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Ashmore

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(54) **COMBINING MARKERS WITH LOCATION INFORMATION TO DELIVER DOMAIN-SPECIFIC CONTENT TO MOBILE DEVICES**

(75) Inventor: **Bradley C. Ashmore**, Mountain View, CA (US)

(73) Assignee: **Knowtate, Inc.**, Mountain View, CA (US)

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(58) **Field of Search** 455/456, 457, 455/414, 422, 432, 458, 461, 456.1, 456.3; 340/995, 988, 990; 701/208, 209, 201

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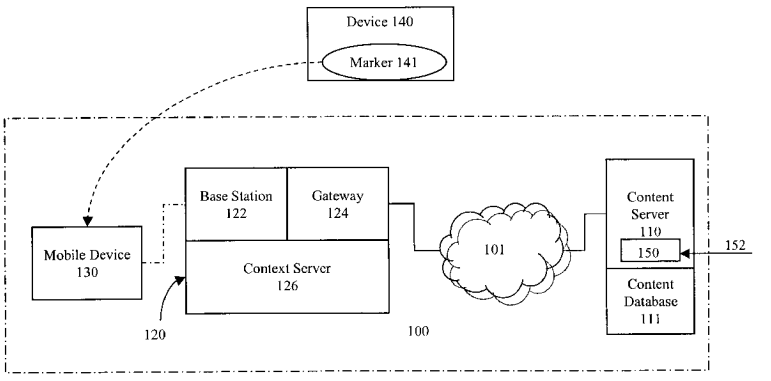
Primary Examiner—Sonny Trinh
(74) *Attorney, Agent, or Firm*—Fenwick & West LLP

(57) **ABSTRACT**

A system and method provides content to a mobile device in response to a marker received from the device and an associated context. A mobile device user initiates delivery of content or another action by entering the marker into the mobile device. The mobile device transmits the marker to a mobile network support system having a context server for supplying a context for the marker. The support system forms a message including the marker and context, and sends it to a content server. The content server uses the context to map the marker to a domain, retrieves from a content database the content identified by the marker and domain, and sends the content to the mobile network support system or performs another action with the content. The mobile network support system then transmits the content back to the mobile device.

58 Claims, 4 Drawing Sheets



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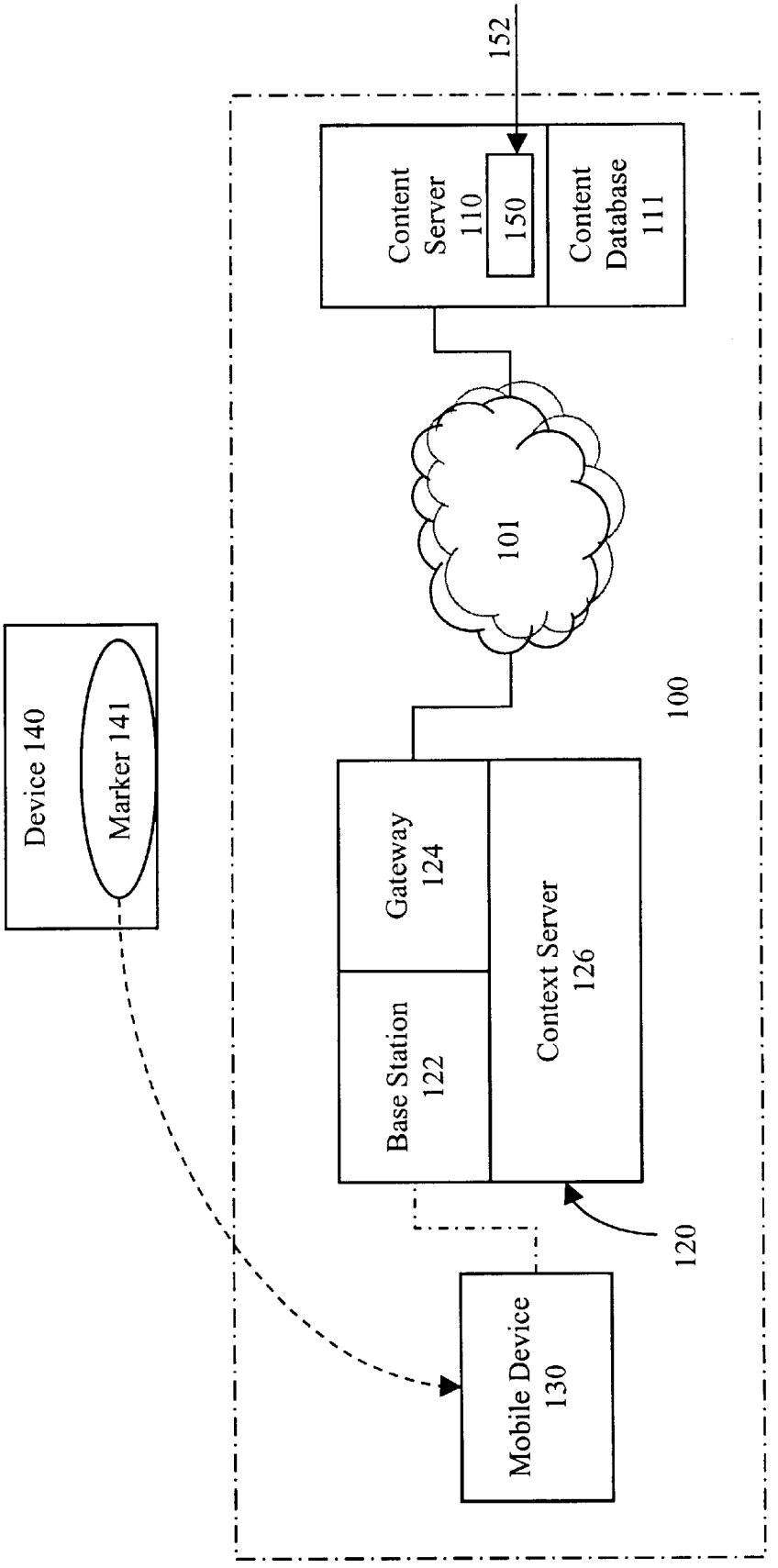
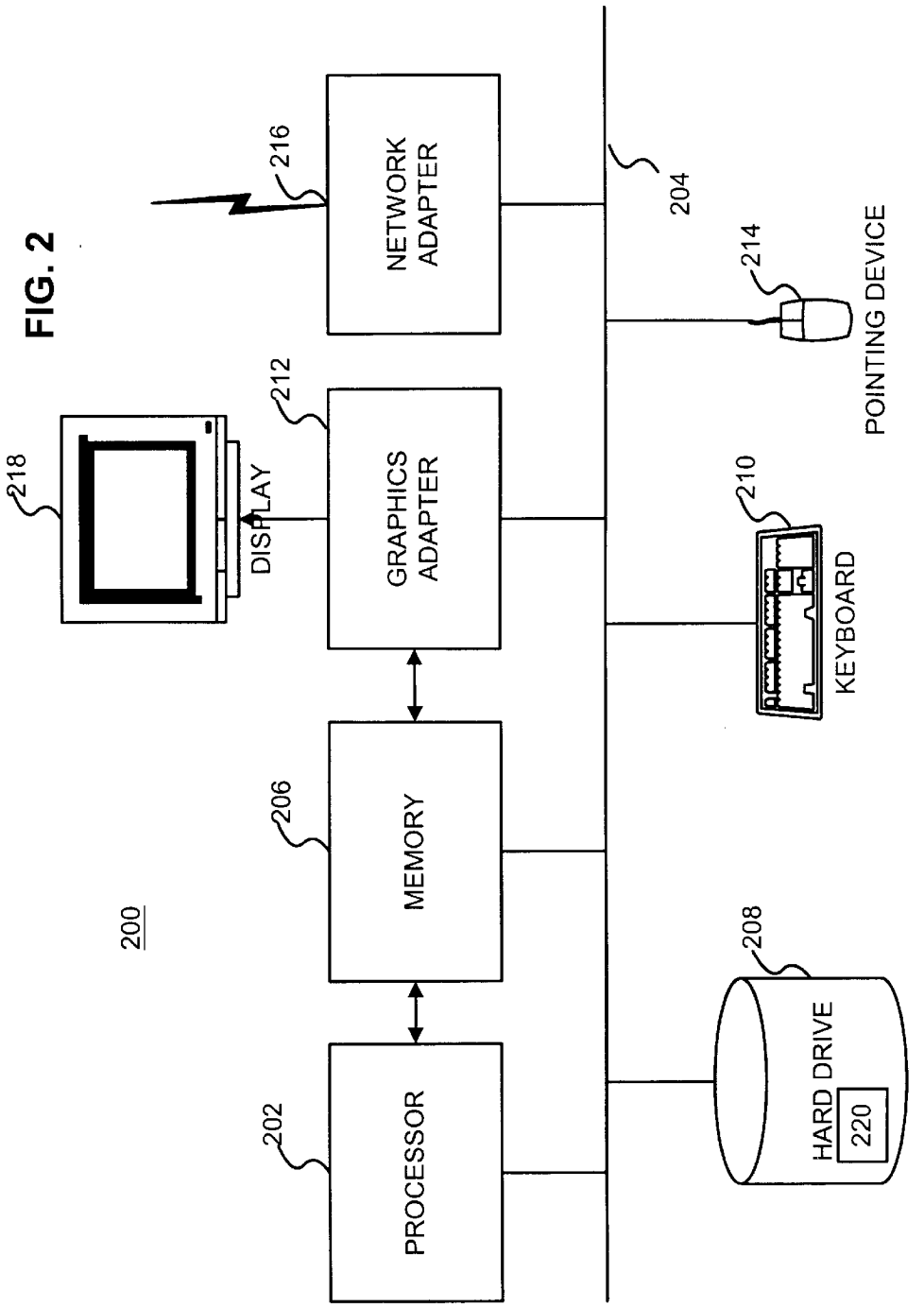


FIG. 1

FIG. 2



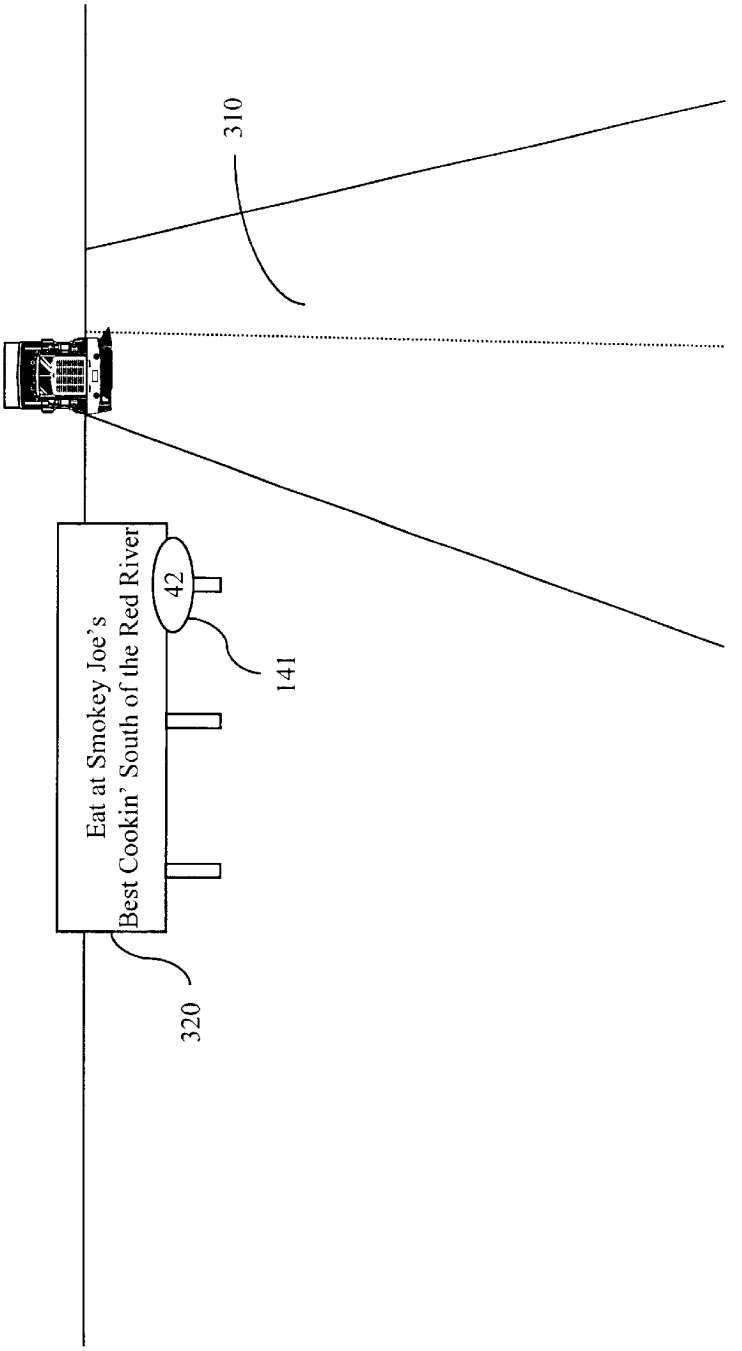


FIG. 3

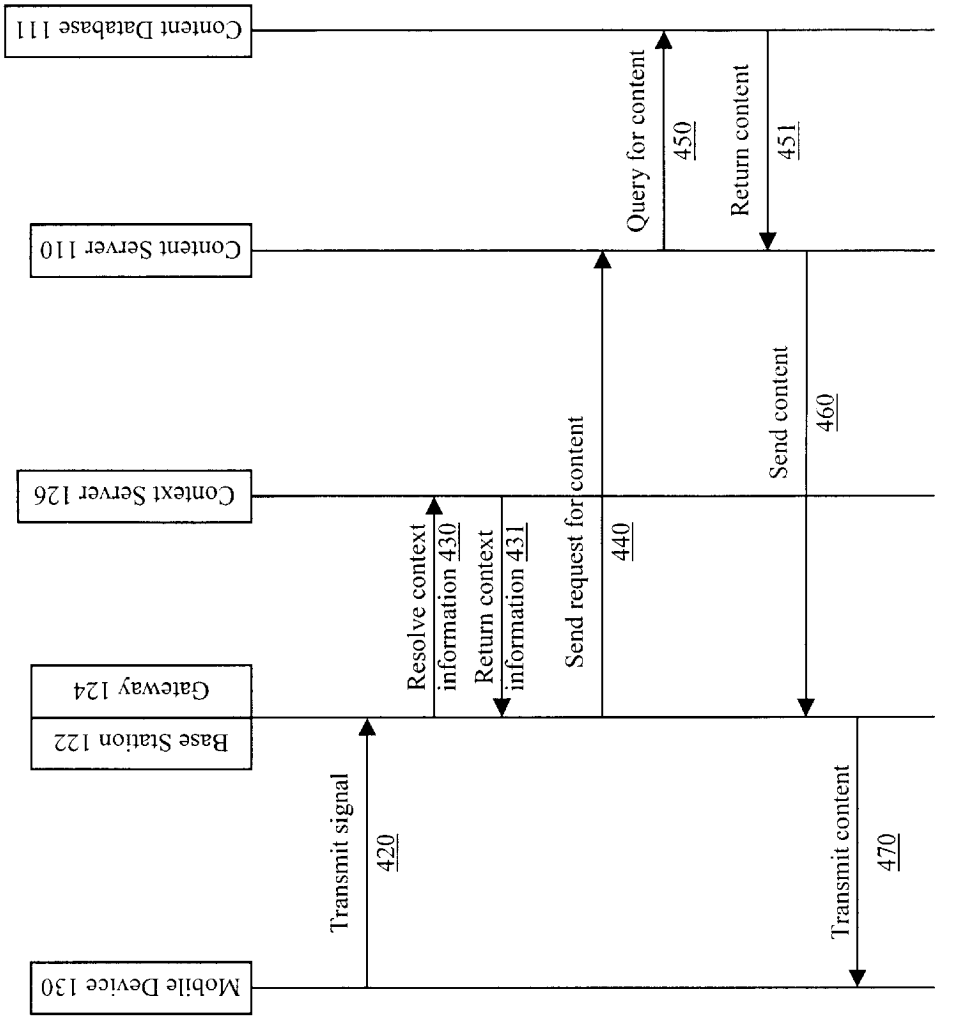


FIG. 4

COMBINING MARKERS WITH LOCATION INFORMATION TO DELIVER DOMAIN-SPECIFIC CONTENT TO MOBILE DEVICES

FIELD OF THE INVENTION

This invention relates generally to wireless technology, and particularly to providing information to wireless mobile devices.

BACKGROUND OF THE INVENTION

With the rapid expansion of wireless technology, many hand-held mobile devices are now capable of various applications, such as performing stock trades, sending/receiving text messages, etc. As wireless technology becomes more pervasive, it opens up new windows for companies and content providers to deliver personalized and localized information to mobile device holders. For example, a mobile device holder on the move may need information such as local weather, local maps, and/or directions to local hotels and restaurants, and it is desirable to deliver this information directly to the mobile device.

Companies and content providers do not usually know what information a mobile device holder may desire at a particular time and location. Some companies and content providers have designed applications to push information to mobile devices based on the assumption that at least some of the device holders are at locations where the information is useful. However, as usually happens, a large percentage of this information is not useful to the vast majority of mobile device users. This unwanted information can flood the mobile devices and consume bandwidth, memory, and battery power.

For these reasons, it is more efficient for a mobile device user to initiate the delivery of desired information, for example, by entering the universal resource locater ("URL") of a website holding the desired information. On the other hand, a mobile device user may be limited by the capabilities of the mobile device. For example, a cell phone has a small monochrome screen and no convenient way to input long text strings. The user of the cell phone may find it easier to dial "411" than to input names or addresses via multiple button presses in order to make use of a wireless directory look-up service. Also, much like the current concerns with people driving and using a cell phone, there are safety issues related to people in automobiles trying to obtain content on the Internet by entering long strings of URLs. Moreover, a URL is often not easy to memorize. Therefore, a user may have to go through lengthy searches on the Internet to find a desired website. These searches consume time and battery power, and are not practical when the user is driving a vehicle.

Therefore, there is a need in the art for a method and system for providing desired content to a mobile device holder without the aforementioned disadvantages.

SUMMARY OF THE INVENTION

The present invention meets the above need by assigning a short identifier, called a "marker," to an entity about which the mobile device user is interested in obtaining information. In one embodiment of the present invention, every marker is associated with a particular domain, such as a geographic area. Markers can be re-used in different domains.

In one embodiment, the present invention utilizes a mobile network support system and a content server. The mobile device user initiates the delivery of the desired content or another action by entering the marker into a mobile device. The mobile device transmits the marker to the mobile network support system. Preferably, a context server within the mobile network support system determines a context for the marker, such as the geographic location of the mobile device. Then, the mobile network support system sends a message including the marker and the context to the content server.

The content server is in communication with a content database, which stores content associated with markers for specified domains. A domain mapping module within the content server uses the context information to map the marker to a domain. The content server retrieves the content referenced by the given marker and domain from the content database and sends it to the mobile network support system, which then transmits the content to the mobile device. Alternatively, the content server uses the content to contact the entity associated with the marker on behalf of the mobile device user or performs some other action.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram illustrating a system for providing content to a mobile device according to an embodiment of the present invention.

FIG. **2** is a high-level block diagram of a computer system for use as a content server according to one embodiment of the present invention.

FIG. **3** is a diagram illustrating an exemplary situation in which a mobile device user uses an embodiment of the present invention to obtain desired content.

FIG. **4** is a ladder diagram illustrating a process for providing content corresponding to a marker having a context, according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** is a block diagram illustrating a system **100** for providing content to a mobile device **130**, according to an embodiment of the present invention. The system **100** includes a content server **110** coupled to a network **101**, such as the Internet, a mobile network support system **120** in communication with the network **101**, and the mobile device **130**. The system **100** makes use of a display **140** for informing a user of the mobile device **130** of a marker **141**.

The marker **141** is a number, a text string, a pictogram, or any other symbol or series of symbols that the mobile device user can enter into his or her mobile device **130** to request content. Preferably, the marker **141** is a short number, such as "42," that is easy to read, remember, and enter into the mobile device **130**. The marker **141** may also be a word, such as "food," "traffic," or a business name, a short phrase, and/or a particular color or sound.

In general, the marker **141** is associated with an entity such as a restaurant, hotel, theater, store, corporation, school, or road sign. In addition, a marker **141** may be associated with more general concepts, such as weather, traffic conditions, Mexican food, etc. Preferably, the mobile device user uses the marker **141** to obtain information about the entity or concept associated with the marker. Typically, this information is in the form of content, such as restaurant menus, theater show times, or traffic conditions.

However, there may be instances where the mobile user uses the marker **141** to obtain a service or cause an event to

occur that does not directly provide additional information to the user. For example, the user may use the marker **141** to cause content to be mailed, electronically or otherwise, to an address associated with the user. In another example, the user may use the marker **141** to establish a connection with an entity such as a reservation service so that the user can provide and/or obtain additional information. Regardless, this description refers to the mobile user as using the marker **141** to obtain "content." It will be understood by those of ordinary skill in the art that "content" includes all possible benefits that may accrue to the mobile user through the use of the marker **141**.

In a preferred embodiment of the present invention, the marker **141** is valid in view of one or more particular types of domains. Possible types of domains for a marker include geographic areas, times, dates, and/or events. A domain can be contiguous or discontiguous. In a preferred embodiment of the present invention, the domain is one or more geographical areas. Examples of geographical areas that may be defined as domains include particular counties, cities, towns, districts, school campuses, shopping centers, buildings, and geographic areas surrounding the marker **141** or some other location, such as the areas around particular roads or highways, paths formed by bus routes, and cellular telephone base stations. Since a meaning for a particular marker **141** is valid for only a particular domain, a marker **141** can be reused and have a different meaning in a different domain.

In one embodiment of the present invention, the marker **141** is illustrated on a display **140**, such as a billboard or other physical object having a fixed location and/or known to reside in a prescribed location or volumetric region. For example, the display **140** can illustrate the marker **141** as part of an advertisement and/or together with other characteristics of the entity with which the marker **141** is assigned, such as a sign at a store, restaurant, motel, theater, school, etc. The display **140** can also be a mobile object that either moves through a known domain or otherwise makes apparent a domain for the marker **141**. For example, a bus might display the message "Enter '42' for traffic information." Since the route of the bus is known, the domain of the marker **141** is also known. In another example, a matchbook or phonebook, displays the message "When in San Jose, enter marker '42' for local weather information." In this latter example, the domain for which the marker **141** is valid is explicitly specified; the marker may have another meaning outside of San Jose.

Alternatively, the display **140** can be anything else through which the mobile user learns about the marker **141**. For example, the display **140** can be orally or visually communicated via a radio or television. For example, a radio advertisement might say "Enter '42' for locations of theatres near you showing 'Star Wars: Episode Two' starting within the next two hours." The display **140** may also be a personal computer or any other device through which the mobile device user learns about the marker **141**.

The mobile device **130**, to which the mobile device user preferably has direct access, is preferably a wireless device that can accept input from and provide output to the mobile device user in various forms. For example, the mobile device **130** can accept input as keypad presses, spoken words or phrases, and/or direct electronic data input. Likewise, the mobile device **130** can provide output as text messages, icons or other pictograms, video, and/or audio. Examples of mobile devices include cellular telephones, satellite telephones, Personal Digital Assistants (PDAs), pagers, portable computers, and in-vehicle communications systems such as the Onstar system available from General Motors Corporation. Preferably, the mobile device **130** supports the Wireless Application Protocol (WAP), however, it should be understood that the present invention works with wireless and/or wired devices that support WAP or other protocols. For example, the mobile device **130** may support standard telephony protocols, such as dual-tone multi-frequency ("DTMF," or "touch-tone") instead of or in addition to other protocols such as WAP. The terms "mobile device" and "wireless device," as used herein, are also intended to include devices that are in fact not mobile and/or wireless.

The mobile device **130** communicates via wireless and/or wired technologies with a base station **122** in a mobile network support system **120**. The base station **122** is typically either ground-based or satellite-based depending upon the type of communication utilized by the mobile device **130**. For example, if the mobile device **130** is a cellular phone, the base station **122** preferably includes a cellular base antenna and associated hardware and software for engaging in two-way communications with the cellular phone. If the mobile device **130** is a satellite-based telephone, the base station **122** preferably includes the hardware and software for supporting satellite uplink and downlink capabilities. Alternatively, if the mobile device **130** is a laptop having a network connection, the base station **122** may be simply an Internet server maintained by an Internet Service Provider (ISP) or other entity.

In a preferred embodiment of the present invention, the base station **122** communicates with multiple mobile devices simultaneously through radio links using an established protocol, such as WAP or the i-Mode protocol from NTT DoCoMo. WAP is a standard for providing cellular phones, pagers and other handheld devices with secure access to e-mail and text-based Web pages. WAP provides an environment for wireless applications including a wireless counterpart of the Transmission Control Protocol/Internet Protocol (TCP/IP) and a framework for telephony integration such as call control and phone book access. WAP supports the Wireless Markup Language (WML), which is a tag-based language allowing standard EXtensible Markup Language (XML) and Hypertext Markup Language (HTML) tools to be used to develop WAP applications. WAP also uses WMLScript, a compact JavaScript-like language that runs in limited memory. In addition, WAP supports handheld input methods such as a keypad and voice recognition, and requires only a minimum functionality in the mobile device. i-Mode is a packet-based information service for mobile phones. i-Mode provides Web browsing, e-mail, calendar, chat, games and customized news. i-Mode uses a proprietary display language called cHTML.

The mobile network support system **120** also preferably includes a context server **126** for providing contextual information for markers **141** in messages received from mobile devices **130**. In general, the context server **126** receives information from the base station **122** and/or the mobile device **130** and determines the context associated with the marker **141** sent by the device. As mentioned above, in a preferred embodiment of the present invention the context is the geographic location of the mobile device **130**. The context server **126** preferably determines this location from the base station **122** or network that received the signal from the mobile device **130**.

The context information may include data such as a heading, velocity, and altitude for the mobile device **130**. To provide this more detailed context information, the context server **126** or base station **126** may utilize technologies including overlay triangulation based on timing or angle of

signal transmission and reception at the mobile device **130** and/or base station **122**. Such triangulation typically uses Enhanced Observed Time Difference (E-OTD) and Time of Arrival (TOA) information. Alternatively, global positioning system (GPS) technology may be included in the mobile device **130**. In this latter case, an embodiment of the present invention may lack or otherwise not use the functionality of the context server **126** because the context information is received directly from the mobile device **130**.

Regardless of the technology used, the context server **126** preferably identifies the location of the mobile device **130** from which it receives the marker **141**. The location information of the mobile device **130** can be in the form of latitude, longitude, and/or altitude, or in the form of physical coordinates relative to the base station **122** or some other point of origin, or in any other format. In one embodiment, the context server **126** also provides information indicating a degree or confidence in the established location of the mobile device.

In alternative embodiments, the context server **126** preferably supplies other information related to the given context. For example, if the context is the time of day, then the context server **126** preferably supplies the time that the marker was received from (or sent by) the mobile device **130**. In addition, the context server **126** may supply multiple contexts for a single marker, such as the location of the mobile device **130** and the time that the marker was received by the base station **122**.

The mobile network support system **120** further includes a gateway **124** coupled between the base station **122** and the network **101**. The gateway **124** is preferably a computer system for performing protocol conversion between different types of networks and/or applications. For example, the gateway **124** preferably converts messages among TCP/IP, WAP, i-Mode, and/or standard telephony protocols. In a preferred embodiment of the present invention, the gateway **124** forms a message containing both the marker **141** received from the mobile device **130** and the context information provided either by the context server **126** or by the mobile device **130**. The gateway **124** then converts the message into a TCP/IP message, such as a Uniform Resource Locator (URL), and passes this message to the network **101** using an established protocol such as the hypertext transport protocol (HTTP). Alternatively, in the embodiment where the gateway **124** communicates with the content server **110** via a standard telephone network, the gateway converts the message into a format designed for communicating the marker **141** and contextual information via the telephone network.

The gateway **124** also preferably converts content received from the network **101** into a wireless communication format such as WML or cHTML, and passes the content to the base station **122** for transmission to the mobile device **130**. The gateway **124** may also compress content sent to the mobile device **130** and/or expand messages received from the mobile device **130** to account for the limited bandwidth of radio links. In one embodiment, the functionality of the gateway **124** is incorporated into the context server **126** or another device.

The network **101** transfers information between the gateway **124** and a content server **110**. The network **101** can utilize any known networking technology, including technologies designed to carry voice and/or data. In addition, the network **101** may utilize paths over a public network such as the Internet, consist of dedicated and/or private communications link, or include some combination of public and private links. In an alternative embodiment, the content server **110** is located in the mobile network support system **120**. Accordingly, the network **101** may be a local area network.

The content server **110** preferably receives the marker **141** transmitted by the mobile device **130** and the contextual information supplied by the context server **126**, maps the context to a domain, determines the content associated with the marker **141** and the mapped domain, and then either sends the content to the mobile device or performs some other action. In one embodiment, the content server **110** is adapted to receive and respond to communications protocols such as HTTP over TCP/IP. In another embodiment, the content server **110** is an interactive voice response (UVR) system adapted to receive and respond to communications received via standard telephony protocols.

FIG. **2** is a high-level block diagram of a computer system **200** for use as the content server **110** or another device illustrated in FIG. **1**, such as the context server **126**. FIG. **2** illustrates at least one processor **202** coupled to a bus **204**. Also coupled to the bus **204** are a memory **206**, a storage device **208**, a keyboard **210**, a graphics adapter **212**, a pointing device **214**, and a network adapter **216**. A display **218** is coupled to the graphics adapter **212**.

At least one processor **202** may be any specific or general-purpose processor such as an INTEL x86 or POWERPC-compatible central processing unit (CPU). The storage device **208** may be any device capable of holding large amounts of data, like a hard drive, compact disk read-only memory (CD-ROM), DVD, or some other form of fixed or removable storage device. The memory **206** holds instructions and data used by the processor **202**. The pointing device **214** may be a mouse, track ball, light pen, touch-sensitive display, or other type of pointing device and is used in combination with the keyboard **210** to input data into the computer system **200**. The network adapter **216** couples the computer system **200** to the computer network **101**.

Program modules **220** for providing the functionality attributed to the content (or other) server **110** are preferably stored on the storage device **208**, loaded into the memory **206**, and executed by the processor **202**. Alternatively, hardware or software modules may be stored elsewhere within the computer system **200**. As used herein, the term "module" refers to computer program logic and/or any hardware or circuitry utilized to provide the functionality attributed to the modules. The types of hardware and software within the computer system **200** may vary depending upon how the computer system is utilized. For example, a computer system used as a content server **110** is likely to have greater processing power and storage capacity than a typical personal computer system. In addition, the content server **110** may lack certain components, such as a display **218** or graphics adapter.

Returning to FIG. **1**, the content server **110** preferably includes a domain mapping module (DMM) **150** and is in communication with a content database **111**. The DMM **150** analyzes the contextual information received from the context server **126** and determines a domain for the marker. In one embodiment of the present invention, the context and the domain are the same. In another embodiment of the present invention, the DMM **150** uses predetermined information, information stored in a different database (not shown), or information received via a data feed **152** to map the context into the appropriate domain. The mapping from context to domain can be contiguous or discontiguous.

For example, the contextual information may specify a geographic location, such as the location of a cell served by

a cellular base station. Likewise, a marker **141** may be valid within a certain geographic area (i.e., the domain), such as an area served by one or more base stations. The DMM **150** maps the geographic location provided by the context server **126** to the appropriate domain in which the marker **141** is valid.

In a more complex example, the contextual information may specify a geographic location, a heading and a velocity. In addition, a road, such as an interstate highway, may have different domains defined for each side of the road. The DMM **150** interprets the contextual information and determines that the mobile device **130** is on the road and headed in a certain direction. Accordingly, the DMM **150** maps the marker **141** to the domain defined for that direction on the road.

In yet another example, markers are located on advertisements on the sides of buses. The domains for the markers are specified relative to certain buses or routes. For example, marker "42" is in a first domain for bus routes **1–5** and a second domain for routes **6–10**. In this example, the contextual information specifies a geographic location and/or a time. The DMM **150** uses the specified geographic location, or the specified time, to determine which bus bearing the marker was closest to the given location at the given time. To make this determination, the DMM **150** may rely on a table of bus schedules or a real-time data feed describing the locations of buses. Then, the DMM **150** maps the marker to the domain corresponding to the bus route of the given bus.

The content database **111** stores content associated with markers and domains. In one embodiment, the database **111** stores content in a two-dimensional array, with one dimension representing the marker **141** and the other dimension representing the domain. Other storage techniques are within the scope of the present invention, including multi-dimensional arrays, hash tables, etc. In one embodiment of the present invention, the content database **111** stores pointers to additional content. For example, the content database **111** stores URLs referencing other content available on the Internet. In another example, the content database **111** stores phone numbers of reservation services. In one embodiment, the content database **111** is implemented using an object-oriented database such as Oracle 8i available from Oracle Corporation.

In one embodiment, the content database **111** is stored on the storage device **208** in the content server **110**. In another embodiment, the content database **111** is stored on a separate storage device associated with a separate database server or a dedicated storage system. Accordingly, the content database **111** may be co-located or remote from the content server **110** and may be coupled to the content server with a local or wide area network (not shown).

Preferably, the content server **110** accesses the content database **111** to retrieve the content identified by the given marker **141** and domain. Upon retrieving the content from the content database **111**, the content server **110** preferably provides the content to the mobile device **130** via the network **101** and mobile network support system **120** and/or performs another action with the content. For example, if the content database **111** holds a restaurant menu, the content server **110** may provide the menu to the mobile device **130** or email the menu to an address associated with the mobile device. Alternatively, if the content database **111** holds a phone number for the restaurant, the content server **110** may cause the mobile device **130** to form a telephone connection with the restaurant. If the content server **110** contains an IVR system, the content server may prompt the user to provide additional information.

FIG. **3** is a diagram illustrating an exemplary situation in which a mobile device user uses an embodiment of the present invention to obtain a desired content. FIG. **4** is a ladder diagram illustrating communications between the various entities illustrated in FIG. **1** in response to the situation of FIG. **3**. FIG. **4** illustrates only major communications and those of ordinary skill in the art will recognize that different embodiments of the present invention may use different sets of communications.

FIG. **3** illustrates an exemplary situation where a mobile device user sees a billboard **320** while driving on a road. The billboard **320** refers to a nearby restaurant, Smokey Joe's. As typically happens, before the mobile device user can read and memorize the direction to the restaurant, or the web address or phone number of the restaurant, which may also be posted on the billboard, the user's car has passed the billboard. However, in this case, the billboard also displays a marker **141** associated with the restaurant. The marker **141** in this example is a two-digit number "42," and it is not hard for the mobile device user to read and memorize this number while driving by the billboard **320**. The mobile device user enters this two digit number into the mobile device **130**, and, in response, obtains content about Smokey Joe's, such as the direction to Smokey Joe's from the mobile user's location, Smokey Joe's menu, etc.

Turning now to FIG. **4**, the signal from the mobile device **130** containing the marker is transmitted **420** to the mobile base station **122**, which then forwards **430** the data in the signal to the context server **126**. The context server **126** determines the contextual information and returns **431** it to the gateway **124**. In this example, the contextual information is the location of the mobile device. The gateway **124** forms a message including Smokey Joe's marker **141** and the location of the mobile device **130**, and sends **440** a message to the content server **110** via the network **101**. When the network **101** is the Internet, the gateway **124** preferably converts the message from the mobile network protocol, such as the WAP or i-Mode protocol, to an Internet protocol, such as HTTP via TCP/IP. In one embodiment, the message sent to the content server **110** is in the form of a URL, such as "http://contentserver.com/context/42," where "content-server" corresponds to the name of the content server **110** and "context" corresponds to the location of the mobile device **130**.

In response to receiving the message, the content server **110** uses the contextual information to map the marker **141** to a domain and then queries **450** the content database **111** for the content corresponding to the marker in the mapped domain. In response to the query, the content database **111** returns **451** the desired content to the content server **110**. Alternatively, the content database **111** may return a URL pointing to a location on the Internet that the mobile device **130** can access to retrieve this content.

The content server **110** sends **460** the retrieved content to the base station **122**, which converts the content into a wireless signal and transmits **470** the signal to the mobile device **130**. The mobile device then outputs the content to the mobile device user.

Having described a preferred embodiment of the invention, it will now become apparent to those skilled in the art that other embodiments incorporating its concepts may be provided. It is felt therefore, that this invention should not be limited to the disclosed invention, but should be limited only by the sprit and scope of the appended claims.

I claim:

1. A method for providing content to a mobile device, comprising:

receiving from the mobile device data representative of a marker;

receiving data representative of a geographic location of the mobile device, the data representative of the geographic location derived independently of the data representative of the marker;

analyzing the geographic location of the mobile device to determine a domain for the marker;

determining content responsive to the marker and the domain for the marker, wherein the content is determined by a one-to-one mapping of the marker to the domain; and

providing the determined content to the mobile device.

2. The method of claim **1**, wherein the data representative of the geographic location of the mobile device are received from the mobile device.

3. The method of claim **2**, wherein the mobile device utilizes the global positioning system to generate the data representative of the geographic location of the mobile device.

4. The method of claim **1**, wherein the data representative of the geographic location of the mobile device are not received from the mobile device.

5. The method of claim **1**, wherein the data representative of the geographic location of the mobile device indicates a particular cell in a cellular telephone system.

6. The method of claim **1**, wherein the data representative of the marker and the data representative of the geographic location of the mobile device are received from a mobile network support system in communication with the mobile device.

7. The method of claim **6**, further comprising the steps of:

receiving, by the mobile network support system from the mobile device, the data representative of the marker; and

accessing a context server in communication with the mobile network support system to determine the data representative of the geographic location of the mobile device.

8. The method of claim **1**, wherein the step of determining content responsive to the marker and the domain comprises the step of:

accessing a content database holding content associated with a plurality of markers for a plurality of domains, wherein the database specifies one-to-one mappings describing specific content associated with specific markers in specific domains.

9. The method of claim **1**, wherein the analyzing step comprises the step of:

correlating data received via a data feed with the geographic location of the mobile device to determine a likely domain for the marker.

10. The method of claim **1**, wherein the domain is a geographic area and/or a volumetric region.

11. The method of claim **10**, wherein the geographic area and/or volumetric region is discontiguous.

12. The method of claim **1**, wherein the data representative of the marker comprises a numeric value.

13. The method of claim **1**, wherein the data representative of the marker comprises a text string.

14. The method of claim **1**, wherein the data representative of the marker comprises data representative of a spoken word or phrase.

15. The method of claim **1**, wherein the data representative of the marker comprises data representative of a selection of a pictogram.

16. The method of claim **1**, wherein the providing step comprises the step of:

providing textual data to the mobile device.

17. The method of claim **1**, wherein the providing step comprises the step of:

providing audio and/or visual data to die mobile device.

18. The method of claim **1**, wherein the marker does not have an intrinsic meaning related to the determined content.

19. The method of claim **1**, wherein the marker is visibly displayed on a physical object.

20. The method of claim **1**, wherein the analyzing occurs alter receipt of the data representative of the marker from the mobile device.

21. The method of claim **1**, wherein the analyzing step comprises the step of:

selecting a domain for the marker from among a plurality of possible domains for the marker.

22. A system for providing content to a mobile device, comprising:

a content database storing content for a plurality of markers, the content associated with one or more of a plurality of domains and storing mappings describing specific content associated with specific markers in specific domains; and

a content server for receiving from the mobile device data representative of a marker and receiving data representative of a geographic location of the mobile device, the data representative of the geographic location derived independently of the data representative of the marker, for analyzing the geographic location for the marker to determine a domain for the marker, for accessing the content database to determine content associated with the marker and the domain from a one-to-one mapping of the marker to the domain, and for sending the determined content to the mobile device.

23. The system of claim **22**, further comprising:

a module for receiving a data feed, wherein the content server correlates data received via the data feed with the geographic location of the mobile device to determine a likely domain for the marker.

24. The system of claim **22**, wherein the domain is a geographic area and/or a volumetric region.

25. The system of claim **24**, wherein the geographic area and/or volumetric region is discontiguous.

26. The system of claim **22**, wherein the data representative of the geographic location of the mobile device is received from the mobile device.

27. The system of claim **26**, wherein the mobile device utilizes the global positioning system to generate the data representative of the geographic location of the mobile device.

28. The system of claim **20**, wherein the data representative of the geographic location of the mobile device is not received from the mobile device.

29. The system of claim **22**, wherein the data representative of the geographic location of the mobile device indicates a particular cell in a cellular telephone system.

30. The system of claim **22**, further comprising:

a mobile network support system in communication with the mobile device and the content sewer for passing the data representative of the marker from the mobile device to the content sewer, for providing the data representative of the geographic location of the mobile device to the content server, ad for passing the determined content from the content server to the mobile device.

31. The system of claim 30, wherein the mobile network support system further comprises:

a context server for generating the data representative of the geographic location of the mobile device.

32. The system of claim 22, wherein the determined content sent by the content server to the mobile device comprises textual data.

33. The system of claim 22, wherein the determined content sent by the content server to the mobile device comprises audio and/or visual data.

34. The system of claim 22, wherein the data representative of the marker comprises a numeric value.

35. The system of claim 22, wherein the data representative of the marker comprises a text string.

36. The system of claim 22, wherein the data representative of the marker comprises data representative of a spoken word or phrase.

37. The system of claim 22, wherein the data representative of the marker comprises data representative of a selection of a pictogram.

38. The system of claim 22, wherein the marker does not have an intrinsic meaning related to the determined content.

39. The system of claim 22, wherein the marker is visibly displayed on a physical object.

40. The system of claim 20, wherein the content database stores content associated with a plurality of domains.

41. A computer program product, comprising:

a computer-usable medium having computer-readable code embodied therein for providing content to a mobile device, the computer-readable code comprising:

a module for receiving from the mobile device data representative of a marker;

a module for receiving data representative of a geographic location of the mobile device, the data representative of the geographic location derived independently of the data representative of the marker;

a domain mapping module for analyzing the geographic location of the mobile device to determine a domain for the marker and for accessing the content database to determine content associated with the marker and the domain, wherein the content is determined by a one-to-one mapping of the marker to the domain; and

a module for providing the determined content to the mobile device.

42. The computer program product of claim 41, wherein the data representative of the geographic location of the mobile device is received from the mobile device.

43. The computer program product of claim 42, wherein the mobile device utilizes the global positioning system to generate the data representative of the geographic location of the mobile device.

44. The computer program product of claim 41, wherein the data representative of the geographic location of the mobile device is not received from the mobile device.

45. The computer program product of claim 41, wherein the data representative of the geographic location of the mobile device indicates a particular cell in a cellular telephone system.

46. The computer program product of claim 41, wherein the data representative of the marker and the data representative of the geographic location of the mobile device are received from a mobile network support system in communication with the mobile device.

47. The computer program product of claim 46, further comprising:

a module for receiving, by the mobile network support system from the mobile device, the data representative of the marker; and

a module for accessing a context server in communication with the mobile network support system to determine the data representative of the geographic location of the mobile device.

48. The computer program product of claim 41, wherein the domain mapping module further comprises:

a module for correlating data received via a data feed with the geographic location of the mobile device to determine a likely domain for the marker.

49. The computer program product of claim 41, wherein the domain is a geographic area and/or a volumetric region.

50. The computer program product of claim 49, wherein the geographic area and/or volumetric region is discontiguous.

51. The computer program product of claim 41, wherein the module for providing the determined content to the mobile device comprises:

a module for providing textual data to the mobile device.

52. The computer program product of claim 41, wherein the module for providing the determined content to the mobile device comprises:

a module for providing audio and/or visual data to the mobile device.

53. The computer program product of claim 41, wherein the data representative of the marker comprises a numeric value.

54. The computer program product of claim 41, wherein the data representative of the marker comprises a text string.

55. The computer program product of claim 41, wherein the data representative of the marker comprises data representative of a spoken word or phrase.

56. The computer program product of claim 41, wherein the data representative of the marker comprises data representative of a selection of a pictogram.

57. The computer program product of claim 41, wherein the marker does not have an intrinsic meaning relaxed to the determined content.

58. The computer program product of claim 41, wherein the marker is visibly displayed on a physical object.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,738,630 B2
DATED : May 18, 2004
INVENTOR(S) : Bradley C. Ashmore

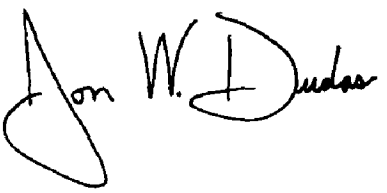
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 10,
Line 6, “die” should read -- the --
Line 12, “alter” should read -- after --
Line 53, “claim 20” should read -- claim 22 --
Lines 61 and 63, “sewer” should read -- server --
Line 65, “ad” should read -- and --

Column 11,
Line 25, “claim 20” should read -- claim 22 --

Signed and Sealed this

Twenty-seventh Day of July, 2004



JON W. DUDAS
Acting Director of the United States Patent and Trademark Office