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(19) **United States**(12) **Patent Application Publication**
Elsey et al.(10) **Pub. No.: US 2009/0110179 A1**(43) **Pub. Date: Apr. 30, 2009**(54) **TECHNIQUE FOR PROVIDING
PERSONALIZED INFORMATION AND
COMMUNICATION SERVICES****Publication Classification**(51) **Int. Cl.**
H04M 3/42

(2006.01)

(52) **U.S. Cl.** **379/218.01**(57) **ABSTRACT**

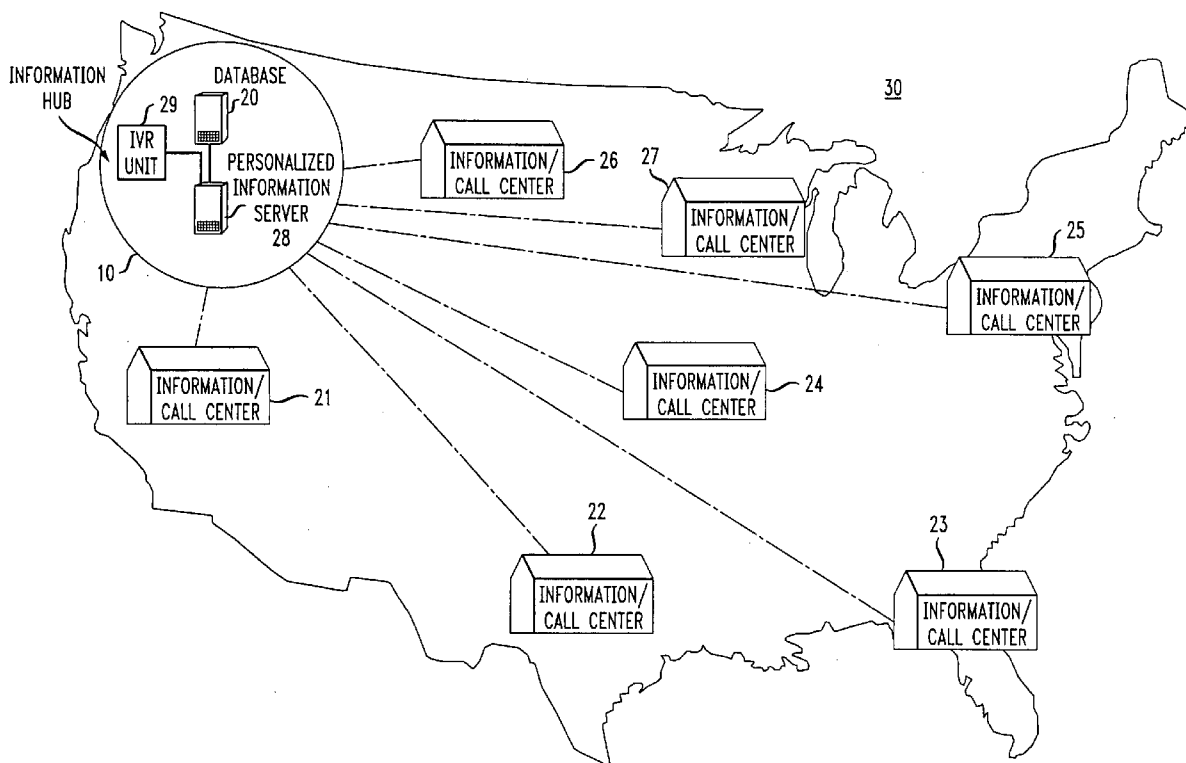
A system for use by a user to protect the privacy of selected telephone numbers in a directory includes a memory for storing a plurality of directories, each of which is associated with a single respective party and includes one or more telephone numbers at least one of which is to be used to contact selected parties associated with and different from the respective party. At least one directory further includes at least one indicator indicating that a telephone number, stored in the directory is to be disclosed only to a first predetermined group of persons associated with the single respective party. The system also includes a processor for allowing access to the at least one directory only to a second predetermined group that includes the first predetermined group of persons; and for providing the telephone number only to the first predetermined group of persons.

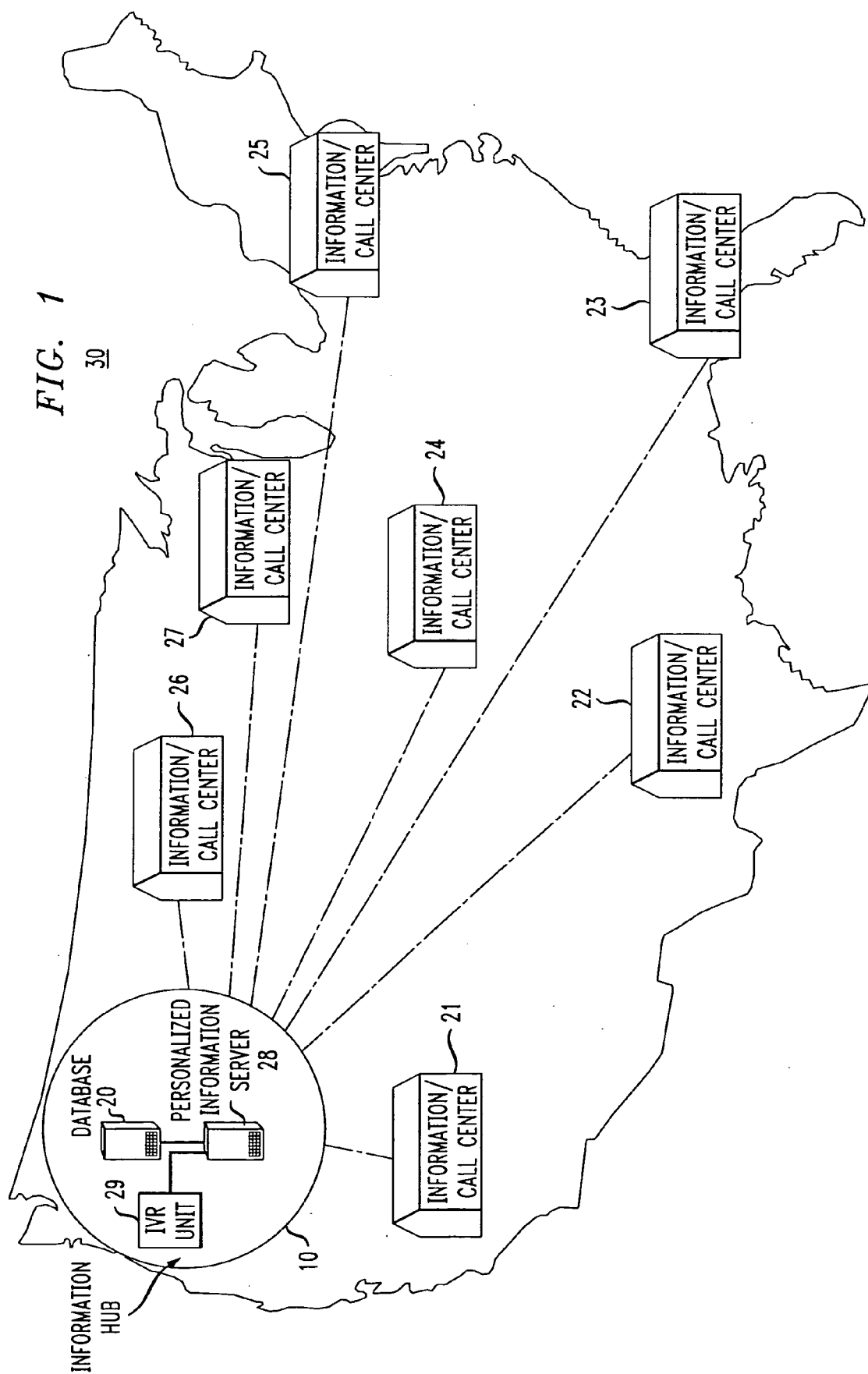
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SOFER & HAROUN LLP.**317 MADISON AVENUE, SUITE 910****NEW YORK, NY 10017 (US)**(21) **Appl. No.: 12/287,148**(22) **Filed: Oct. 6, 2008****Related U.S. Application Data**

(63) Continuation of application No. 10/896,380, filed on Jul. 21, 2004, now Pat. No. 7,499,537.





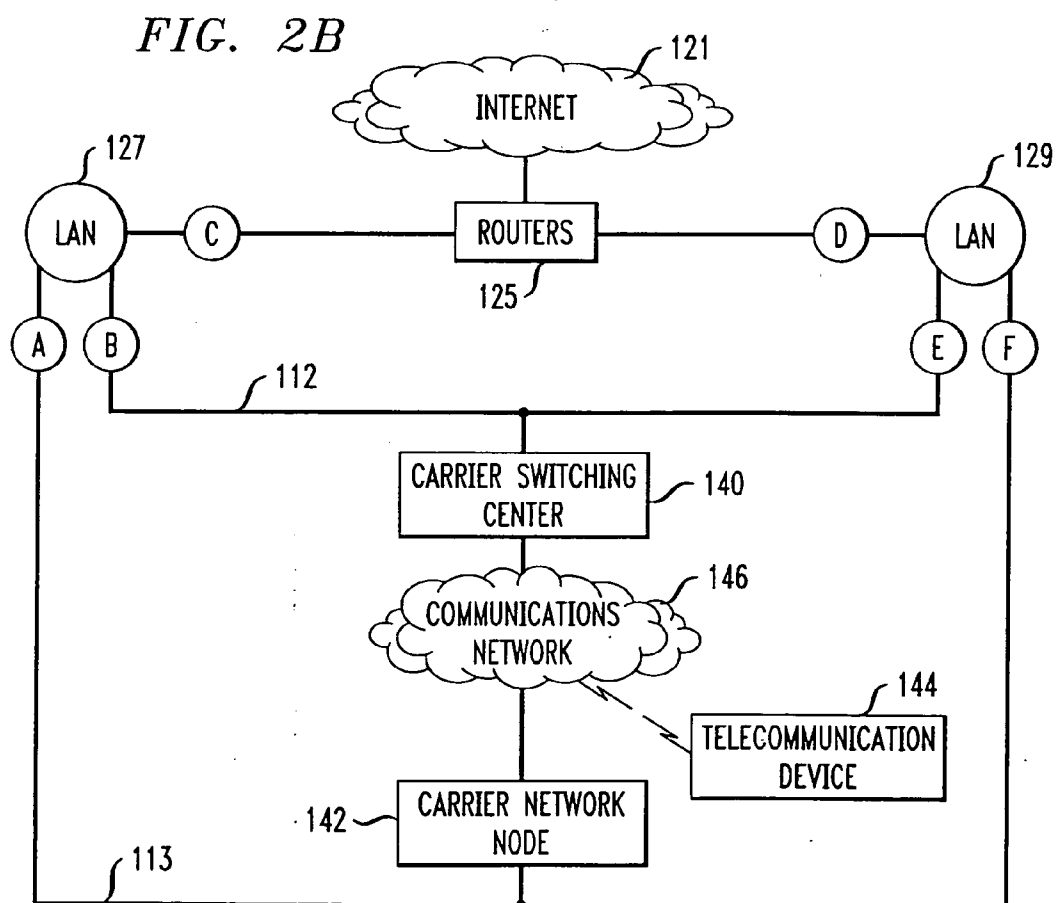
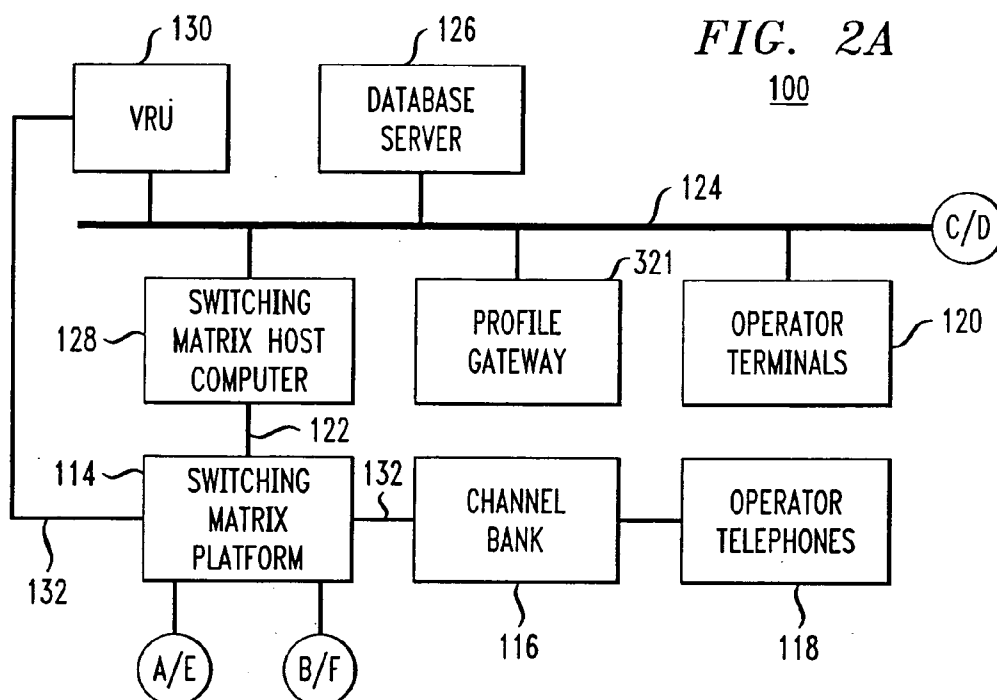


FIG. 3

LOGIN

PHONE NUMBER
OR USERNAME

PASSWORD

LOGIN

HELP

FIG. 4

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1000

FIG. 5

512	NAME	HOME	BUSINESS	MOBILE	505 MORE	507 EDIT
	BOB	709-166-5555	555-444-3333	709-123-4567		
	MARY LAMB	709-133-2977	555-222-7777	709-890-1234		
	BAT MAN	555-666-0000	646-111-0000	646-555-6789		
	:	:	:	:		
	:	:	:	:		

FIG. 6

FIRST NAME	MIDDLE NAME	LAST NAME
BOB		
COMPANY NAME	ABC CORPORATION	ADDRESS
DEPARTMENT	SALES	CITY
TITLE	MANAGER	STATE
HOME	709 166 5555	PRIVATE ☒ 607
MOBILE	709 123 4567	PRIVATE ☐
BUSINESS	555 444 3333	PRIVATE ☐
FACSIMILE		PRIVATE ☐
EMAIL		PRIVATE ☐
PAGER		PRIVATE ☐
:	:	
		SAVE CANCEL

FIG. 7

712

NAME	HOME	BUSINESS	MOBILE	
BOB	PRIVATE	555-444-3333	709-123-4567	MORE
MARY LAMB	709-133-2977	555-222-7777	709-890-1234	MORE
BAT MAN	555-666-0000	646-111-0000	646-555-6789	MORE
:	:	:	:	
:	:	:	:	

FIG. 8

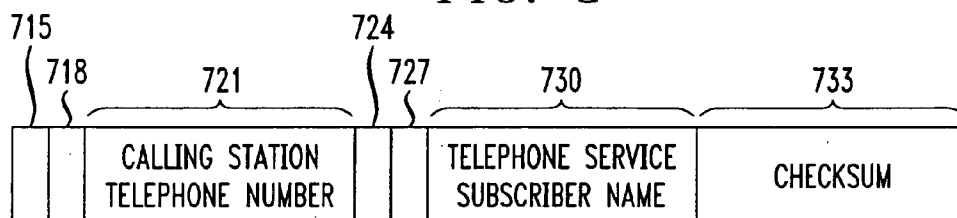


FIG. 9

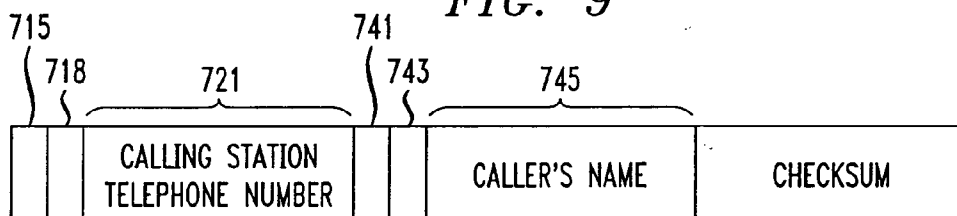


FIG. 10

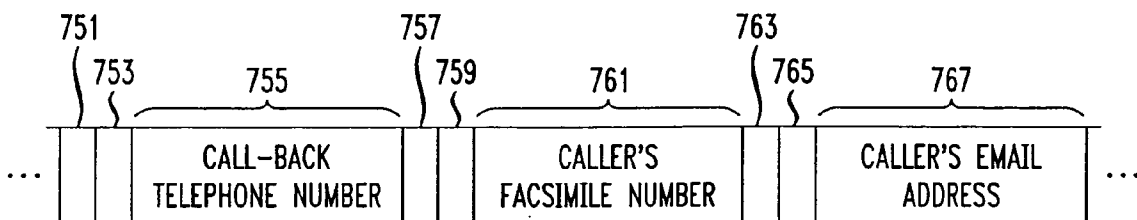


FIG. 11

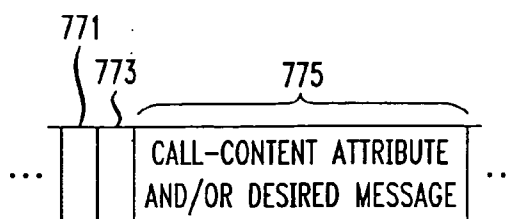


FIG. 12

780

EDA 4.6.3 (10:2.417)

8:06 AM

0:00

MOBILE ID

CALL CENTER: LAB

MAIN

REST

LAST DIALED

STATUS

RESTRICTIONS

HOME

RELOAD

BACK

FORWARD

file:/Program Files/eda4/html

SEARCH

Name

BOB

Company

City

Street

State

Department

Listing Type

Company Calendar

Company Contacts

My Appointments

My Contacts

Joe Smith

Joe Smith

USER

USER

View Appointments

View Contacts

Edit Appointments

Edit Contacts

Delete

Delete

New Contacts Folder

New Appointments Folder

Subscribers

Subscribers

785

782

FIG. 13

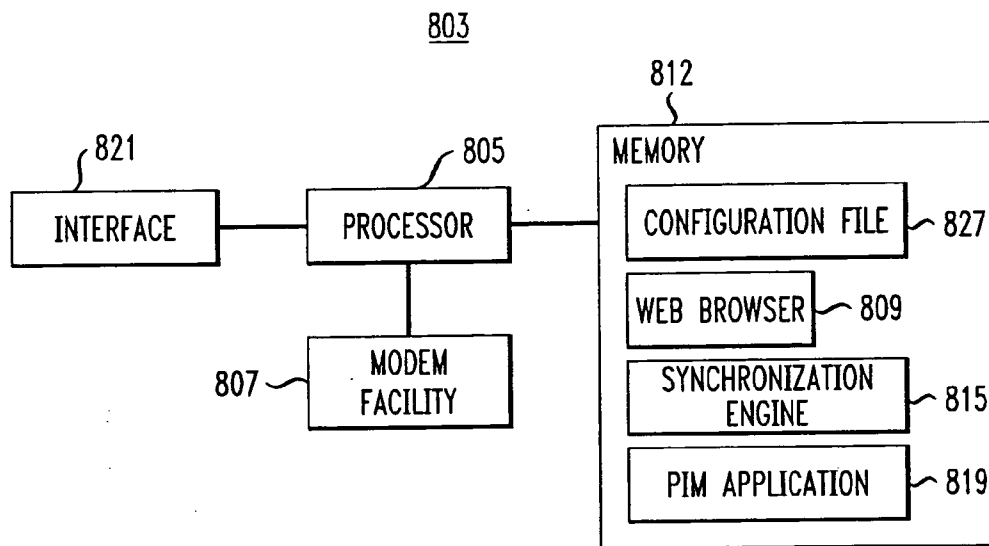


FIG. 14

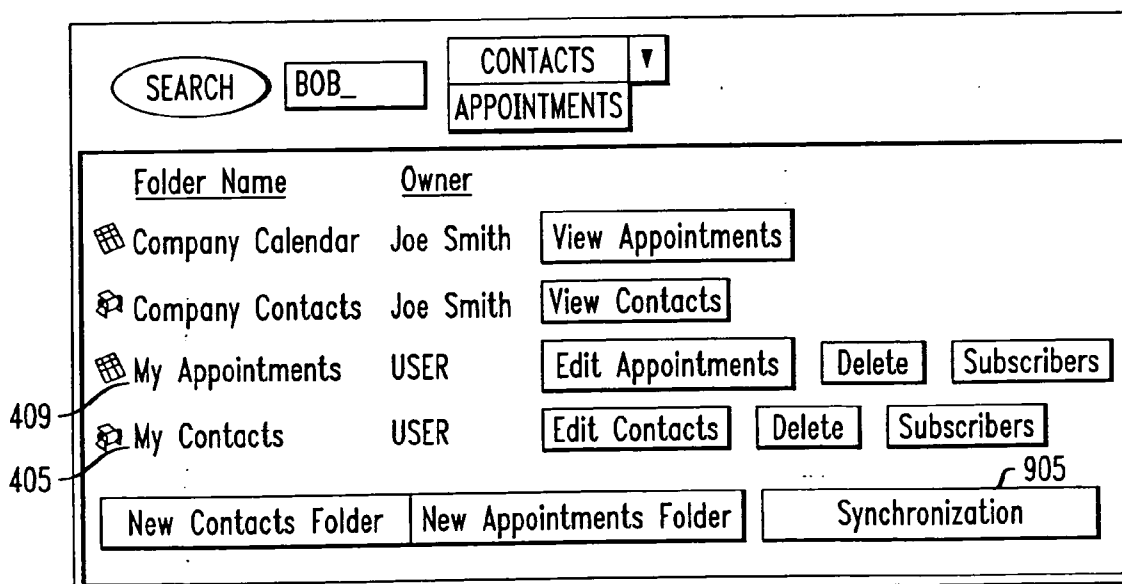


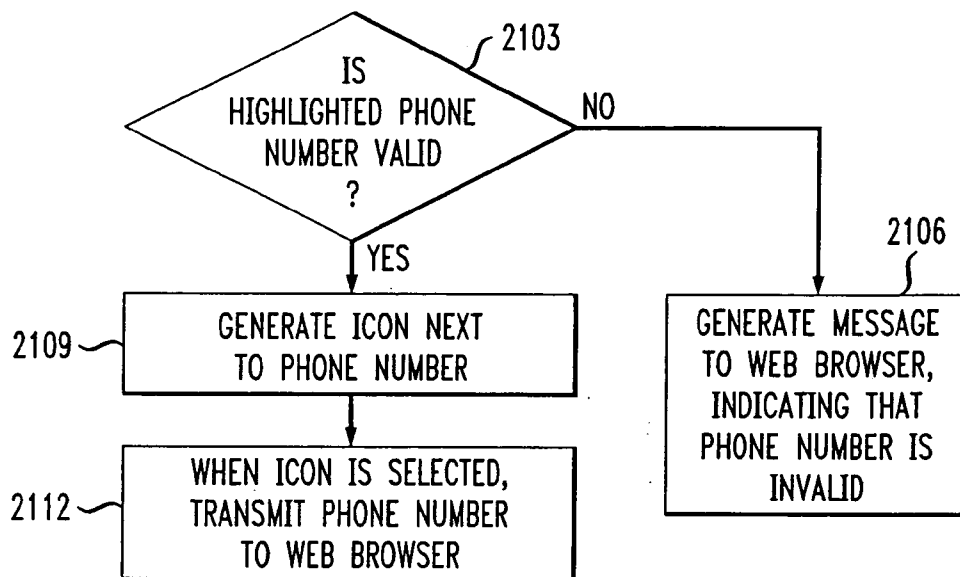
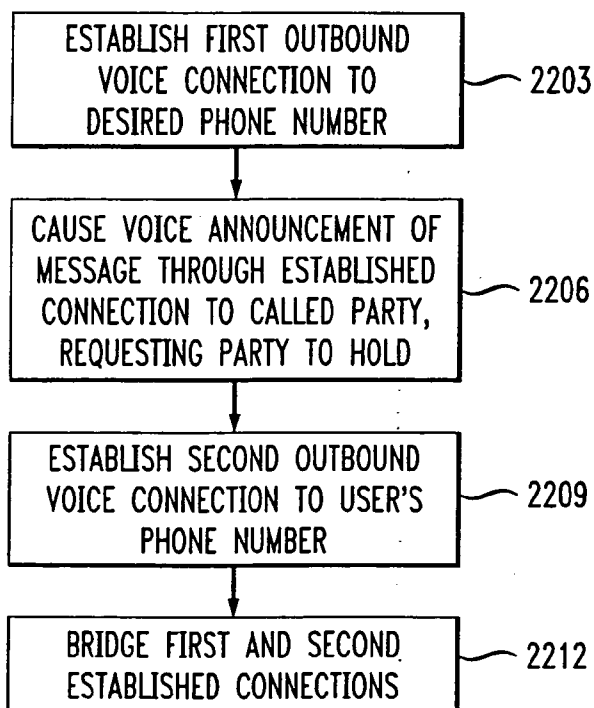
FIG. 15*FIG. 16*

FIG. 17

☐ Hide panel		Current Time Zone:		☐ PST: (GMT -8:00) Pacific Time
☒ Friday February 2, 2001		(Default Time Zone:)		☐ EST: (GMT -5:00) Eastern Time
Show Appointments in: Show				
☐ This folder only		☒ All Appointments		☐ My Appointments
		☐ Corporate Schedule		
My Appointments <u>Add Appointments</u>				
<u>8:00</u>				
<u>9:00</u>				
<u>10:00</u>				
<u>11:00</u>				
<u>12:00</u>				
<u>1:00</u> 1:00 pm-2:00 pm PST (4:00 pm EST) <u>MetroDex design review</u>				
<u>2:00</u>				
<u>3:00</u>				
<u>4:00</u> 4:00 pm-5:00 pm PST (7:00 pm EST) <u>Staff Meeting</u>				
<u>5:00</u>				

FIG. 19

New Appointment	
<u>Title</u>	Adding to My Appointments folder
<u>Location</u>	
<u>Date</u>	Time Zone: PST: (GMT -8:00) Pacific Time
February 2 2001	1405 Private Show as Busy Public 1407 1409
<u>Time</u>	Notes
☐ All day event ☒ Start Time: 1pm :00 End Time: 2pm :00	
<u>Repeating</u>	
☒ Do not repeat this event ☐ Repeat Every Day ☐ Repeat on the First Sun of the month every month	
☒ Always ☐ Until February 9 2001	
<u>Reminders</u>	
☐ Do not send a reminder ☐ Send a reminder --- before the event via: Email: 5036439400@attmessaging.com	
Save Save & Add Cancel	

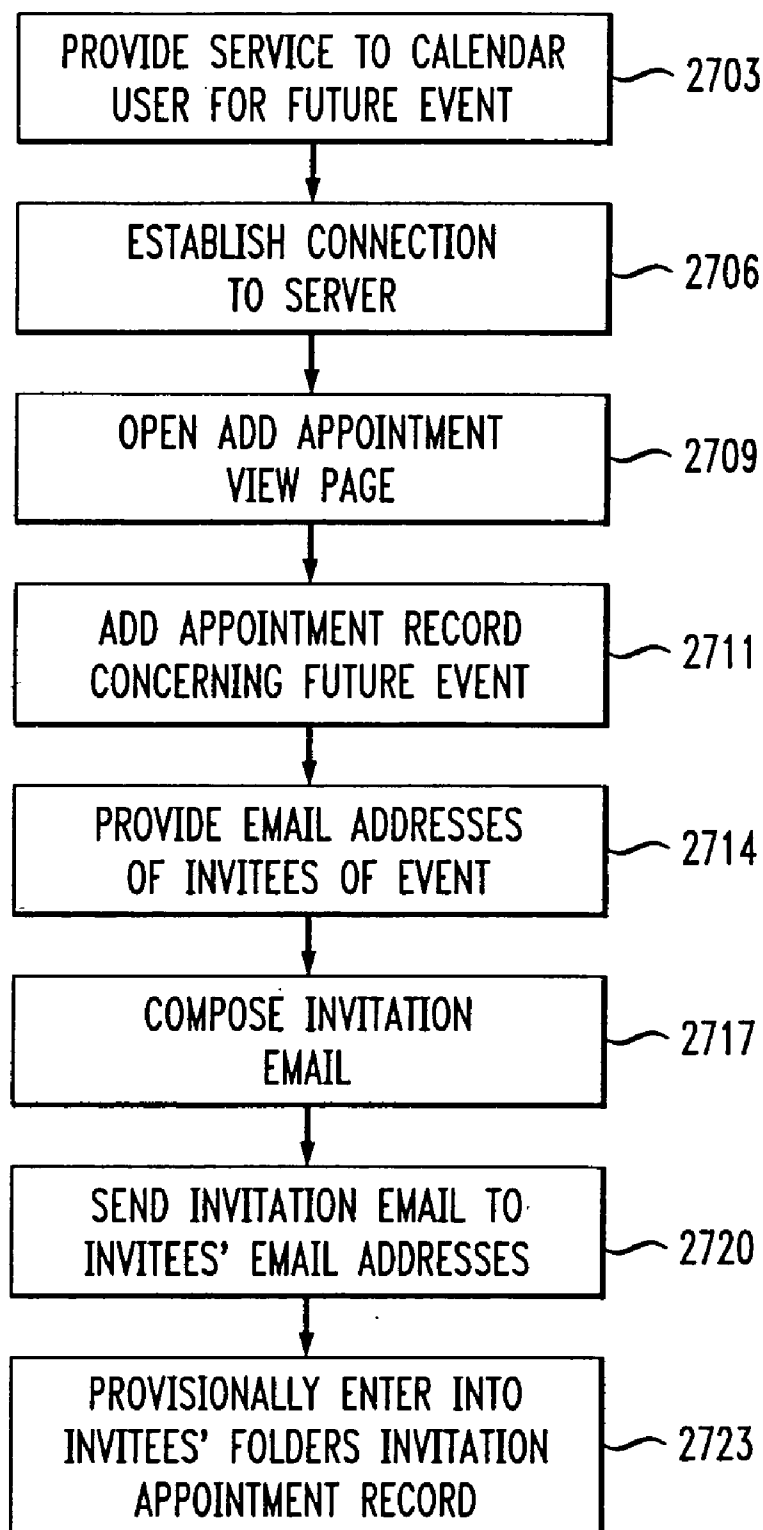
FIG. 20

FIG. 21

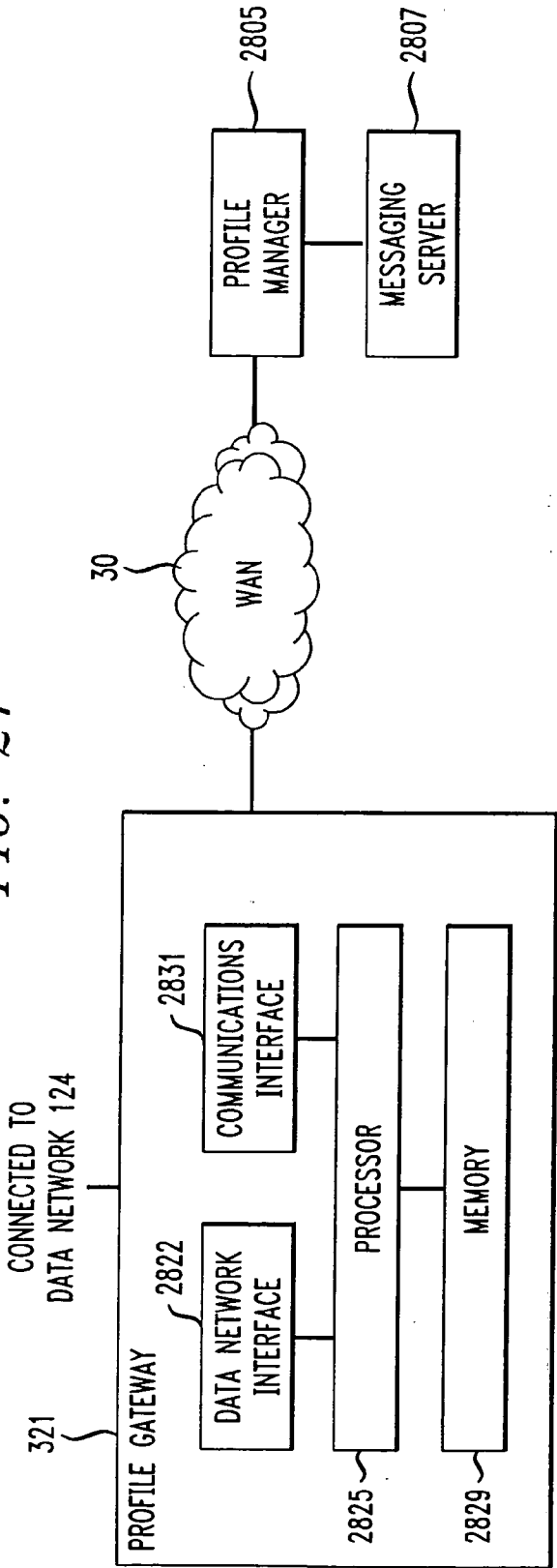


FIG. 22

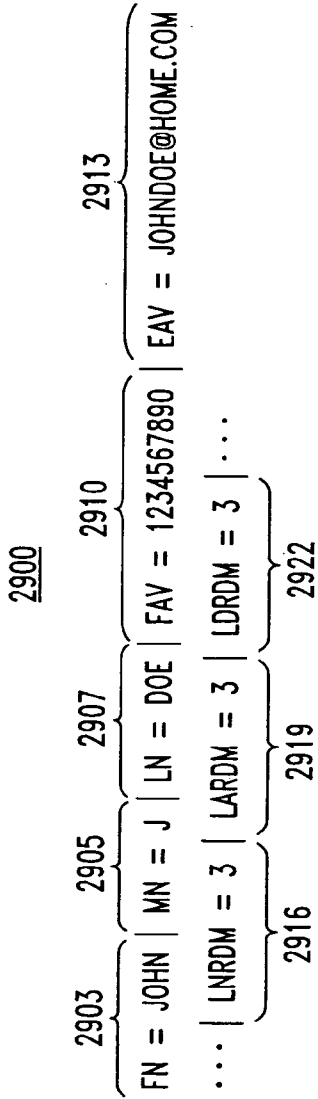


FIG. 23

```
<Profile>
:
:
    <PersonalInfo>
        <firstName>John</firstName>
        <middleName>J</middleName>
        <lastName>Doe</lastName>
    </PersonalInfo>
:
:
    <DeliveryMethod>
        <methodName>fax</methodName>
        <address>1234567890</address>
        <ContentInfo>
            <contentName>number</contentName>
            <selected>true</selected>
        </ContentInfo>
        <ContentInfo>
            <contentName>name</contentName>
            <selected>true</selected>
        </ContentInfo>
        <ContentInfo>
            <contentName>details</contentName>
            <selected>true</selected>
        </ContentInfo>
    </DeliveryMethod>
    <DeliveryMethod>
        <methodName>email</methodName>
        <address>johndoe@home.com</address>
        <ContentInfo>
            <contentName>number</contentName>
            <selected>true</selected>
        </ContentInfo>
        <ContentInfo>
            <contentName>name</contentName>
            <selected>true</selected>
        </ContentInfo>
        <ContentInfo>
            <contentName>details</contentName>
            <selected>true</selected>
        </ContentInfo>
    </DeliveryMethod>
:
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</Profile>
```

TECHNIQUE FOR PROVIDING PERSONALIZED INFORMATION AND COMMUNICATION SERVICES

[0001] The present application is a continuation application of U.S. patent application Ser. No. 10/896,380, filed on Jul. 21, 2004 which claims the benefit of U.S. application Ser. No. 09/441,656 filed on Nov. 21, 1999 under 35 U.S.C. 120, and the benefit of U.S. Provisional Application No. 60/257,913 filed on Dec. 21, 2000 under 35 U.S.C. 119(e).

FIELD OF THE INVENTION

[0002] The invention relates to a communication system and method, and more particularly to a system and method for providing personalized information assistance and services.

BACKGROUND OF THE INVENTION

[0003] In this information age, people need to be well informed and organized to effectively carry out day-to-day activities, especially when they are traveling and away from their "home" site where they normally conduct their business. As a result, use of mobile devices which facilitate mobile communications such as personal digital assistants (PDAs), and wireless phones and devices is ubiquitous. For example, PDAs of the PALM type allow users to store and organize their appointments, to-do lists and contacts information. Some PDAs also allow the users to access the Internet to upload and download information, and communicate with other people and information sources via email.

[0004] Similarly, wireless phones conveniently allow users while traveling to call and communicate with other people. In case the users cannot remember the telephone number of a contact or it is not handy, or the users want to obtain directions and other information concerning, e.g., restaurants, theaters, etc., they can call operators for assistance. To that end, an expansive network of communication call centers has been established which provides users with nationwide assistance. However, for those users who would normally be able to call upon personal aides at their offices, the operators may not be as efficient or personal in providing information assistance and services as their personal aides. For example, by using conventional personal information management (PIM) software, a user's personal aide may maintain for the user a directory containing his/her contacts information. Based on some description of the contact provided by the user, especially when the contact is frequently referred to at work, the personal aide oftentimes manages to locate the requested information concerning the contact in the user directory. Thus, requests such as "I need to reach Bob . . . I forget his last name;" "Connect me to Bob at ABC Corporation . . . I need his direct line;" and "I want to talk to the sales manager at ABC Corporation . . . What is his name?" would be sufficient for the personal aide to locate the contact information. On the other hand, an operator typically needs to know at least the complete name of the desired contact and sometimes his/her geographic location before the operator can search a public directory for the contact information. In addition, when the user requests the contact's telephone number, an operator normally provides the desired number verbally while the user may prefer to receive it via email or other electronic automated means for storage and later reference. In that case, most likely either the operator cannot meet such a user preference

or its accommodation would incur a significant delay. For example, in accommodating the user preference, the operator needs to, among others, learn the user's email address for the first time. On the other hand, knowing his/her preference and email address, the user's personal aide would automatically send the requested telephone number to him/her via email without delay.

[0005] Existing PIM software and devices are often used to store private directory information and personal data, e.g., appointments, to-do lists, etc., but are often not convenient or safe tools for providing directory information to telephone users. Corporate employees in many cases must manually synchronize their personal and their corporate directories, and such private directories are often out of date or otherwise inaccurate, consuming what might otherwise be more productive time.

[0006] Accordingly, there is a need for efficient and personalized information assistance for telephone and mobile device users comparable to that which is offered by the users' personal aides or which the users would experience in the home site.

SUMMARY OF THE INVENTION

[0007] In accordance with the invention, a server is employed to effectively manage sources of information pertaining to and about a user, including his/her preferences. Such information sources may be in the form of folders containing contacts, appointments, to-do lists, notes, email, events, products and other information which may be tailored to the needs of an individual, or a group, e.g., a corporation, an organization, or a collection of people having a common interest. After identifying a user to the server, the server presents, among others, a list of the contacts folders and appointments folders associated with the user, and at least one option to perform an action on the folders, depending on the user's access rights to the folders. For example, if a folder is created by the user, the user, as the owner of the folder, has rights to view, edit and even delete the folder. The owner can also appoint additional subscribers to the folder, e.g., read-only subscribers and administrators, and can also remove them later. A read-only subscriber can view or read the folder entries, but cannot make changes thereto. An administrator has, in addition to the viewing rights, rights to modify the folder, but no right to delete the folder. An administrator can also appoint or remove read-only subscribers, but not administrators, to or from the folder.

[0008] In an illustrative embodiment, the user may access the folders directly through a web interface or indirectly through an operator. The operator acts as an agent of the user and may possess substantially the same access rights to the folders as the user. With access to the user's folders, the operator can be relied upon to efficiently retrieve the desired contact and appointment information, and to modify the information if the user has authority to do so. As a result, such user requests as "I need to reach Bob . . . I forget his last name;" "Connect me to Bob at ABC Corporation . . . I need his direct line;" and "I want to talk to the sales manager at ABC Corporation . . . What is his name?" would be sufficient for the operator to locate the contact information. However, when given more specific data about the desired contact, e.g., his/her full name the operator may also search a national directory for the desired contact to supplement and/or confirm the located contact information. The operator can further connect the user to the phone number of the desired contact in an

expeditious manner. Thus, the operator becomes, de facto, a personal aide to the user. However, advantageously, unlike a personal aide who works a limited number of hours on weekdays, an operator can be reached all the time.

[0009] In accordance with an aspect of the invention, the contacts and appointments folders may be readily updated by synchronization with data sources in a PIM application. To that end, the user may specify an association of each folder with the PIM data source with which the folder is to be synchronized. In addition, the user may specify the frequency of synchronizations, and the direction(s) of information flow between the folder and the associated PIM data source. For example, the user may specify that any changes to the folder are to be reflected in the associated PIM data source, and/or the other way around.

[0010] In accordance with another aspect of the invention, after a user locates information concerning a desired contact in one or more directories, e.g., a contacts folder, which includes the contact's telephone number, the number is then verified and an icon or a link is generated on the directory which is selectable via a web interface to initiate a communication connection to the number. For example, the communication connection may be a voice over Internet protocol (VoIP) connection. In an alternative embodiment, when the icon is selected, a switching system is triggered to establish a first communication connection to the contact's telephone number, requesting the contact to hold for the user. The switching system then establishes a second communication connection to the user's telephone number, and bridges the first connection to the second connection to allow the user to communicate with the contact.

[0011] In accordance with yet another aspect of the invention, when a service concerning a future event is provided for the user, e.g., making a restaurant reservation for the user, an appointment record containing information concerning the future event is generated and incorporated in one or more of the user's appointments folders. In addition, the user is reminded of the future event by transmitting to the user a notification containing at least part of the information in the appointment record prior to the future event. Moreover, similar notifications may be transmitted to the invitees of the event as invitations.

[0012] In accordance with still another aspect of the invention, at least one profile associated with a user or group of users, e.g., a wireless telephone user, is employed to provide a service, e.g., information assistance, to the user. The profile was previously established, and is identified by an identifier, e.g., an automatic number identification (ANI), which is associated with a communication, e.g., a telephone communication, requesting the service. The profile includes preferences which define options of the service. For instance, in providing information assistance, one of the preferences may specify use of a special skilled operator, e.g., a foreign language speaking operator, to handle the information assistance call. Other preferences may specify methods of delivery of different listing information which include, e.g., email, facsimile, short message service (SMS) transmissions or other delivery methods. In addition, the user may specify in a profile his/her preferred types of events, areas of interest, food, products, services, manufacturers, merchants and other personal preferences, e.g., preferred music, fashion, sports events, restaurants, seating on a plane, sizes of jackets, etc. Such a profile may be used by a server to tailor the content of information delivered automatically to the user as soon as the information

becomes available. For example, based on one such profile, the server, without being prompted by the user, communicates from time to time to the user any sales and advertisement information concerning his/her favorable products, services, manufacturers and merchants; and news and information concerning his/her preferred types of events and areas of interest. Of course, such information may also be obtained upon user's request.

[0013] It should be noted that the preferences in a profile may vary with time, and may be adjustable depending on different conditions. For example, preferences applicable to the day time may be turned off in the evening, at which time another set of preferences may control. Similarly, preferences applicable to weekdays may be turned off on weekends in favor of a second set of preferences selected for weekends. Advantageously, by using the profile, the user is automatically provided with a personalized service, without the need of otherwise repeating the preferences, e.g., each time when calling an operator to obtain information and assistance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Further objects, features and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawing showing an illustrative embodiment of the invention, in which:

[0015] FIG. 1 illustrates a communications system including information/call centers in accordance with the invention;

[0016] FIGS. 2A and 2B are block diagrams of components of the communications system of FIG. 1;

[0017] FIG. 3 illustrates a Login graphical user interface (GUI) for providing personalized information and communications services in accordance with the invention;

[0018] FIG. 4 illustrates a Home GUI in accordance with the invention;

[0019] FIG. 5 illustrates an Edit GUI in accordance with the invention;

[0020] FIG. 6 illustrates a GUI containing contact information in accordance with the invention;

[0021] FIG. 7 illustrates a View GUI in accordance with the invention;

[0022] FIG. 8 illustrates a first example of caller identification (CID) data to be transmitted to a called station in accordance with the invention;

[0023] FIG. 9 illustrates a second example of CID data to be transmitted to a called station in accordance with the invention;

[0024] FIG. 10 illustrates a third example of CID data to be transmitted to a called station in accordance with the invention;

[0025] FIG. 11 illustrates a fourth example of CID data to be transmitted to a called station in accordance with the invention;

[0026] FIG. 12 illustrates a GUI particularly useful for an operator to search for directory information concerning a desired party in accordance with the invention;

[0027] FIG. 13 illustrates a user computer for accessing the personalized information and communications services;

[0028] FIG. 14 illustrates a Home page presented on the user computer of FIG. 13;

[0029] FIG. 15 is a flow chart depicting a first process for realizing a direct connect feature of the invention;

[0030] FIG. 16 is a flow chart depicting a second process for realizing a direct connect feature of the invention;

[0031] FIG. 17 illustrates a DAILY VIEW page of an appointments folder in accordance with the invention;

[0032] FIG. 18 illustrates a MONTHLY VIEW page of an appointments folder in accordance with the invention;

[0033] FIG. 19 illustrates an ADD APPOINTMENT VIEW page for adding an appointment record to an appointments folder in accordance with the invention;

[0034] FIG. 20 is a flow chart depicting a process for carrying out certain calendaring functions in accordance with the invention;

[0035] FIG. 21 illustrates an arrangement for providing personalized information and communications services to a user based on the user profile(s); and

[0036] FIG. 22 illustrates a user profile in accordance with the invention.

[0037] FIG. 23 illustrates another user profile in extensible markup language (XML) which is equivalent to that of FIG. 22.

DETAILED DESCRIPTION

[0038] The invention is directed to providing personalized information and communications services to users, e.g., telephone and mobile device users, especially when they are away from their “home” site from where they normally conduct their business. An objective of the invention is to provide the users with the personalized services comparable to those which are offered by the users’ personal aides, or which the users would experience in their home site. The invention is realized by providing the users with information management tools which include private directory, direct connect, calendaring and user profile functions described below. In accordance with the invention, such management tools can be flexibly defined by the users to effectively handle dynamic information. The latter may include, e.g., sales and price data which varies with time, and user profile preferences adjustable depending on different conditions, e.g., weekdays vs. weekends, daytime vs. evening, travel in business class vs. first class when one of the classes is full, and whether the user is in a roaming calling area. In accordance with an aspect of the invention, an expansive network of information/call centers are used where operators can effectively provide the users with the personalized information and communications services. Such services may include, e.g., providing directory information, movie listings, restaurant recommendations, directions to various places, etc.; making reservations; sending invitations; administering appointments calendars; ticketing and conducting other transactions for the users. It should be pointed out that the term “operator” here broadly encompasses entities that are capable of providing assistance in a telecommunication environment, including without limitation human operators, voice response/recognition capabilities, web-enabled operator services, and other automated and electronic access.

[0039] FIG. 1 illustrates a system embodying the principles of the invention, which includes wide area network (WAN) 30 covering an extensive area. WAN 30 can be an Internet-based network such as the World Wide Web or a private intranet based network. In this illustrative embodiment, WAN 30 connects operators dispersed throughout a wide coverage area in information/call centers 21 through 27. Each of information/call centers 21 through 27 covers one or more regional coverage areas. One or more information hubs 10 are also included in WAN 30. An information hub 10 includes one or more personalized information servers 28 which are acces-

sible by the operators in the system and one or more databases 20 in which users’ contacts, appointments and other folders and information are stored and maintained. Such folders and information may also be stored locally at one or more of the information/call centers. The folders and information at different centers are synchronized. Synchronized databases provide necessary backup as well as support to roaming mobile device users.

[0040] It should be noted at this juncture that although the ensuing discussion illustratively focuses on contacts and appointments folders, it similarly applies to other folders containing, e.g., to-do lists, notes, email, events, products and other information which may be tailored to the needs of an individual, or a group, e.g., a corporation, an organization, or a collection of people having a common interest. Thus, in this illustrative embodiment, the contacts and appointments folders contain contacts and appointments information pertaining to an individual or a group. For instance, an individual may want to create multiple contacts (appointments) folders for different purposes. Such contacts (appointments) folders may include a personal contacts (appointments) folder containing personal contacts (appointments) information, a business contacts (appointments) folder containing business contacts information, and a softball group contacts (appointments) folder containing contacts (appointments) information which pertains to the softball league to which the individual belongs. The creator of a folder by default is the “owner” of the folder, although the ownership of the folder is transferable. For example, in the event that the individual owner may want to allow his/her spouse to access the personal contacts folder, the owner can grant the spouse the right to view the folder entries only. The spouse would then become a “read-only” user of or subscriber to the folder. Furthermore, the owner may want to allow the spouse to modify the personal contacts folder to add his/her own contacts information thereto. In that case, the spouse would become an “administrator” of the folder.

[0041] Thus, in the first instance, the owner of a contacts or appointments folder is the only subscriber and has sole access to the folder. The owner can appoint additional subscribers to the folder, e.g., read-only subscribers and administrators, and can also remove them later. A read-only subscriber can view or read the folder entries, but cannot make changes thereto. An administrator has, in addition to the viewing rights, rights to modify the folder, but no right to delete the folder. An administrator can also appoint or remove read-only subscribers, but not administrators, to or from the folder.

[0042] A group, e.g., a company, may take advantage of the invention by keeping the contacts information of all of its employees in a contacts folder. Different levels of access may be set up for different employees. For example, some employees may be provided access to the actual contact details contained in the contacts folder. In contrast, other employees may only have the ability to place calls, without being supplied with the contact details of the party called.

[0043] In this illustrative embodiment, a contacts (appointments) folder may be created and maintained (1) through the Internet or other communications means; (2) through an agent, e.g., an operator; and/or (3) using a PIM. In case (3), by running a synchronization engine, any contacts (appointments) information which has been changed (added, edited or deleted) in a PIM data source may be updated in the corresponding contacts (appointments) folder, and vice versa, subject to the access rights of the user.

[0044] In case (2), a user may access a contacts (appointments) folder through communications with an operator at an information/call center via telecommunication media, e.g., wireless telephone, wireline telephone, voice over Internet protocol (VoIP), PDA, VPN, etc. The operator, as explained in more detail below, is generally provided with web browsing capabilities, telephone facilities as well as fully-featured operator user interface applications which facilitate the searching, retrieval and administering of database 20 through server 28. It is well understood that operators generally receive and respond to requests for information and communications services.

[0045] In accordance with the invention, an operator to whom a user (i.e., a read-only subscriber, administrator, or owner) of a contacts (appointment) folder corresponds is provided at least the same access rights to the folder as the user. Thus, if the operator corresponds to a "read-only" subscriber, the operator may only view the contacts (appointments) folder but not change it. On the other hand, if the operator corresponds to an owner of the folder, the operator has full access rights to the folder. However, an operator has additional access rights. For example, if a user has changed telephone numbers, an operator is allowed to change the association of the user's folders from the old telephone number to the new telephone number. This situation is frequently encountered when users change wireless carriers. The operator may confirm that the carrier to which the user subscribes allows creation of contacts (appointments) folders and, if so, may record certain information concerning the user including a password, a username, and/or an email address to provide the personalized services in accordance with the invention.

[0046] Referring to FIGS. 2A and 2B, information/call center 100 (which generically represents one of aforementioned information/call centers 21 through 27) is attended by operators, which includes switching matrix platform 114 connected to one or more external T1 voice connections 112 and one or more corresponding T1 data connections 113 from carrier networks. Switching matrix platform 114 is also connected via T1 communication links to channel bank 116 for coupling to operator telephones 118.

[0047] Each operator is equipped with a terminal 120 that includes a monitor, mouse and keyboard with associated dialing pad. The operator terminals are coupled over data network 124 to database server 126, allowing an operator to access the data in database server 126 through operator terminals 120. Database server 126 contains, among other things, public directory information.

[0048] Data network 124 further connects to voice response unit (VRU) 130, profile gateway 321 described below, and switching matrix host computer 128 (also known as a PBX host), which in turn is connected to switching matrix platform 114 by switch data link 122. Data network 124 consists of, but is not limited to, local area network (LAN) 127, best seen in FIG. 2B. LAN 127 may connect to other similar remote LANs 129 to form WAN 30 in FIG. 1. LANs 127 and 129 are connected to one another and to Internet 121 via routers 125.

[0049] A user's telephone, computer, PDA or other telecommunication device 144 communicates via communications network 146 which is connected to carrier network node 142 and carrier switching center 140. T1 voice connections 112, or voice links, provide connection between the information/call center's switching matrix platform 114 and the carrier's switching center 140, through which incoming infor-

mation assistance calls are received. T1 voice connections 112 further provide connection to the carrier network over which outgoing calls are placed (which network may be different than that used for incoming calls). Similarly, T1 data connections 113, or data links, provide a signaling connection between the information/call center's node (not shown) and carrier network node 142, through which incoming and outgoing signaling messages are transported. The information/call center node is contained within switching matrix platform 114, but one with skill in the art will appreciate that the information/call center node could also be a physically distinct component. If the outgoing call is being placed over a different network than that on which the incoming call was received, a second data connection to the outgoing network will be established.

[0050] Switching matrix platform 114 is conventional which includes digital signal processing circuitry providing the requisite conference capability, and DTMF and multi frequency (MF) tone generation/detection capabilities. In this illustrative embodiment, switch 114 supports digital T1 connectivity. The operation of switching matrix platform 114 is governed by computer-readable instructions stored and executed on switch matrix host computer 128.

[0051] VRU 130 is employed to play the constantly repeated parts of an operator's speech, namely the various greetings and signoffs (or closings), and the caller's desired telephone number where requested. Not only does this system provide a voice-saving and monotony-relief functionality for the operators, it performs a "branding" function (i.e., the pre-recorded messages incorporate the name of the telephone company through which the caller was routed to the information assistance service), and it also reduces the amount of time an operator is actually connected to a caller. VRU 130 may also contain a voice recognition system for receiving verbal input from a party connected to the VRU.

[0052] VRU 130 is connected via data network 124 to switching matrix host 128 (to which it acts as a slave processor) and via one or more T1 spans to switching matrix platform 114. Each VRU 130 when more than one is employed in information/call center 100, connects to switching matrix platform 114 via a separate voice server link. VRU 130 comprises a general purpose computer incorporating one or more voice cards, which serve as the interface between VRU 130 and the T1 span to switching matrix platform 114. A voice card in VRU 130 monitors and controls communications over the T1 span. Its capabilities include telephone tone detection and generation, voice recording and playback, and call progress analysis. Similar to switching matrix platform 114, VRU 130 is capable of detecting connection status conditions, detecting caller keypresses, and generating tones.

[0053] At appropriate stages in a call progression, switching matrix host 128 initiates a voice path between VRU 130 and switching matrix platform 114 such that the caller, or the caller and the operator, are able to hear whatever pre-recorded speech is played on that circuit by VRU 130. Switching matrix host 128 then instructs VRU 130, via data network 124, what type of message to play, passing data parameters that enable VRU 130 to locate the message appropriate to the call state, the service-providing telephone carrier, and the operator.

[0054] Database server 126 enables the operator to search not just by name and address, but also by type of goods/services and/or geographical region, or by any other attribute in the caller record, including phone number.

[0055] Users of a particular telephone carrier or company may dial, speak or otherwise communicate the access digits, access codes or retail numbers, or input an address or a URL established for information assistance by that company. The instant example assumes that the user dials the designated access number, e.g., “411”, “*555,” “555-1212” or “00.” The participating telephone company’s own switching system will then reroute the call to information/call center 100 (via a T1 channel), where it appears as an incoming call.

[0056] Automatic call distribution (ACD) logic is used to queue (if necessary) and distribute calls to operators in the order in which they are received, and such that the call traffic is distributed evenly among the operators. In other embodiments, other distribution logic schemes are utilized, such as skills-based routing or a priority scheme for preferred callers. The queue is maintained by switching matrix host 128.

[0057] When a call is connected to an operator, switching matrix host 128 directs VRU 130 (also conferenced into the call) to play a greeting message, using a message prerecorded by the connected operator. Both the operator and the caller hear the message, which incorporates the name of the service or company to which the caller is a subscriber (in other words, the call is “branded”). The message ends with a prompt, thus cueing the caller to volunteer what information they are seeking. When the automated greeting is complete, the VRU is disconnected, and the operator and the caller are left connected by a 2-way speech path. From this point, the caller is interacting with a live operator.

[0058] As mentioned before, a user may create, maintain or access a contacts (appointments) folder via the Internet- or other communications means, or through an operator who in turn may create, maintain or access the folder on behalf of the user. Without loss of generality, the user in this instance wants to access a contacts folder through an operator. To that end, the user uses telecommunication device 144, e.g., a wireless phone, to call an operator at a designated access number. Let’s say the call is routed to information/call center 100 where an operator attends to the call. After the user communicates to the operator his/her needs, the operator at terminal 120 accesses personalized information server 28 through WAN 30 (or alternatively Internet 121). In response, server 28 presents on terminal 120 a Login graphical user interface (GUI), which is illustrated in FIG. 3. As shown in FIG. 3, the operator is prompted to enter the user’s phone number or username to identify the user, and a password to verify that the user is authorized to access the personalized information and communications service in accordance with the invention.

[0059] It should be noted at this point that the user identification and password are established beforehand through a registration process. For example, to join the personalized service, the user can call an operator at the designated access number. As part of the registration, the operator enters at a user data web page on server 28 the user identity, username, password, and telephone number of the particular telecommunication device, e.g., wireless phone in this instance, which the user would use to call the service in the future. It is particularly advantageous to use such a phone number (also known as a mobile directory number (MDN) in the case of a wireless phone number) to identify the user since the calling number would be automatically captured at information/call center 100 when the user calls. Specifically, platform 114 in center 100 in a well known manner derives, from the call set-up signals associated with the user’s call, the user’s phone

number from which the call originates, also known as the automatic number identification (ANI).

[0060] Thus, referring to FIG. 3, the ANI of the user is automatically provided in entry 301 by platform 114, thereby obviating the need of the operator’s eliciting from the user, and entering, the required phone number or username. (In the event that such an ANI is not automatically available, the user may supply, with or without prompting, the necessary identification.) At entry 304, the operator enters the password provided by the user to complete the login process. The login information is then transmitted to server 28, where it checks the aforementioned user data web page to verify the received ANI and password. After they are verified, server 28 identifies from the user data web page all of the contacts folders and appointments folders associated with the received ANI, and the user’s access rights thereto. Server 28 then presents to terminal 120 a Home GUI, listing all such contacts and appointments folders.

[0061] FIG. 4 illustrates such a Home GUI, which lists, among others, contacts folders 403 and 405 designated “Company Contacts” and “My Contacts,” respectively. The owners of folders 403 and 405 are identified to be “Joe Smith” and the “User,” respectively. After checking the access rights of the user to folders 403 and 405 in the aforementioned user data web page, server 28 determines that the user is a read-only subscriber to folder 403 and an owner of folder 405. As a result, the user is afforded option 411 which is selectable to view information concerning the contacts in folder 403. Since the user is the owner of folder 405, the user is afforded option 415 to edit the contacts information in folder 405. Also by selecting option 415, the user (through the operator acting as an agent of the user in this instance) is able to view the contacts information therein, with or without actually editing it. It should be noted that in this example, it is understood that the user’s actions upon folders 403 and 405 are through the agency of the operator. Such an agency relationship should be apparent in the context of the description of the example even though the repetition of this relationship may be omitted from time to time for fear of verbosity. Moreover, the user, as the owner of folder 405, is afforded option 417 to delete folder 405, and option 419 to appoint new administrators and/or read-only subscribers to folder 405, remove their association from the folder, and/or change their access level.

[0062] In addition, the Home GUI of FIG. 4 lists appointments folders 407 and 409 designated “Company Calendar” and “My Appointments,” respectively. Although the calendaring aspects of the invention are fully described below, it suffices to know for now that depending on the user’s access rights to appointments folders 407 and 409, the user likewise is allowed to perform certain actions thereupon. For example, as a read-only subscriber to folder 407, the user is afforded option 421 to view the appointment records therein. As the owner of folder 409, the user is afforded option 425 to edit/view the appointment records therein, option 427 to delete the folder, and option 429 to appoint new administrators and/or read-only subscribers to folder 409, remove their association from the folder, and/or change their access level. The user is also afforded option 433 to create a new contacts folder, and option 435 to create a new appointments folder.

[0063] By way of example, instructed by the user, the operator in this instance selects option 415 to edit/view contacts information in folder 405. In response, server 28 presents on terminal 120 an Edit GUI, listing the contacts information in folder 405. This GUI is illustrated in FIG. 5, where

for each contact, e.g., Bob, his/her name, home phone number, business phone number and mobile phone number, if any, are displayed, although additional information concerning the contact, e.g., his/her postal and electronic mail addresses, may be available but is not displayed for lack of room. For that reason, a More option, e.g., option 505, is provided for selection to present the additional information on a separate display. In addition, for each contact an Edit option, e.g., option 507, is provided to edit the contact information. For instance, when option 507 is selected, server 28 returns another GUI, which is illustrated in FIG. 6. At this GUI, different fields concerning the contact Bob, e.g., his name, company name, company address, phone numbers, facsimile numbers and pager numbers are presented, and each field may be modified by overwriting any existing information therein.

[0064] It should be noted that to protect privacy of certain information about a contact, e.g., his/her home phone number, an owner or administrator of folder 405 is afforded Private options, e.g., option 607, to designate certain contact information private. Accordingly, server 28 exercises censorship on contact information in a folder based on any privacy protection previously imposed by the owner or administrator of the folder. For example, when option 607 is selected, Bob's home phone number is kept private. That is, a read-only subscriber to folder 405 is not privy to Bob's home phone number. As a result, when a read-only subscriber views a listing of the contacts including Bob in folder 405, his home phone number is replaced by a "Private" notice.

[0065] However, in accordance with an aspect of the invention, the read-only subscriber may still be connected to Bob's home phone number by the operator, but will not be provided with the number dialed. To that end, after the read-only subscriber calls an operator and requests to be connected to Bob, the operator goes through the similar Login and Home GUIs which however pertain to the read-only subscriber. By utilizing the search engine described below, the operator uncovers listing 712 in a View GUI illustrated in FIG. 7.

[0066] It should be noted that this View GUI which is made available to a read-only subscriber (represented by the operator in this instance) to folder 405 is similar to the Edit GUI of FIG. 5 which is made available to an owner or administrator of the folder. However, the two GUIs differ from each other in that unlike the Edit GUI, the View GUI lacks Edit options since a read-only subscriber to folder 405 does not possess edit rights. In addition, Bob's home number, designated private, is revealed on the Edit GUI to the owner or administrator of folder 405, but not on the View GUI. Thus, in this instance, the operator is faced with the same "Private" notice in lieu of Bob's home phone number on the View GUI as would be the case if the read-only subscriber accesses the View GUI on his/her own. In order to connect the read-only subscriber to Bob's home number, the operator at terminal 120 signals switching matrix platform 114 to place the read-only subscriber's call on hold, and selects the "Private" notice. This selection causes an identification (ID) of the subscriber's connection which is on hold, and a request for Bob's home number in folder 405 to be sent to server 28. In response to such a request, server 28 retrieves Bob's home number in folder 405 from database 20, and transmits another request for connecting the subscriber to the retrieved phone number to switching matrix host computer 128 via WAN 30. This request includes the aforementioned subscriber's connection ID. Under control of computer 128, platform 114 then calls Bob's home phone number to establish a connection thereto.

Once the new connection is established, computer 128 causes platform 114 to bridge the subscriber's connection identified by the received ID to the new connection, thereby connecting the subscriber to Bob's home number, without disclosing the number to the subscriber, or the operator for that matter.

[0067] In an alternative embodiment, the operator plays an active role before the subscriber's connection is bridged to the connection to Bob's home number. In this embodiment, the operator obtains from the user data web page the subscriber's name as registered. However, the operator may also verify the subscriber's name with the subscriber verbally before putting the subscriber's connection on hold. As soon as platform 114 establishes the connection to Bob's home number, the operator is afforded an option to ask Bob over the newly established connection whether Bob wants to talk to the read-only subscriber. If Bob accepts the call, the operator signals host computer 128 to cause platform 114 to bridge Bob's connection to the subscriber's connection, thereby connecting the subscriber to Bob's home number. Otherwise, if Bob declines to talk to the read-only subscriber, the operator informs the subscriber of the declination and causes platform 114 to terminate (or tear down) both connections with Bob and the subscriber.

[0068] In another alternative embodiment, VRU 130 takes the place of the operator in asking Bob whether he wants to answer the subscriber's call. That is, before the subscriber's connection is bridged to Bob's connection, VRU 130 seizes Bob's connection and announces in an automated voice, over the connection, an arrival of the call from the subscriber who is identified by his/her registered name. After learning the identity of the subscriber, Bob is afforded a choice to accept the call by pressing a first predetermined key on his telephone. The resulting DTMF signal causes platform 114 to bridge the subscriber's connection to Bob's connection. Otherwise, Bob may press a second predetermined key to reject the call. The resulting DTMF signal causes (a) VRU 130 to announce to the subscriber, through the subscriber's connection, Bob's declination to answer the call, and (b) platform 114 to terminate both Bob's and the subscriber's connections.

[0069] In yet another alternative embodiment, the screening of the subscriber's call is achieved by using an improved caller ID (CID) feature in accordance with the invention. Traditionally, by subscribing to a CID service and utilizing a CID receiver, which may be integrated into a phone, a called party between phone rings may receive display CID information on the receiver which includes the originating telephone number, name associated with that number, date and time of the call. One such receiver for receiving CID information is described, e.g., in U.S. Pat. No. 4,582,956 issued to Doughty on Apr. 15, 1986.

[0070] The CID information is transmitted from a switching office connected to the called party's CID receiver using frequency shift keyed (FSK) modem tones. These FSK modem tones are used to transmit the display message in ASCII character code form. The transmission of the display message takes place between the first and second rings of the called station. The CID data format and transmitter are described, e.g., in U.S. Pat. No. 4,551,581 ("the '581 patent") issued to Doughty on Nov. 5, 1985. As described in the '581 patent, the data format of each message to be sent to the called station is preceded by the specification of the type and length of the message. For example, for the first message concerning the originating number, the first character sent is the message type which specifies that the ensuing message is an originat-

ing number. The second character represents the length of the message. After the message length character are characters which represent the digits of the originating number. Additional messages follow the same data format (i.e., type character, length character and message content in that order). The formatted messages are followed by a checksum or other error detection character which is used to detect errors which may have been introduced in the transmission.

[0071] However, we have recognized a few disadvantages of using the traditional CID service. For example, any name which appears in the CID alongside the originating telephone number identifies the telephone service subscriber to that number, and which is registered by a telephone carrier in a directory database, also known as “white pages.” Telephone carriers typically have directory listings of wireline telephone service subscribers but currently lack the listings of wireless telephone service subscribers. As a result, when a caller uses a wireless telephone to call a called station, the CID receiver at the called station typically displays the wireless telephone number, but not the name of the associated telephone service subscriber because of a lack of the white pages information. As such, the traditional CID service is ineffective in screening wireless calls by the callers’ name.

[0072] Return now to the above example where the caller, who is a read-only subscriber to contacts folder **405**, asks an operator to connect him/her to Bob’s home number which is indicated “Private” in the folder. Not to be confused with a telephone service subscriber, the folder subscriber in this example will now be referred to simply as the “caller.” When the caller calls the operator for connecting him/her to Bob’s home number, the ANI associated with the caller’s call is communicated to center **100** which, as mentioned before, is derived by platform **114** from the call set-up signals. In accordance with an aspect of the invention, the white pages information associated with such an ANI is provided as CID data to Bob for call screening purposes. To that end, host computer **128** provides the ANI to database server **126** to look up the corresponding white pages information. It should be noted that unlike a typical telephone carrier, call/information center **100** in this instance has access to directory listings of both wireline and wireless telephone service subscribers. Thus, based on the received ANI, server **126** locates the directory listing including the name of the telephone service subscriber associated with the ANI. While the connection with the caller is on hold, and the second connection to Bob’s home number is being established, host computer **128** in accordance with the invention communicates, as part of the call set-up procedure, the ANI and associated telephone service subscriber name to the called station (i.e., Bob’s telephone) as the CID data. Specifically, such ANI and associated telephone service subscriber name are formatted in the well known CID data format and communicated, pursuant to an agreed-upon protocol, to the aforementioned data transmitter in the switching office connected to the called station.

[0073] FIG. **8** illustrates the ANI and associated telephone service subscriber name in the CID data format. As shown in FIG. **8**, type character **715** specifies that the ensuing message contains the telephone number of the calling station from which the caller calls the operator. Length character **718** specifies the length of such a telephone number. Message field **721** contains the actual telephone number of the calling station, i.e., the ANI. In addition, type character **724** specifies that the ensuing message contains the telephone service subscriber name associated with the telephone number in field

721 according to the directory listing. Length character **727** specifies the length of such a name. Message field **730** contains the actual telephone service subscriber name. Following field **730** is checksum field **733** for detection of transmission errors.

[0074] In a well known manner, the data transmitter in the switching office transmits the CID data between rings of the called station, which is displayed on the called station or other connected device for receiving such CID data. As soon as the connection to the called station is established, host computer **128** causes platform **114** to bridge the new connection to the caller’s connection which is on hold. Presumably, Bob reviews the resulting CID display information at the called station before he decides to answer the call or not.

[0075] However, we have recognized that in the above example, the caller may not always be the same as the telephone service subscriber to the originating number because the caller may have borrowed another person’s telephone to call. As a result, the CID message indicating the name of the telephone service subscriber may be misleading in identifying whom the caller is. Thus, in accordance with a second aspect of the invention, after obtaining the white pages information based on the ANI in the above example, the operator checks the name associated with the ANI in the directory listing against the caller’s name as registered on the user data web page. If they do not match, the operator may assume that the caller’s name from the user data web page is valid as the associated password of the caller was verified in the earlier login process. However, the operator may also verify the caller’s name with the caller on the phone. The operator then enters the actual caller’s name on terminal **120**, which replaces the telephone service subscriber name in the CID data to be transmitted to the called station. FIG. **9** illustrates the resulting formatted CID data, which differs from that of FIG. **8** in that type character **741** and length character **743** in FIG. **9** correspond to the caller’s name, as opposed to the telephone service subscriber name. In addition, message field **745** contains such a caller’s name.

[0076] We have also recognized that with the caller’s name ascertained in the above example, the calling station number in the CID data serves no additional identification purpose. However, it may provide a means for the called party to return the caller’s call. For instance, upon reviewing the CID display information, Bob may decide not to answer the call immediately as he is unavailable or currently on another call. Bob may try to contact the caller later using the display calling station number. Nevertheless, by the time when Bob calls, the caller may not be at that number, or the caller may want Bob to return his/her call at a different number or by a different method of communications altogether, e.g., facsimile, email or SMS. Thus, in accordance with a third aspect of the invention, the operator may query the caller on the phone for methods of returning his/her call in case Bob does not answer the call immediately. In this instance, let’s say the caller wants Bob to return his/her call using a telephone number different from the current calling number, or via facsimile or email. In that case, the caller provides the operator with his/her desired (1) call-back telephone number, (2) facsimile number and (3) email address. Accordingly, the operator enters on terminal **120** the information concerning the call-return methods, along with the caller’s name, to generate the CID data to be transmitted to the called station. The resulting formatted CID data by host computer **128** is illustrated in FIG. **10**, which includes additional type character **751** and length character

753 correspond to the call-back telephone number, which is contained in message field **755**; type character **757** and length character **759** correspond to the caller's facsimile number, which is contained in message field **761** and may be preceded with "F-" to be distinguished from a telephone number; type character **763** and length character **765** correspond to the caller's email address, which is contained in message field **767**. Of course, the time period for which each method of communications is the most convenient to the caller may also be specified in the CID data.

[0077] Further, we have recognized that the caller's name in the CID display may not be sufficient information for the called party to decide to answer the call. The purpose of the call, or the subject of the call may be important as well. For instance, Bob in the above example would answer the call if it concerns a business meeting the next day whereas he would not if it concerns an upcoming social event, even though the caller is the same in each case. Thus, in accordance with a fourth aspect of the invention, the operator, when querying the caller for the call-return methods, may also query the caller for the purpose or subject of the call, or other CID message to be shown to Bob. For example, the caller may want to confirm the meeting with Bob at 10 a.m. tomorrow. In that case, a CID message such as "See you tomorrow at 10" is sufficient to confirm the meeting. In implementation, the CID message may be abbreviated to accommodate the limited number of characters allowed. Thus, upon reviewing such a CID message while the called station is ringing, Bob may choose not to answer the call if he is satisfied with the message, or to pick up the call if he wants to talk to the caller, e.g., to change the meeting schedule or for whatever reasons. Thus, in this illustrative embodiment, the operator also enters on terminal **120** the call-content attribute of the call (e.g., information concerning the call purpose or subject), or any desired message from the caller to generate the CID data to be transmitted to the called station. The resulting formatted CID data is illustrated in FIG. **11**, which includes additional type character **771** and length character **773** corresponding to the call-content attribute and/or desired message from the caller, which are contained in message field **775**. By reviewing the display CID information at the called station which includes the call-content attribute and/or caller's message in this instance, Bob is able to make a better informed decision whether to answer the call.

[0078] Referring back to FIG. **6**, as mentioned before, the owner or administrator of a contacts folder is afforded Private options, e.g., option **607** to designate certain contact information (e.g., Bob's home number) private. However, in another embodiment, a selection of one such Private option leads to a query for a desired privacy level. This privacy level is used to qualify the restriction of access to private information. For example, in company contacts folder **403**, information accorded privacy level **1** can only be revealed to employees of a company, identifiable by their phone number or username; information accorded privacy level **2** can only be revealed to managers and higher-ranked employees of the company; information accorded privacy level **3** can only be revealed to directors and higher-ranked officials of the company; and so on and so forth. Thus, the invention serves as a clearing house to allow proper parties to access the folder information, i.e., serving only pre-authorized information to a given party.

[0079] Referring back to FIG. **4**, a search engine is provided on a Home GUI to search for a listing of a desired contact. For example, the operator may specify at entry **455** a search term

(e.g., Bob), and select at entry **457** the type of folder (e.g., contacts or appointments) in which the search term is to be found. Thus, by using such a search engine, an informal request without much information, such as "I need to reach Bob" and "I want to talk to the sales manager at ABC Corporation" is sufficient for the operator to locate the requested contact information. After initiating the search by clicking on the "Search" button, any listing satisfying the search query is highlighted. In this instance, a search on the name "Bob" in a contacts folder uncovers listing **512** in the Edit GUI of FIG. **5**.

[0080] It is anticipated that when given more specific data about the desired contact, e.g., Bob's full name, the operator may also search a public directory, e.g., national directory, for the desired contact to supplement and/or confirm the contact information. To that end, GUI **780** in FIG. **12** is designed for the operator to perform such a combined search. As shown in FIG. **12**, section **785** of GUI **780** corresponds to the Home GUI of FIG. **4**, which allows the operator to manage contacts and appointments folders for the user as described before. In addition, section **782** provides the interface for the operator to search both the contacts folders and public directory for information concerning the desired contact.

[0081] As mentioned before, a user may directly access server **28** to create, manage and/or view contacts folders and appointments folders via the Internet, without agency of an operator. For example, by utilizing computer **803** in FIG. **13**, which may be a personal computer (PC) and includes, among others, processor **805**, modem facility **807**, and memory **812** containing web browser **809**, the user can access server **28** over the Internet at a predetermined uniform resource locator (URL). The web pages provided to the user through the direct Internet access are similar to those GUIs described above. For example, upon accessing server **28**, computer **803** is presented by server **28** with a Login page similar to the Login GUI in FIG. **3**. However, here the user needs to manually enter his/her telephone number or username, or other identifier since he/she cannot take advantage of the ANI feature as in the above-described case where the user calls an operator to access server **28** indirectly. The user is also required to enter the password at the Login page. After the login is verified, server **28** identifies from the aforementioned user data web page all of the contacts folders and appointments folders associated with the user, and the user's access rights thereto. The server **28** then presents to computer **803** a Home page illustrated in FIG. **14**. This Home page is similar to the Home GUI of FIG. **4** except that the Home page of FIG. **14** also includes option **905** for synchronization in accordance with the invention.

[0082] We have recognized that the user for whatever reasons may utilize conventional PIMs in addition to the inventive personalized services described above to conduct day-to-day activities. These conventional PIMs include, but not limited to, Microsoft Outlook, Outlook Express, Goldmine, Symantec Act!, Lotus Organizer and Lotus Notes applications, or a Palm-type device, which provide capabilities of managing/viewing contacts information and appointments. To effectively conduct the day-to-day activities, it is desirable that the contacts and appointments data sources in one such PIM are synchronized with the contacts and appointments folders in database **20** corresponding thereto so that any changes in the PIM data sources are reflected in the corresponding folders, and vice versa. In this example, one such conventional PIM application, denoted **819**, is incorporated in computer **803**. Synchronization engine **815**, also installed

in computer **803**, is used to perform the desirable synchronization function. In the event that the user wants to use engine **815** to synchronize with a Palm-type device, one such device may be connected to computer **803** through external interface **821**. In this illustrative embodiment, engine **815** is designed based on a commercially available Intellisync Connector SDK kit provided by Puma Technology, San Jose, Calif. Engine **815** may be downloaded from server **28** via the Internet and is configured according to PIM application **819** used. In configuring engine **815**, all of the contacts and appointment folders in database **20** associated with the user are identified. However, in accordance with the invention, only those contacts and appointments folders of which the user is either an owner or administrator can be selected to be synchronized with data sources in PIM application **819**, stemming from the requirement that a folder can only be modified by its owner or administrator, but not its read-only subscriber. Thus, in this instance, since the user is the owner of My Contacts folder **405** and My Appointments folder **409**, the user is afforded options to synchronize folder **405** and/or folder **409** with the corresponding PIM data sources specified by the user.

[0083] In addition, in accordance with an aspect of the invention, the user is afforded options to specify the directions and frequency of synchronizations. That is, the user is afforded an option to (a) export any changes in the folders to the corresponding PIM data sources, but not the other way around; (b) export any changes in the PIM data sources to the corresponding folders, but not the other way around; and (c) perform bidirectional synchronization, i.e., both (a) and (b). Information concerning the association of each folder with the PIM data source to be synchronized with the folder, and directions of the synchronization are stored in configuration file **827**. After the initial set-up of engine **815** and file **827**, each time when the user creates a folder or becomes an administrator of a folder, the user is afforded the above-described options to associate the folder with the corresponding PIM data source and the direction of synchronization.

[0084] Referring to the Home page of FIG. **14**, Synchronization option **905** in this instance is provided for selection to synchronize My Contacts folder **405** and My Appointments folder **409** of which the user is an owner with the corresponding PIM data sources. It should be noted that the provision of option **905** depends on the association information contained in configuration file **827**. In the event that a folder of which the user is an owner or administrator has no association with any PIM data source, a warning about a lack of such association may be issued on the Home page to alert the user. This warning may include highlighting the folder name, e.g., in red. The user may then add any such association to file **827** if he/she so desires.

[0085] By selecting option **905**, the user initiates the synchronization process where engine **815** causes an exchange of data between each participating folder on server **28** and the associated PIM data source in computer **803** through web browser **809**, depending on the direction of synchronization specified in configuration file **827**.

[0086] Alternatively, the synchronization may be automated by programming engine **815** to synchronize the specified folders with the associated PIM data sources from time to time, provided that computer **803** is connected to server **28**. For example, engine **815** may be programmed to perform unattended synchronizations at specified times, after computer **803** has been idle for a specified period, or when the user logs on/off computer **803**. In addition, engine **815** may be

programmed to suspend any automated synchronization while computer **803** is running on battery power.

Direct Connect Feature

[0087] In accordance with a “direct connect” feature of the invention, a user is afforded effective connectivity to phone numbers listed in a stored directory, e.g. My Contacts folder **405** described above, or addresses within a communication network. In a first embodiment realizing the direct connect feature, the user preferably has access to a device, e.g., computer **803**, having conventional multimedia capabilities, e.g., speakers, a microphone and a sound card, incorporated therein. Additional telephonic software is also incorporated in computer **803** so that the resulting computer may serve as a phone terminal through which the user may call a telephone number and conduct a phone conversation via a subscribed telephone service. Such telephonic software may be supplied and/or specified by the telephone service provider as part of the service. One such telephone service may be, e.g., the Net2Phone service, which provides telephone connectivity through a communications network implementing a transmission control protocol/Internet protocol (TCP/IP) data transport, e.g., the Internet. The telephone connectivity is realized in a well known manner using voice over IP (VoIP) connections through such a communications network.

[0088] Web browser **809** in computer **803** enables the user to access, through the Internet, a directory database server, e.g., personalized information server **28**, connected to the Internet at a predetermined uniform resource locator (URL). For instance, using web browser **809**, the user in the manner described before can add to, delete from and update contacts information in folder **405**. The user can also search for desired contacts information in contacts folders using the aforementioned search engine in FIG. **4**. For example, FIG. **5** illustrates listing **512** containing the desired contact information as a result of one such search. Continuing the example, let's say the user at this point wants to call Bob's home number **1005** in listing **512**. To that end, the user uses an indicator device, e.g., a mouse, touchpad, trackball, etc., connected to computer **803** to point and click at the desired number in listing **512** to call. The desired number is then highlighted. In response, server **28** determines whether the highlighted phone number is a valid “dialable” number, as indicated at step **2103** in FIG. **15**. In a well known manner, in making such a determination, server **28** checks whether the highlighted phone number consists of only numerals, and is in compliance with the standard telephone numbering plan. If it is determined that the highlighted phone number is invalid, it generates a message to the web browser, indicating to the user that the phone number is invalid, as indicated at step **2106**. Otherwise, if it is determined that the highlighted phone number is valid, server **28** at step **2109** generates an icon or a link, e.g., telephone icon **1007** in FIG. **5**, next to the highlighted phone number. When the icon is selected by the user to call the valid phone number, server **28** at step **2112** transmits the phone number to web browser **809** in computer **803**. Accordingly, web browser **809** invokes a VoIP application, part of the aforementioned telephonic software, on computer **803**, and passes the received phone number to that application. The latter then utilizes the subscribed telephone service to establish a VoIP connection to the phone number over the Internet, whereby the user can conduct the phone conversation at computer **803**.

[0089] A second embodiment realizing the direct connect feature requires no installation of the telephonic software or telephone service for VoIP connection as in the first embodiment. Rather, this second embodiment relies on an information/call center to establish a callback connection to a desired phone number for the user. For example, let's say the user selects the icon, e.g., telephone icon **1007**, next to the desired phone number, e.g., number **1005**, on listing **512**. Based on the desired phone number, and in particular its area code and/or prefix, server **28** identifies the information/call center which is the closest to the location of the called party at that number. Server **28** then transmits a call initiation message to the identified information/call center via WAN **30**, which contains the desired phone number to call, and the user's name and wireless (or wireline, e.g., home) phone number which are pre-recorded by server **28** as part of the user registration. The call initiation message is then routed to the identified information/call center, say, information/call center **21**, and particularly to the switching matrix host computer therein, i.e., host computer **128** in this instance. Upon receiving the call initiation message, host computer **128** causes switching matrix platform **114** to establish a first one of the outbound voice connections **112** to the desired phone number, as indicated at step **2203** in FIG. **16**. Establishment of this call may be restricted by the calling plan and toll restrictions appropriate to the user and the called number. As soon as platform **114** receives answer supervision from the called party, the connected status of the call is fed back to host computer **128**. The latter at step **2206** causes a voice announcement of a message through the established connection to the called party, requesting the party to hold for the user. Such an announcement may be accomplished with the help of VRU **130** in the center **100**. Host computer **128** at step **2209** causes platform **114** to establish a second one of the outbound voice connections **112** to the user's wireless phone number. When the user answers the call using his/her wireless phone, the connected status of the second connection is fed back to host computer **128**. The latter at step **2212** causes platform **114** to bridge (or conference) the first and second established connections to allow the user to converse with the called party.

[0090] In an alternative embodiment, after host computer **128** at step **2203** establishes the first connection to the called party and at step **2206** requests the party to hold for the user, host computer **128** may not cause platform **114** to establish the second connection to the user. Rather, host computer **128** reports the connected status of the first connection to server **28**. Based on the user's wireless phone number, and in particular its area code and/or prefix, server **28** identifies the information/call center which is the closest to the location of the user at that number, say, information/call center **24**. (It will be appreciated that other location techniques, including GPS techniques, may be used, instead, to identify the closest information/call center to the user.) Server **28** then transmits a call initiation message to the identified information/call center via WAN **30**, which contains the user's wireless phone number to call. The call initiation message is then routed to information/call center **24** and particularly to the switching matrix host computer therein. Upon receiving the call initiation message, the host computer causes the associated switching matrix platform to establish an outbound voice connection to the user's wireless phone number. Server **28** then bridges the first connection with the called party to the second connection with the user through WAN **30**, thereby allowing

the user to converse with the called party. It should be noted that the bridge connection portion within WAN **30** extends from the switching matrix host computer of center **21** to that of center **24**. These host computers may perform necessary protocol conversions to transport voice information through the bridge connection, pursuant to, e.g., the VoIP.

Calendaring Feature

[0091] In accordance with a calendaring feature of the invention, users may be connected to server **28** to set up one or more appointments folders, e.g., My Appointments folder **409**, which are stored in database **20**. As described before, database **20** may be accessed via the Internet to which server **28** is connected, and a user may utilize a web browser to navigate through the aforementioned web pages to create, maintain and/or view the appointments folders. In addition, the user may call information assistance and ask an operator to access the appointments folders pursuant to the user's instructions. Alternatively, the user may access database **20** through an Internet connection, a wireless data connection or direct dial-up to server **28**, or through a LAN to which the user's computer or communication equipment is connected. FIGS. **17** and **18** illustrate pages of appointments folder **409**, respectively. Specifically, FIG. **17** illustrates a DAILY VIEW page showing the user's appointments of a selected date. FIG. **18** illustrates a MONTHLY VIEW page showing the user's appointments of a selected month.

[0092] As described before, appointment folders in database **20** can be synchronized with specified data sources in PIM applications and devices. For example, by selecting Synchronization option **905** in FIG. **14**, the user can cause the synchronization of folder **409** with the corresponding PIM data source in computer **803**.

[0093] In addition, the user may call information assistance to learn appointments in appointments folders associated with the user. In response to one such call, an operator may direct the call to interactive voice response (IVR) unit **29** connected to server **28** in FIG. **1** to allow the user to hear selected appointments. In addition, server **28** may be programmed to send a reminder notification to a user prior to his/her appointment. Thus, the notification may be automatic or selected by the user as an option. The notification is provided by server **28** a period before the appointment, where the length of the period may be predetermined or selected by the user, or varies with the subject, category and/or information content of the appointment record provided by the user. For example, if an appointment concerns catching a domestic flight which generally requires a relatively short check-in process, barring any user override, based on an analysis of the subject, category and/or information content of the appointment record, server **28** automatically generates and sends a reminder notification to the user an hour before the scheduled flight. On the other hand, if it concerns catching an international flight which generally requires a relatively long check-in process, the lead period for generating and sending such a reminder notification may be two hours.

[0094] In accordance with another aspect of the invention, the reminder notification may be communicated to the user via telephone, SMS, email, facsimile, etc. For example, server **28** may cause IVR unit **29** to call the user's wireless phone number to verbally remind the user of an upcoming appointment. The verbal reminder may be realized by automated voice. In addition, given different methods of delivery of a reminder notification (e.g., via facsimile, SMS, email,

wireline telephone, etc.), server **28** may decide to utilize one method of delivery over another depending on the particular situation. For example, when the user's wireless phone is unresponsive as it is outside its home area or wireless phone service coverage, server **28** may instead send the reminder notification via SMS. To that end, database **20** contains the user's SMS and other contact information provided by the user.

[0095] A GUI may also be made available for the user to choose, modify or define templates for formatting, e.g., the subject line and/or body of the email message he/she receives as a reminder notification, including adding his/her own static text to the message. Such formatting facilitates automated sorting, forwarding or processing of email based upon patterns found in the subject line and/or body of the message, and helps those email-initiated messaging systems which require specific formatting or content. However, by default, the subject line for the email notification may be taken from the title (or subject line) of an appointment record, which may also include the date and start time of the appointment. The body of email may include the information from a notes field in the appointment record.

[0096] As described before, an owner of an appointments folder by default is the only person authorized to view and edit his/her own calendar. However, the owner may also grant other users rights to access the appointments folder. Access rights may have different levels. A user may be granted "read-only" access rights, who is allowed to view certain appointment entries only. For example, the read-only subscriber is generally allowed to view the date, time and title (or subject) of an appointment record, but cannot open the record and view or edit any details thereof. In addition, the read-only subscriber may not even be allowed to view the title of a personal appointment record. Nor can the read-only user add or delete any appointment records. On the other hand, a user granted "administrator" access rights is generally allowed to view, edit, add or delete appointment records, except for a personal appointment record, in which case the administrator-user can only view the appointment date and time of the personal record. In addition, the administrator-user is allowed to grant the read-only access rights to others, or restrict or revoke such access rights.

[0097] FIG. **19** illustrates an ADD APPOINTMENT VIEW page for adding a new appointment record to folder **409**. The user is afforded options for sharing certain information concerning the new appointment. For example, by selecting private option **1405**, the user who is the owner of folder **409** keeps the new appointment record personal. In that case, when a read-only subscriber or administrator accesses folder **409**, only date and time information concerning the new appointment is revealed to the subscriber or administrator. In addition, in that case the administrator is not allowed to edit any information concerning the new appointment or delete the new appointment record.

[0098] By selecting Show As Busy option **1407**, the user keeps the title information of the new appointment record from the read-only subscribers to folder **409**. As a result, one such subscriber is allowed to view the date and time information concerning the new appointment, along with a title replaced by the word "busy." On the other hand, an administrator of folder **409** is allowed to exercise his/her full access rights to the new appointment record.

[0099] By selecting Public option **1409**, the user allows both read-only subscribers to and administrators of folder **409**

to exercise their full access rights to the new appointment record. That is, one such subscriber is allowed to view the date, time and actual title of the new appointment, and one such administrator is allowed to view and/or edit every information concerning the new appointment, and even delete the new appointment record.

[0100] As described before, a user may call information assistance and asks an operator to access appointments folders in database **20** associated with the user. Upon verification of the user's login information, and determination by server **28** of the user's access rights to each folder, the operator may vicariously administer the folder in response to the user's verbal commands. The operator, as an alter ego of the user, is accorded at least the same access rights as the user. The operator may therefore retrieve, edit, store or delete any details in the folders so long as the user has the authority to do so.

[0101] In accordance with yet another aspect of the invention, the above-described calendaring feature may be integrated with such other service features as making reservations, ticketing and conducting other electronic transactions for a user. For example, a user can call information assistance for a TeleConcierge® service whereby an operator, at the request of the user, makes restaurant reservations or purchases tickets for sports events, concerts, opera, shows, etc. for the user. It should be noted that the user's preferences, e.g., the preferred restaurant and dining time, may be specified in a user profile, described below, which is made available to the operator when the user calls for the TeleConcierge® service. In addition, the relevant user preferences from the profile automatically populate the fields in an electronic request, e.g., for a restaurant reservation, on operator terminal **120**, thereby obviating the need of an interrogation by the operator. Thus, referring to FIG. **20**, after an operator at step **2703** provides a service to a calendar user for a future event, e.g., making a restaurant reservation for a party, the operator, at the request of the calendar user, establishes a connection to server **28**, opens the ADD APPOINTMENT VIEW page of FIG. **19** of a specified appointments folder, and adds an appointment record concerning the future event to the folder, as indicated at steps **2706**, **2709** and **2711**, respectively. Of course, the user request can be met only if the user is the owner or administrator of the appointments folder. Continuing the example and assuming that the restaurant reservation is made electronically, e.g., via a TeleConcierge® server (not shown), the reservation information transmitted to the restaurant automatically populates the appropriate fields of the new appointment record, e.g., its title, time, date and notes fields, with minimal manual input by the operator. For instance, the title field of the new appointment record may be pre-populated and read "Reservation at XYZ Restaurant." In addition, the notes field may be pre-populated with information concerning the name under which the reservation was made, restaurant address and phone number, number of people in the party, any smoking preference, etc. The TeleConcierge® server then generates an appointment ID in its own database for identifying the new appointment record. In the event that the reservation is subsequently changed through the TeleConcierge® server, the appointment record identified by the appointment ID is changed accordingly.

[0102] The user may also want to inform the invitees of the upcoming event. To that end, the user himself/herself, or through the operator, accesses server **28** which provides the functionality of sending invitations, including the informa-

tion in the new appointment record, to the invitees via email, facsimile or other methods of delivery. For example, the user in this instance wants to send the invitations via email, the user (or through the operator) provides the email addresses of the invitees of the event to server **28**, as indicated at step **2714**. Accordingly, server **28** at step **2717** composes an invitation email based on the information of the new appointment record in a manner described before. Server **28** at step **2720** sends the invitation email to the invitees' email addresses just provided. In addition, the user may want to add the reservation appointment to those invitees having their appointments folders stored in database **20**. To that end, the user provides such invitees' MDN and other ID information identifying the appropriate folders. Server **28** at step **2723** provisionally enters into the respective invitees' folders an invitation appointment record containing information similar to that of the reservation appointment record described above. The invitees are notified of the provisional invitation appointment the next time when they access their calendars, and it is up to each invitee to adopt the invitation appointment record in his/her folder.

[0103] In addition, it should be noted that server **28** is programmed to link (or hyperlink) contact names in the user's appointments folder(s) to the contact information associated with such names in the user's contacts folder(s). Thus, in accordance with still another aspect of the invention, a contact name in an appointment record may be highlighted to indicate that the associated contact information is available in the user's contact folder(s). The user may access such information by pointing and clicking at the highlighted contact name.

User Profile

[0104] In accordance with the invention, an operator at an information/call center may utilize one or more profiles associated with a user to effectively provide information and communications services to the user. In general, a user profile is a record containing identifiers and preferences associated with the user. One such profile may be a personal profile including personal preferences selected by the user, which concern particulars of delivery of information and services. The selection of personal preferences may be accomplished through use of Internet web pages or an operator. The resulting personal profile is identified by the user's telephone number, e.g., MDN, and stored in a profile manager described below. Other profiles associated with the user, and the use of any of these profiles in combination with the user's personal profile are fully described below.

[0105] By way of example, the user in this instance calls a predetermined information access number for a directory listing, and the information assistance call is routed to, say, information/call center **100** of FIG. 2A. The received information assistance call is then handled by center **100** based on a personal profile previously established by the user. For example, such a personal profile specifies, among others, that the listed name, number and address are to be emailed to the user's email address, e.g., johndoe@home.com, after he/she is connected to the listed number.

[0106] Specifically, referring to FIG. 2A, the information assistance call is received by switching matrix platform **114** in information/call center **100**. In a well known manner, platform **114** derives, from the signaling associated with the call, the user's phone number from which the call originates, also known as the ANI. The switching matrix host computer **128**

then requests any profile identified by such an ANI from profile gateway **321** connected to data network **124**.

[0107] Referring also to FIG. 21, gateway **321** receives the profile request including the ANI through data network interface **2822**. In response to such a request, processor **2825** searches memory **2829** for the profile identified by the ANI. It should be noted at this point that all profile data is input and updated (e.g., via Internet web pages or operator) through profile manager **2805**, which may be located in information hub **10** in FIG. 1. Copies of the profile data are distributed by manager **2805** to the profile gateways in various information/call centers through WAN **30**. In this illustrative embodiment, a master copy of the profiles is kept at manager **2805**. For example, profile gateway **321** initially forwards requests for new profiles to manager **2805**, and caches copies of the requested profiles from manager **2805** in local memory **2829** for rapid, subsequent retrieval of the profiles. Memory **2829** here generically includes disks, caches, and volatile and non-volatile memories. When a particular profile in gateway **321** is updated at manager **2805**, the latter notifies gateway **321** that the particular profile is expired.

[0108] Thus, continuing the above example, if processor **2825** determines that the requested profile cannot be found in memory **2829** or the requested profile is expired, processor **2825** forwards the profile request to manager **2805** through communications interface **2831**. In response, manager **2805** provides to gateway **321** any latest profile identified by the ANI. Otherwise, processor **2825** retrieves from memory **2829** any available, unexpired profile identified by the ANI.

[0109] In order to expedite the information assistance, host computer **128** preferably is programmed to wait for a return of the user's personal profile for a short predetermined period, e.g., 2 seconds, while the call is placed in queue even if there is an available operator. Nonetheless, host computer **128** may wait for a longer period when no operator is available anyway. Let's assume that the user's personal profile is received by host computer **128** within the wait period. Host computer **128** causes platform **114** to operate according to those parts of the personal profile pertinent thereto. For example, the personal profile may also specify a special skill required of an operator handling the call, e.g., a Spanish language skill. In that case, platform **114** routes the call to, or places it in queue for, a Spanish speaking operator. It should be pointed out at this juncture that the system components of information/call center **100** bear a server-client relationship where gateway **321** serves profile data to clients including host computer **128** and database server **126**. When the call is answered by an appropriate operator, which involves another client, namely, database server **126** in this case, host computer **128** forwards a copy of the personal profile to server **126**, along with the ANI.

[0110] Otherwise, if the personal profile was not received by host computer **128** within the wait period, the host computer forwards to server **126** the ANI without profile data. Accordingly, server **126** issues to profile gateway **321** a profile request similar to that issued by host computer **128**, which includes the ANI identifying any user profile. Since by now profile gateway **321** most likely has obtained the necessary user profile data from profile manager **2805** and cached same, gateway **321** efficiently returns a cached copy of the requested profile to server **126**.

[0111] When the operator answers the call, server **126** communicates to the operator through terminal **120** any profile data pertinent to the handling of the call. The operator then interacts with the user and utilizes server **126** to locate the

requested listing. In this instance, the user's personal profile requires that the user be connected to the listing number. It also requires that at the same time the full listing details be sent via email to johndoe@home.com, which is provided in the profile. Thus, as soon as the operator utilizes a well known function of server 126 to connect the user to the listing number, server 126 sends to profile gateway 321 a message, which contains a subscriber identifier identifying the user, the information to be delivered (listing name, number and address in this case) and delivery method (email and email address). Gateway 321 in turn forwards this message to profile manager 2805. The latter then generates an appropriate request to messaging server 2807 for email delivery of the listing name, number and address information, in accordance with the user's personal profile.

[0112] Messaging server 2807 may be situated at the same location as profile manager 2805. Server 2807 serves as a gateway for delivering electronic content information to a user, e.g., via facsimile, email, SMS and wireless application protocol (WAP). When it is determined that electronic content information needs to be delivered via one of these communications, profile manager 2805 forwards the necessary content and addressing information (e.g., email address) to messaging server 2807. Messaging server 2807 feeds back to profile manager 2805 information about the delivery status. This information may also be used for billing purposes.

[0113] It should be noted that in the above example, profile gateway 321 needs to communicate in real time with profile manager 2805 each time when a requested profile is unavailable or expired in memory 2829. In an alternative embodiment, to avoid such real time communications with manager 2805, thereby saving the response time, a copy of each profile in profile manager 2805 is also stored in the profile gateways in all of the information/call centers, including profile gateway 321. Whenever a change is made to a profile in manager 2805, the latter immediately communicates the change to each profile gateway to ensure that each gateway has the current set of profiles, identical to the master set in manager 2805. Nonetheless, this "copy-all" approach is disadvantageous in that it requires more local memory capacity to store a larger profile database in each gateway.

[0114] In general, a profile comprises a string of identifiers, each of which is accompanied by a defined value. FIG. 22 illustrates one such profile, denoted 2900. Profile 2900 serves to provide information about the user and his/her preferences. As shown in FIG. 22, profile 2900 includes FN field 2903 containing the first name of the user, e.g., "John" in this instance; MN field 2905 containing the middle name or initial of the user, e.g., "J" in this instance; LN field 2907 containing the last name of the user, e.g., "Doe" in this instance; FAV field 2910 containing the facsimile number provided by the user, e.g., "1234567890" in this instance; EAV field 2913 containing the email address provided by the user, e.g., "johndoe@home.com;" . . . ; LNRDM field 2916 specifying the user's preferred method of delivery of a listing number, e.g., email which is represented by a value "3" in this instance, indicates that email is the preferred method of delivery; LARDM field 2919 specifying the user's preferred method of delivery of a listing address, e.g., email in this instance; LDRDM field 2922 specifying the user's preferred method of delivery of listing details, e.g., email in this instance; and so on and so forth. It should be noted that other content delivery methods other than email, e.g., facsimile, SMS and/or WAP may be specified in fields 2916, 2919 and

2922 of profile 2900. It should also be noted that profile 2900 may be used to specify not only methods of delivery of different parts of listing information, but also whether the multiple delivery methods occur simultaneously. Further, profile 2900 may be used to specify whether, after the content delivery is initiated, the user-caller should be handed off to VRU 130 or the operator to be informed of the delivery status. Although profile 2900 may define the content delivery options, the operator, at the request of the user, may elect other alternative or additional delivery methods, overriding the previously defined option. For that matter, the user may always request the operator to change or temporarily override different defined options in profile 2900, subject to a necessary security check on the user.

[0115] In an alternative embodiment, profile 2900 is realized in extensible markup language (XML) which, as is well known, uses tags (words bracketed by "<" and ">") to delimit data. In this instance, profile 2900 expressed in XML is illustrated in FIG. 23, which is equivalent to that of FIG. 22.

[0116] Profile 2900 may also define options of various assistance service features which may include, e.g., the above-described TeleConcierge® features whereby the user can make restaurant reservations, purchase tickets, etc.; a NumberBack feature whereby the user is provided with a listing number before he/she is connected to the listing number; and a LocationPro feature whereby the user can obtain directions to a listing address. Similarly, for example, the methods of delivery of (i) a confirmation of a TeleConcierge® reservation or purchase, (ii) a listing number, and (iii) LocationPro directions to the user may be specified in profile 2900 as well.

[0117] As mentioned before, the information assistance and services provided to the user may be based on more than one profile associated with the user. These profiles may be arranged in a hierarchy. For example, the hierarchy may consist of seven levels, with the seventh, highest level corresponding to the user's personal profile described above. The sixth level corresponds to a group profile, also known as a "class of service," which includes preferences for a predetermined group of individual users belonging to one or more carriers. The fifth level corresponds to a site carrier profile used when a specific carrier in a specific information/call center is involved. The fourth level corresponds to a call center profile which allows different information/call centers to apply service features in different ways. The third level corresponds to a carrier market profile, which includes preferences for customers of a carrier in selected markets. The second level corresponds to a carrier profile which is used for a specific carrier nationwide. The first level corresponds to a default profile applied to all calls lacking any other profiles.

[0118] In this illustrative embodiment, the hierarchical relationship of the profiles requires that, barring any restriction, preferences in a profile at a relatively high level take precedence over those preferences conflicting therewith in a profile at a relatively low level. Thus, in the case where a carrier defines a carrier profile (at the second level) for all its subscribers, which applies to all of their calls, and one of the subscribers also defines his/her own personal profile (at the seventh level), preferences in the personal profile accordingly override any conflicting preferences in the carrier profile. The resulting profile, generated by processor 2825 of gateway 321, is a reconciled profile which contains non-conflicting

preferences from the profiles at different levels and is used by the clients and operator to provide information assistance and services to the user.

[0119] The foregoing merely illustrates the principles of the invention. It will thus be appreciated that those skilled in the art will be able to devise numerous other arrangements which embody the principles of the invention and are thus within its spirit and scope.

[0120] For example, in the disclosed embodiment, the master copy of the profiles is stored in profile manager 2805 which is coupled to messaging server 2807 for realizing electronic content deliveries. It will be appreciated that multiple profile managers similar to profile manager 2805 and multiple messaging servers similar to messaging server 2807 may be geographically distributed. In that case, each manager sends, to the gateway in each information/call center, a control signal indicating the current load of the manager and/or its connected messaging server. In response to such a control signal, the gateway efficiently routes requests for profiles (content delivery) to those managers (messaging servers) experiencing a lesser load.

[0121] In addition, a user may specify in a profile his/her preferred types of events and areas of interest, e.g., selected music, fashion and sports events, for which the user would like to receive information from time to time. Thus, based on one such profile, a server, e.g., server 28, tailors the content of the information delivered automatically to the user to suit his/her interest as soon as the information becomes available. For instance, the user may specify in the profile that he/she is a fan of a particular professional basketball team, and would like to purchase tickets to attend the games played by the team in the city where he/she lives. The user may further specify his/her seating preferences in such games. Based on such profile information, the server from time to time initiates communications to the user's communication device, and thus to the user, informing the user of the schedule of the upcoming games of interest and the availability of the preferred seats ahead of the game times. In the case where tickets may be purchased electronically, on learning such information, the user may also utilize the communication device to purchase any game ticket on line. Otherwise, the user may reserve tickets through an agent or a service, e.g., the TeleC-oncierge® service. Similarly, the user may specify his/her favorable products, services, manufacturers, and merchants in his/her profile. In response, the server from time to time communicates to the user any sales and advertising information concerning such products, services, manufacturers and merchants.

[0122] Finally, information/call center 100 is disclosed herein in a form in which various functions are performed by discrete functional blocks. However, any one or more of these functions could equally well be embodied in an arrangement in which the functions of any one or more of those blocks or indeed, all of the functions thereof, are realized, for example, by one or more appropriately programmed processors.

1. A system for use by a user to protect the privacy of selected telephone numbers in a directory, the system comprising:

a memory configured to:

store a plurality of directories, each of the plurality of directories being associated with a single respective party and comprising one or more telephone numbers at least one of which is to be used to contact selected parties associated with and different from the respective party,

wherein at least one directory among the plurality of directories further comprises at least one indicator indicating that a telephone number, stored in the at least one directory is to be disclosed only to a first predetermined group of persons associated with said single respective party; and

the system further comprising:

a processor configured to:

allow access to the at least one directory only to a second predetermined group that includes the first predetermined group of persons; and

provide the telephone number only to the first predetermined group of persons.

2. The system of claim 1, wherein the processor is further configured to:

establish a communication connection between a calling telephone number associated with a member of the second predetermined group of persons and the respective telephone number, without disclosing the respective telephone number to the member.

3. A method for use by a user to protect the privacy of selected telephone numbers in a directory, the system comprising:

storing, in a memory, a plurality of directories, each of the plurality of directories being associated with a single respective party and comprising one or more telephone numbers at least one of which is to be used to contact selected parties associated with and different from the respective party, and

wherein at least one directory among the plurality of directories further comprises at least one indicator indicating that a telephone number stored in the at least one directory is to be disclosed only to a first predetermined group of persons associated with said single respective party;

allowing access to the at least one directory only to a second predetermined group that includes the first predetermined group of persons; and

providing the telephone number only to the first predetermined group of persons.

4. The method of claim 3, further comprising:

establishing a communication connection between a calling telephone number associated with a member of the second predetermined group of persons and the respective telephone number, without disclosing the respective telephone number to the member.

5. A system for use by a user to protect the privacy of selected telephone numbers in a directory, the system comprising:

a memory configured to:

store a plurality of directories, each of the plurality of directories being associated with a single respective party and comprising one or more telephone numbers at least one of which is to be used to contact a selected party associated with and different from the respective party; wherein at least one directory among the plurality of directories further comprises at least one indicator indicating that a selected telephone number stored in the at least one directory is to be disclosed only to persons associated with said single respective party satisfying one or more specified criteria;

the system further comprising:

an interface configured to:

receive a call from a calling party, the call including a request to access the at least one directory; and

receive data identifying the calling party, during the call;
and
a processor configured to:
allow the calling party to access the at least one directory
based, at least in part, on the identifying data;
determine whether or not the calling party satisfies the
specified criteria based, at least in part, on the identify-
ing data; and
provide the respective telephone number to the calling
party, if the calling party satisfies the specified criteria.
6. A method for use by a user to protect the privacy of
selected telephone numbers in a directory, the method com-
prising:
storing a plurality of directories, each of the plurality of
directories being associated with a single respective
party and comprising one or more telephone numbers at
least one of which to be used to contact a selected party
associated with and different from the respective party;

wherein at least one directory among the plurality of direc-
tories further comprises at least one indicator indicating
that a selected telephone number stored in the at least
one directory is to be disclosed only to persons associ-
ated with said single respective party satisfying one or
more specified criteria;
the method further comprising:
receiving a call from a calling party, the call including a
request to access the at least one directory;
receiving data identifying the calling party, during the call;
allowing the calling party to access the at least one direc-
tory based, at least in part, on the identifying data;
determining whether or not the calling party satisfies the
specified criteria based, at least in part, on the identify-
ing data; and
providing the respective telephone number to the calling
party, if the calling party satisfies the specified criteria.

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