym, an electronic message including a video of a person running, a picture of a barbell, and the text "feeling the burn" may be generated. The automatically generated electronic message may be stored for later use in an away message repository corresponding to the mobile device, such as one of the away message repositories **112***a* or **112***b* of **FIG. 1**.

[**0058**] Referring to **FIG. 4**, an interface **400** enables a user of a mobile device to generate a representation of an otherwise automatically identified geographic location of the mobile device. The interface **400** may be presented on the mobile device during execution of the process **300** of **FIG. 3**. The interface includes a geographic location indicator **405**, a selection list **410** and a text box **415** with which the representation may be specified, and a button **420** for selecting the specified option.

[**0059**] The geographic location indicator **405** provides an indication of a geographic location of the mobile device. The indicated geographic location may be calculated by a GPS application of the mobile device, as described above with respect to operations **305** and **310** of the process **300** of **FIG. 3**. Alternatively or additionally, the mobile device may access a map server or a directory server to identify the indicated geographic location, as described above with respect to operation **315** of the process **300** of **FIG. 3**. For example, in the illustrated implementation, the geographic location indicator **405** includes an address that was identified by the map server in response to GPS coordinates provided by the mobile device.

[**0060**] The selection box **410** enables the user of the interface **400** to select the representation of the indicated geographic location from among a set of representations of previous geographic locations of the mobile device. The representations that are selectable from the selection box **410** may have been saved after being generated when the mobile device was located at the previous geographic locations. In one implementation, if a representation of the geographic location indicated by the geographic location indicator has been identified and saved previously, then that representation may be presented as a default value for the selection box **410**. The options included in the selection box **410** may represent text, audio data, video data, or graphical data.

[**0061**] If a representation corresponding to the indicated geographic location is not included as a selectable option of the selection box **410**, the user may specify the representation manually using the text field **415**. Alternatively or additionally, the text field **415** may be used to identify a non-textual representation of the indicated geographic location. For example, the text field **415** may be used to specify a location of an image file, an audio file, or a video file that is to serve as the representation of the indicated geographic location.

[**0062**] Selecting the button **420** associates the representation specified by the selection box **410** or the text field **415** with the geographic location indicated by the geographic location indicator **405**. In one implementation, if no text is specified in the text field **415**, and no option is selected from the selection box **410**, then selecting the button **420** sets the indicated geographic location as its own representation. In another implementation, the indicated geographic location may be included as part of the representation of the geographic location. In some implementations, the specified representation may be stored in association with the indicated geographic location for use when the mobile device returns to the indicated geographic location. In some implementations, selecting the button **420** also may dismiss the interface **400**.

[**0063**] Referring to **FIG. 5**, an away message display interface **500** displays an away message **505** describing a particular user. The user for which the away message is displayed is identified in a text box **510**. The away message display interface **500** also may display separately a profile **515** of the user, particularly when the profile is not included in the away message **505**. The combination of the away message **505** and the profile **515** provides information describing the user to an individual for which the away message display interface **500** is displayed.

[**0064**] The interface **500** illustrated in **FIG. 5** may be displayed prior to execution of the process **300** of **FIG. 3**. Consequently, the away message **505** and the profile **515** do not include an indication of a geographic location of the user. Referring also to **FIG. 6**, the interface **500** also may be displayed after a first execution of the process **300**. At the time of the first execution of the process **300** by a mobile device of the user, the user and the mobile device may be located at "Sam's Pub at 13 Lake Street." Such a representation of the location of the mobile device may be identified and included in the away message **505** as a result of the first execution of the process **300**. When the away message **505** is requested and displayed as illustrated in **FIG. 6**, the away message **505** includes the representation of the location.

[**0065**] Referring also to **FIG. 7**, the interface **500** also may be displayed after a subsequent execution of the process **300**. At the time of the subsequent execution of the process **300** by the mobile device of the user, the user and the mobile device may have moved from "Sam's Pub" to "Bill's Pizza at 25 State Street." Such a representation of the location of the mobile device may be identified and included in the away message **505** as a result of the subsequent execution of the process **300**. When the away message **505** is requested and displayed as illustrated in **FIG. 7**, the away message **505** includes the representation of the location.

[**0066**] Referring also to **FIG. 8**, an away message including information describing a user's location may be displayed in an instant messaging interface **800**, which enables instant messages to be sent and received. A sender of instant messages may use the instant messaging interface **800** to send an instant message to a recipient for which the process **300** was executed previously.

[**0067**] The instant messaging interface **800** includes a message history box **805** that lists the instant messages sent between the sender and the recipient. The message history box **805** also may be referred to as a message transcript box **805**. Each message is presented with an indication of an identifier by which the sender or the recipient is identified as the sender of the message. Each message listed in the message history box **805** also includes the text of the instant message sent by the sender or the recipient. For example, the message history box **805** includes a message **810** sent by a user with a screen name "MyUser" and a message **815** sent by a user with a screen name "Buddy1." In one implementation, each message listed in the message history box **805** includes a time stamp of when the message was sent. The users that sent the messages **810** and **815** are the recipient and the sender, respectively. In some implementations, the message history box may include automatically sent messages that were not specified manually by the sender of the recipient. For example, the automatically sent messages may inform the recipient that the sender has not used the instant messaging interface **800** for more than a threshold amount of time.

[**0068**] In typical implementations, the message history box **805** includes only those instant messages sent between the sender and the recipient after the interface **800** was displayed initially. In other implementations, the instant messages reflected in the message history box **805** may be saved when the interface **800** is dismissed, for example, such that the message history box **805** may be repopulated with those instant messages when the interface **800** is displayed again at a later time.

[**0069**] The instant messaging interface **800** also includes a message specification box **820** in which the sender may specify a message to be sent to the recipient. The sender may enter text to be sent to the recipient in the message specification box **820**. The instant message interface **800** includes a set of format controls **825** that may be used to format the text entered in the message specification box **820**. More particularly, the controls in the set of format controls **825** enable the user to change the size, foreground color, background color, style, and effects of the text entered in the message specification box **820**. The set of format controls **825** also includes controls for inserting objects that are not plain text, such as hyperlinks and emoticons, into the message specification box **820**.

[**0070**] After a message has been specified in the message specification box **820**, the message may be sent by selecting a send button **825** included in a second control set **830**. After the send button **835** has been selected, the text that has been entered in the message specification box **820** is sent to the recipient, and the message specification box **820** is cleared. The message is added to the message history box **805**. The message also is displayed in a message history box **805** of an instance of the instant messaging interface **800** being viewed by the recipient. Also included in the second control set **830** are controls for warning instant message senders, blocking instant messages from particular senders, or adding another sender to a participant list used by the sender.

[**0071**] The recipient with the identifier "Buddy1" may be unavailable to send and receive instant messages at a time when the sender with the identifier "MyUser" sent the message **810**. As a result the recipient may have chosen a descriptive message to be sent automatically to other users, such as the sender, that send the recipient instant messages. The descriptive message may include a representation of the geographic location of the recipient that was identified and included in the descriptive message through execution of the process **300** of **FIG. 3**. The message **815**, which indicates that the recipient is located at "Sam's Pub at 13 Lake Street," may represent such a descriptive message, which is why the message **815** is labeled as an "AutoResponse from Buddy1." The message **815** may be processed or simply presented to the sender with the instant messaging interface **800**. The sender may continue to send instant messages to the recipient, if so desired.

[**0072**] Referring to **FIG. 9**, an away message display interface **900** is similar to the away message display interfaces **500** of **FIGS. 5-7**. However, instead of displaying information describing a single user, the away message display interface **900** displays information describing multiple users. In one implementation, the interface **900** is a web page that may be displayed in a web browser. In another implementation, the interface **900** may be configured for display on a device with limited display capabilities, such as a mobile device.

[**0073**] Identifiers **905***a*-**905***d* for the users are displayed on the left side of the interface **900**. Away messages **910***a*-**910***d* describing the users are displayed next to the identifiers **905***a*-**905***d*. A profile of a user may be displayed next to the identifier of the user in the interface **900**, for example, when the profile is not included in the away message for the user, of when the user has not otherwise indicated that the profile is no to be displayed. For example, the interface **900** includes a profile **915***a* of the user corresponding to the identifier **905***a* and a profile **915***b* of the user corresponding to the identifier **905***d*. In the illustrated implementation, the profiles **915***a* and **915***b* are displayed next to the identifiers **905***a* and **905***d*.

[**0074**] One or more of the away messages **910***a*-**910***d* may include a representation of a geographic location of a corresponding user. The representation may be included in the away message through execution of the process **300** of **FIG. 3** on behalf of the corresponding user. For example, the away message **910***b* for the user corresponding to the identifier **905***b* includes a representation of the location of the user. For example, in the illustrated implementation, the away message **910***b* indicates that the user is at "Sam's Pub at 13 Lake Street."

[**0075**] **FIG. 10** is a block diagram of a computing device **1000** that may be included within the IM server **102** and/or the client devices **108***a* and **108***b*. The computing device **1000** may represent a general-purpose computer, a special-purpose computer, or a mobile computing device, such as a portable computer, a mobile telephone, or a PDA. The computing device **1000** includes a processor **1005**, a memory **1010**, an input/output controller **1015**, a GPS receiver **1020**, a network adapter **1025**, and a storage device **1030**. Each of the components **1005**, **1010**, **1015**, **1020**, **1025**, and **1030** are interconnected using a system bus **1035**.

[**0076**] The processor **1005** is capable of processing instructions for execution within the computing device **1000**. In one implementation, the processor **1005** is a single-threaded processor. In another implementation, the processor **1005** is a multi-threaded processor. The processor **1005** is capable of processing instructions stored in the memory **1010** or on the storage device **1025** to display graphical information for a GUI on an external input/output device that is coupled to the input/output controller **1015**.

[**0077**] The memory **1010** stores information within the computing device **1000**. In one implementation, the memory **1010** is a computer-readable medium. In one implementation, the memory **1010** is a volatile memory unit. In another implementation, the memory **1010** is a non-volatile memory unit.

[**0078**] The input/output controller **1015** manages input/output operations for the computing device **1000**. In one implementation, the input/output controller **1015** is coupled to an external input/output device, such as a keyboard, a pointing device, or a display unit that is capable of displaying various GUIs, such as the GUIs shown in the previous figures, to a user.

[0079] The GPS receiver **1020** is similar to the GPS application **205** of **FIG. 2**. The GPS receiver **1020** is configured to receive signals from multiple GPS satellites, such as the satellite devices **210***a*-**210***c* of **FIG. 2**, and to use the received signals to calculate a location of the computing device **1000**, for example, as GPS coordinates.

[0080] The computing device **1000** uses the network adapter **1025** to communicate with other network devices. If, for example, the client device **108***a* is a mobile device that includes the computing device **1000**, the computing device **1000** uses its network adapter **1025** to communicate with the host server **106** over a wireless connection.

[0081] The storage device **1030** is capable of providing mass storage for the computing device **1000**. In one implementation, the storage device **1030** is a computer-readable medium. In various different implementations, the storage device **1030** may be a floppy disk device, a hard disk device, an optical disk device, or a tape device.

[0082] In one implementation, a computer program product is tangibly embodied in an information carrier. The computer program product contains instructions that, when executed, perform one or more methods, such as those described above. The information carrier is a computer- or machine-readable medium, such as the memory **1010**, the storage device **1030**, or a propagated signal.

[0083] A number of implementations have been described. Nevertheless, it will be understood that various modifications may be made. Accordingly, other implementations are within the scope of the following claims.

What is claimed is:

1. A method of providing location information on a mobile device, the method comprising:

receiving signals from external devices, each signal including information that specifies a geographic location for the external device that has provided the signal;

calculating a geographic location for the mobile device by using the information contained in each of the received signals;

generating a representation of the geographic location of the mobile device;

including the representation of the geographic location within an electronic message that provides information describing a user of the mobile device to other users of an electronic communications system; and

transmitting the electronic message to another device to provide an indication of the geographic location for the user to one of the other users of the electronic communications system.

2. The method of claim 1 wherein generating a representation of the geographic location comprises generating a representation of a location that is within a threshold distance from the calculated geographic location.

3. The method of claim 1 wherein generating a representation of the geographic location comprises identifying a name of the geographic location.

4. The method of claim 3 wherein identifying a name of the geographic location comprises accessing a data store that includes indications of names of geographic locations.

5. The method of claim 1 wherein generating a representation of the geographic location comprises prompting the user of the mobile device for the representation of the geographic location.

6. The method of claim 1 wherein generating a representation of the geographic location comprises generating a commercial or social description of the geographic location.

7. The method of claim 1 wherein receiving signals from external devices comprises receiving signals from one or more GPS satellites.

8. The method of claim 1 wherein receiving signals from external devices, each signal including information that specifies a geographic location for the external device that has provided the signal comprises receiving signals from one or more external devices, each signal including information that specifies a previous electronic message that provides information describing the user.

9. The method of claim 1 wherein including the representation of the geographic location within the electronic message comprises overwriting a representation of a previous geographical location of the mobile device with the generated representation of the mobile device.

10. The method of claim 1 further comprising storing the generated representation of the geographic location such that the representation may be used without being generated again at a later time when the mobile device is at the geographic location.

11. The method of claim 10 further comprising prompting the user of the mobile device to select the generated representation of the geographic location for inclusion in the electronic message at a next time at which the mobile device is located at the geographic location.

12. The method of claim 1 further comprising prompting the user of the mobile device to confirm that the representation of the geographic location should be included in the electronic message.

13. The method of claim 12 wherein prompting the user comprises prompting the user when the geographic location is more than a threshold distance away from a previous geographic location.

14. The method of claim 12 wherein prompting the user comprises prompting the user when the geographic location has not changed for more than a threshold amount of time.

15. The method of claim 1 wherein calculating the geographic location comprises calculating a latitude and a longitude of the geographic location.

16. The method of claim 15 wherein calculating the geographic location further comprises calculating an altitude of the geographic location.

17. The method of claim 1 wherein the electronic message indicates the availability of the user to send and receive electronic messages.

18. The method of claim 17 wherein the electronic message includes text, audio data, video data, or graphical data.

19. The method of claim 1 wherein the mobile device is at least one from a group including a personal computer, a mobile phone, and a personal digital assistant.

20. The method of claim 1 wherein including the representation of the geographic location within an electronic message comprises identifying an electronic message based on the representation of the geographic location.

21. The method of claim 1 wherein including the representation of the geographic location within an electronic message comprises generating an electronic message based on the representation of the geographic location.

22. The method of claim 1 further comprising determining whether the geographic location is a geographic location for which the representation of the geographic location should be included in the electronic message, wherein including the representation of the geographic location in the electronic message comprises including the representation of the geographic location in the electronic message when the geographic location is a geographic location for which the representation of the geographic location should be included in the electronic message.

23. The method of claim 1 wherein calculating the geographic location comprises calculating the geographic location in response to a user request.

24. A machine-accessible medium that, when accessed, results in a machine performing operations for providing location information on a mobile device, comprising:

receiving signals from external devices, each signal including information that specifies a geographic location for the external device that has provided the signal;

calculating a geographic location for the mobile device by using the information contained in each of the received signals;

generating a representation of the geographic location of the mobile device;

including the representation of the geographic location within an electronic message that provides information describing a user of the mobile device to other users of an electronic communications system; and

transmitting the electronic message to another device to provide an indication of the geographic location for the user to one of the other users of the electronic communications system.

25. A system comprising:

means for receiving signals from external devices, each signal including information that specifies a geographic location for the external device that has provided the signal;

means for calculating a geographic location for the mobile device by using the information contained in each of the received signals;

means for generating a representation of the geographic location of the mobile device;

means for including the representation of the geographic location within an electronic message that provides information describing a user of the mobile device to other users of an electronic communications system; and

means for transmitting the electronic message to another device to provide an indication of the geographic location for the user to one of the other users of the electronic communications system.

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