US 20050002501A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2005/0002501 A1

Elsey et al. (43) Pub. Date: Jan. 6, 2005

(54) TECHNIQUE FOR PROVIDING PERSONALIZED INFORMATION AND COMMUNICATIONS SERVICES

(75) Inventors: **Nicholas J. Elsey**, West Linn, OR (US); **Michael A. Kepler**, Aloha, OR (US); **Timothy A. Timmins**, Tigard, OR (US); **Michael T. Samudio**, Tigard, OR (US)

Correspondence Address:
Alex L. Yip
Kaye Scholer LLP
425 Park Avenue
New York, NY 10022 (US)

(73) Assignee: **Metro One Telecommunications, Inc.**

(21) Appl. No.: **10/896,735**

(22) Filed: **Jul. 21, 2004**

Related U.S. Application Data

(60) Division of application No. 09/865,230, filed on May 25, 2001, and which is a continuation-in-part of application No. 09/441,656, filed on Nov. 12, 1999.

(60) Provisional application No. 60/257,913, filed on Dec. 21, 2000.

Publication Classification

(51) **Int. Cl.**[7] **G06F 12/00**; H04M 1/64; G06F 17/30

(52) **U.S. Cl.** **379/88.17**; 379/218.01

(57) **ABSTRACT**

A user may utilize a communication device, e.g., a wireless phone, mobile device or personal digital assistant (PDA), to contact an information/call center where an operator provides personalized information and communications services to the user in accordance with the invention. Such services include, e.g., providing listing information, contacts information, appointments information, etc. To provide effective connectivity, for example, when a user locates a phone number in his/her private directory using a web browser, the user may utilize a direct connect feature of the invention to initiate a phone call to the desired number over the Internet. In addition, the invention allows for delivery of the appointments information to the user not only via voice connection, but also SMS, email, facsimile, PDA, etc. It also allows for rendering a calendaring service in combination with such services as a TeleConcierge® service which helps the user to plan a future event, e.g., making a restaurant reservation. An appointment record concerning the future event is automatically incorporated into the user's calendar once it is successfully planned. To personalize the services, at least one profile associated with the user is used which specifies the subscribed services and the preferred ways of receiving them. For example, the profile may specify use of a special skilled operator, methods of delivery of information to the user, etc.

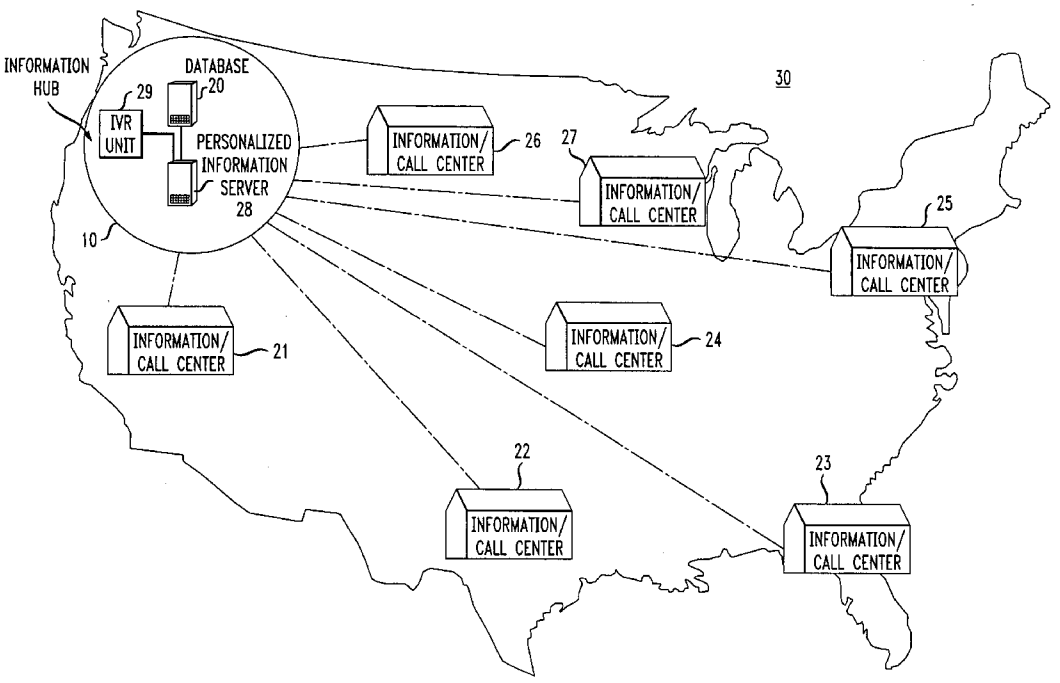
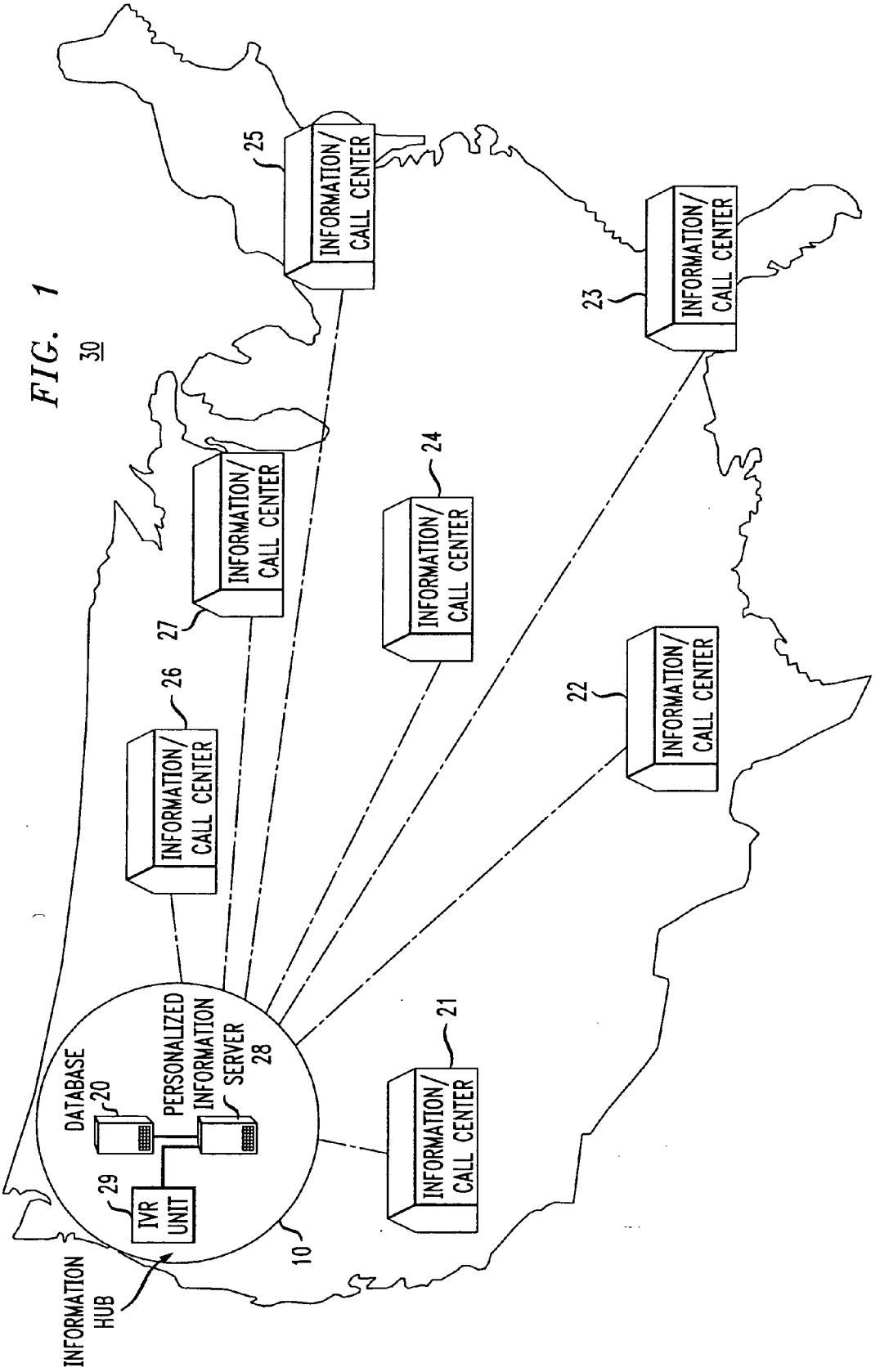


FIG. 1


30
INFORMATION HUB
10
IVR UNIT
29
DATABASE
20
PERSONALIZED INFORMATION SERVER
28
INFORMATION/ CALL CENTER
21
22
23
24
25
26
27

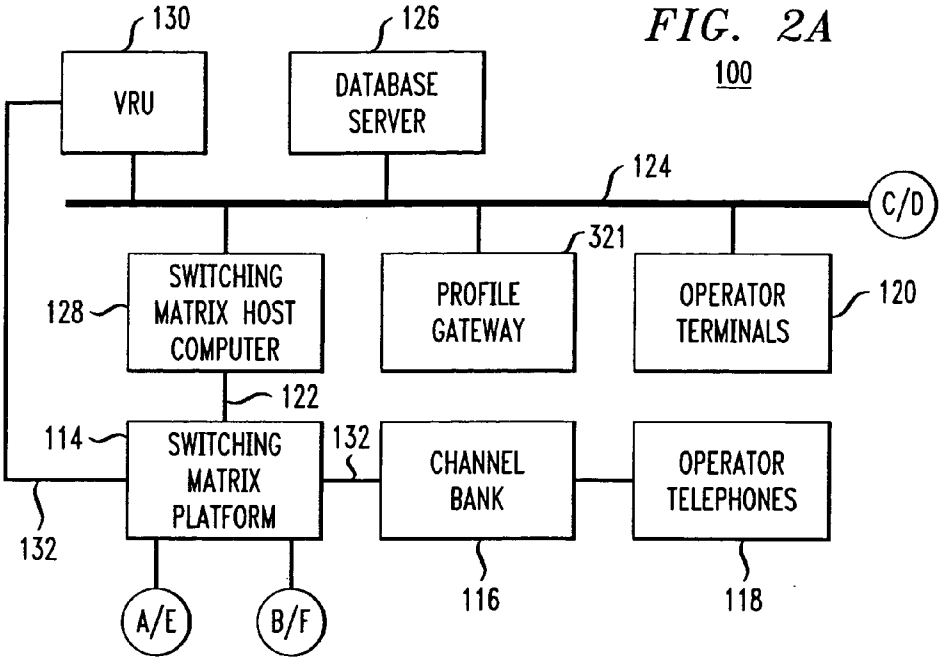

130
126
VRU
DATABASE SERVER
100
124
C/D
321
SWITCHING MATRIX HOST COMPUTER
128
PROFILE GATEWAY
OPERATOR TERMINALS
120
122
114
SWITCHING MATRIX PLATFORM
132
CHANNEL BANK
OPERATOR TELEPHONES
132
A/E
B/F
116
118

FIG. 2A

FIG. 2B

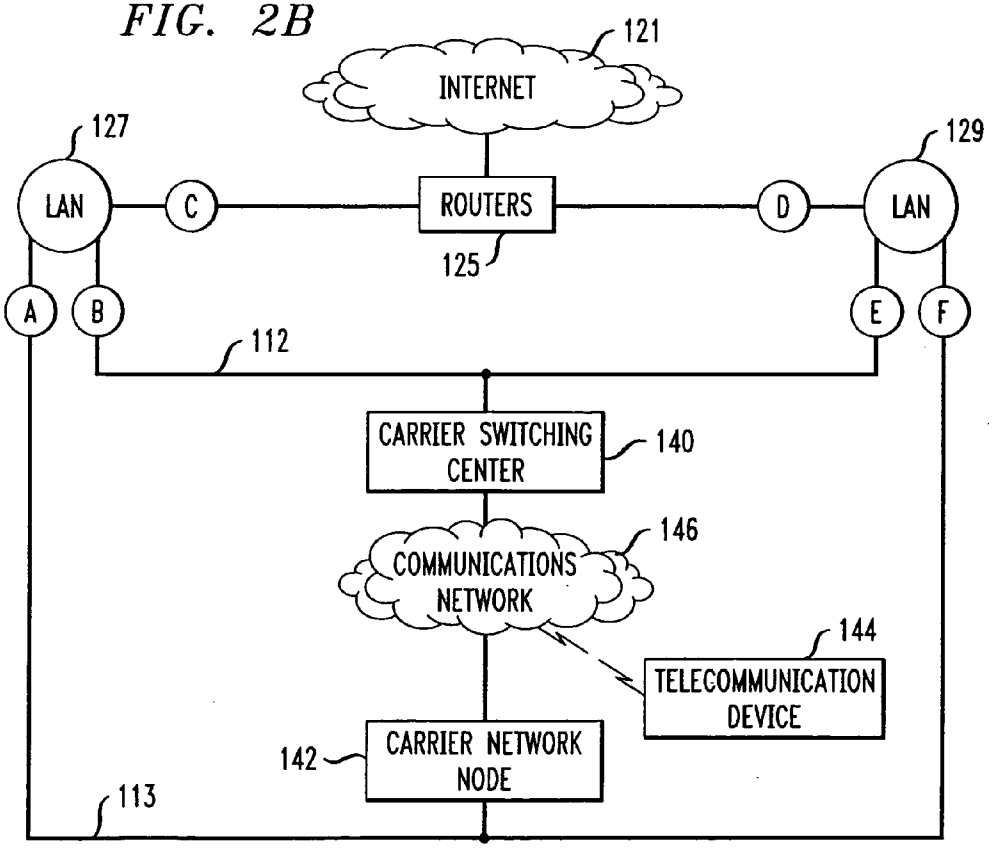

121
INTERNET
127
129
LAN
C
ROUTERS
D
LAN
125
A
B
E
F
112
CARRIER SWITCHING CENTER
140
146
COMMUNICATIONS NETWORK
144
TELECOMMUNICATION DEVICE
142
CARRIER NETWORK NODE
113

FIG. 3

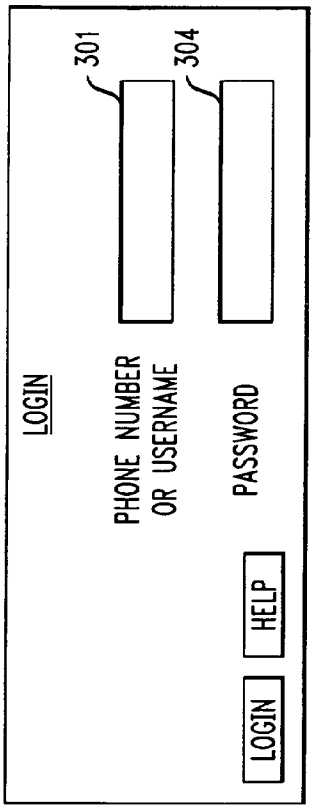

LOGIN
PHONE NUMBER OR USERNAME
PASSWORD
LOGIN
HELP
301
304

FIG. 4

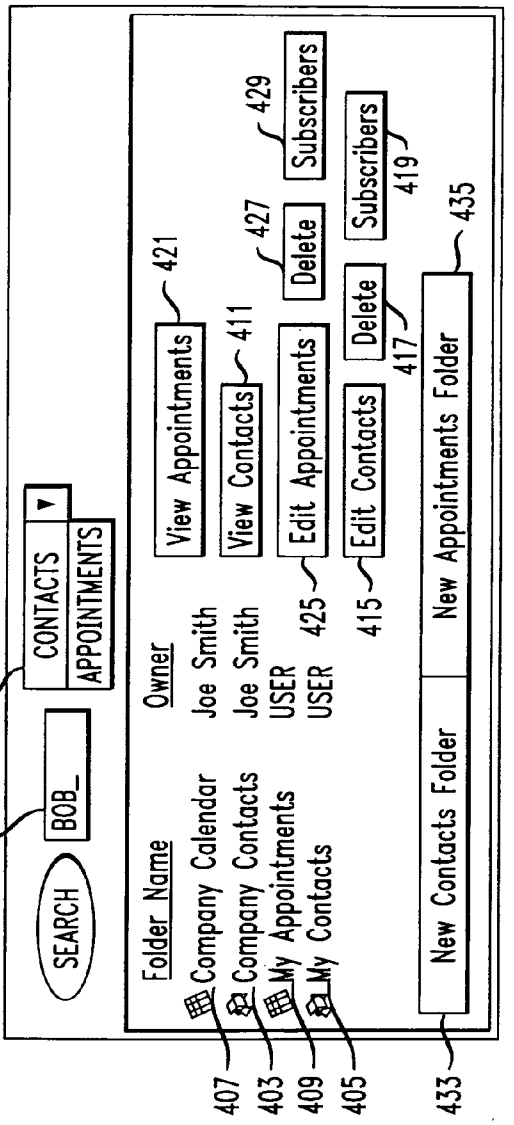

SEARCH
BOB_
CONTACTS
APPOINTMENTS
445
447
Folder Name
Owner
Company Calendar
Joe Smith
Company Contacts
Joe Smith
My Appointments
USER
My Contacts
USER
View Appointments
View Contacts
Edit Appointments
Edit Contacts
Delete
Delete
Subscribers
Subscribers
421
411
425
415
427
417
429
419
New Contacts Folder
New Appointments Folder
435
407
403
409
405
433

FIG. 5

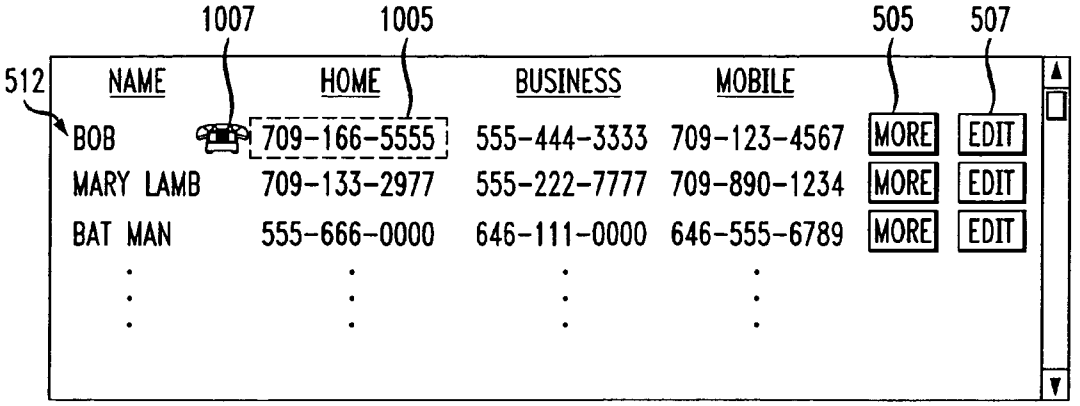

1007
1005
505
507
512
NAME
HOME
BUSINESS
MOBILE
BOB
709-166-5555
555-444-3333
709-123-4567
MORE
EDIT
MARY LAMB
709-133-2977
555-222-7777
709-890-1234
MORE
EDIT
BAT MAN
555-666-0000
646-111-0000
646-555-6789
MORE
EDIT

FIG. 6

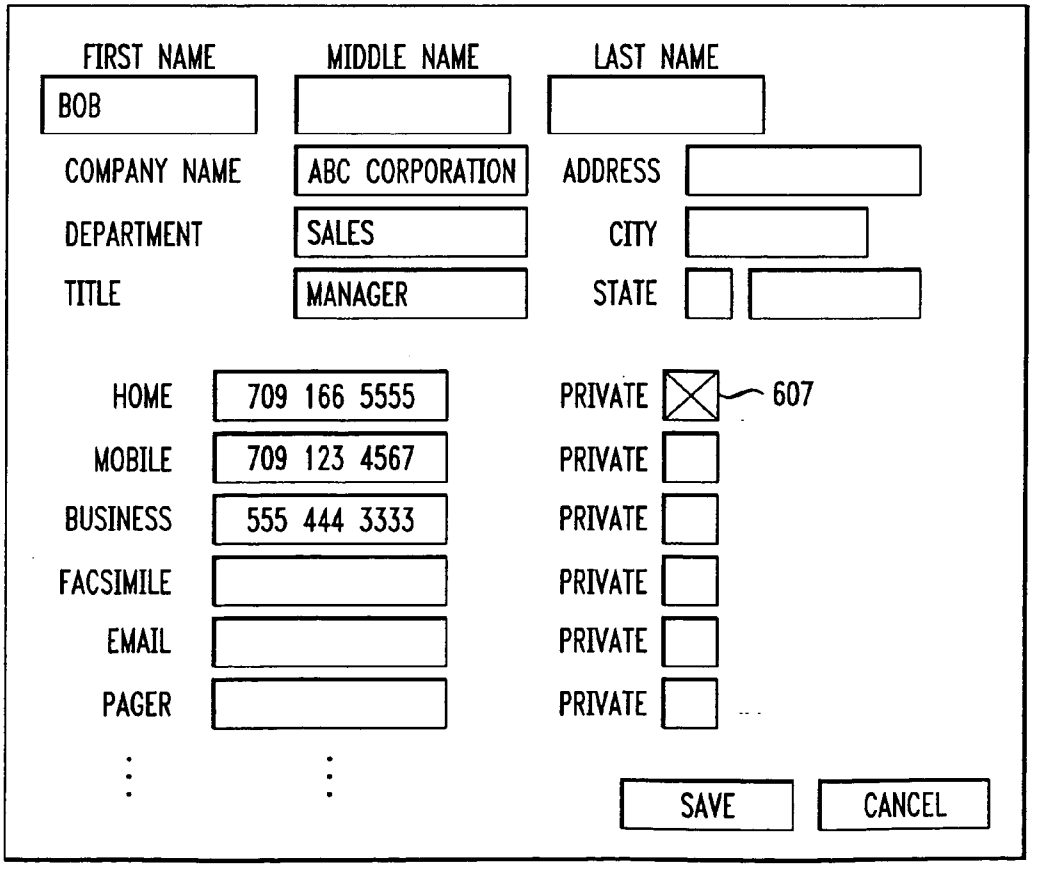

FIRST NAME
MIDDLE NAME
LAST NAME
BOB
COMPANY NAME
ABC CORPORATION
ADDRESS
DEPARTMENT
SALES
CITY
TITLE
MANAGER
STATE
HOME
709 166 5555
PRIVATE
607
MOBILE
709 123 4567
PRIVATE
BUSINESS
555 444 3333
PRIVATE
FACSIMILE
PRIVATE
EMAIL
PRIVATE
PAGER
PRIVATE
SAVE
CANCEL

FIG. 7

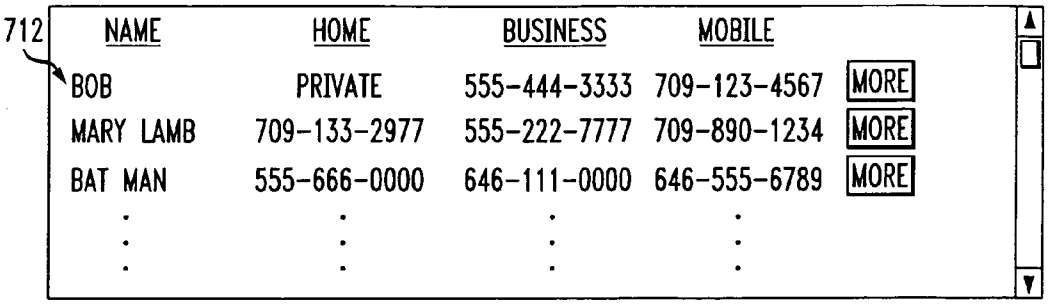


FIG. 8

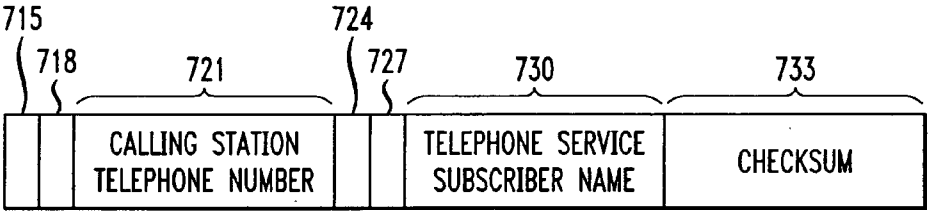


FIG. 9

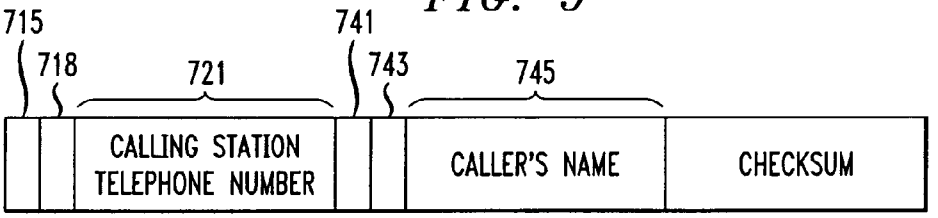


FIG. 10

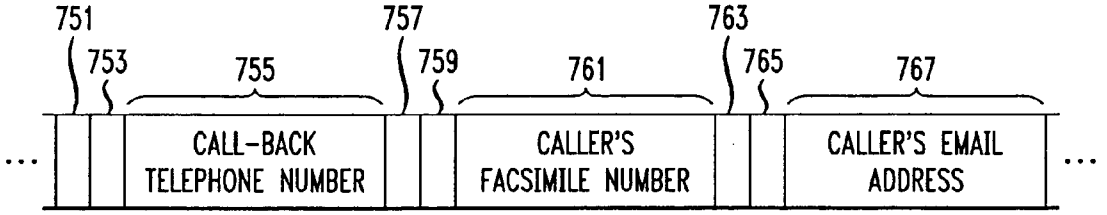


FIG. 11

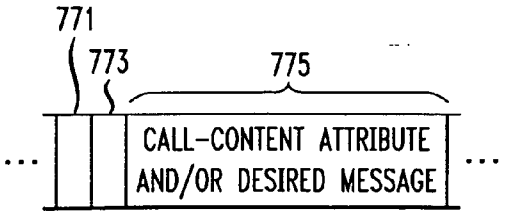


FIG. 12

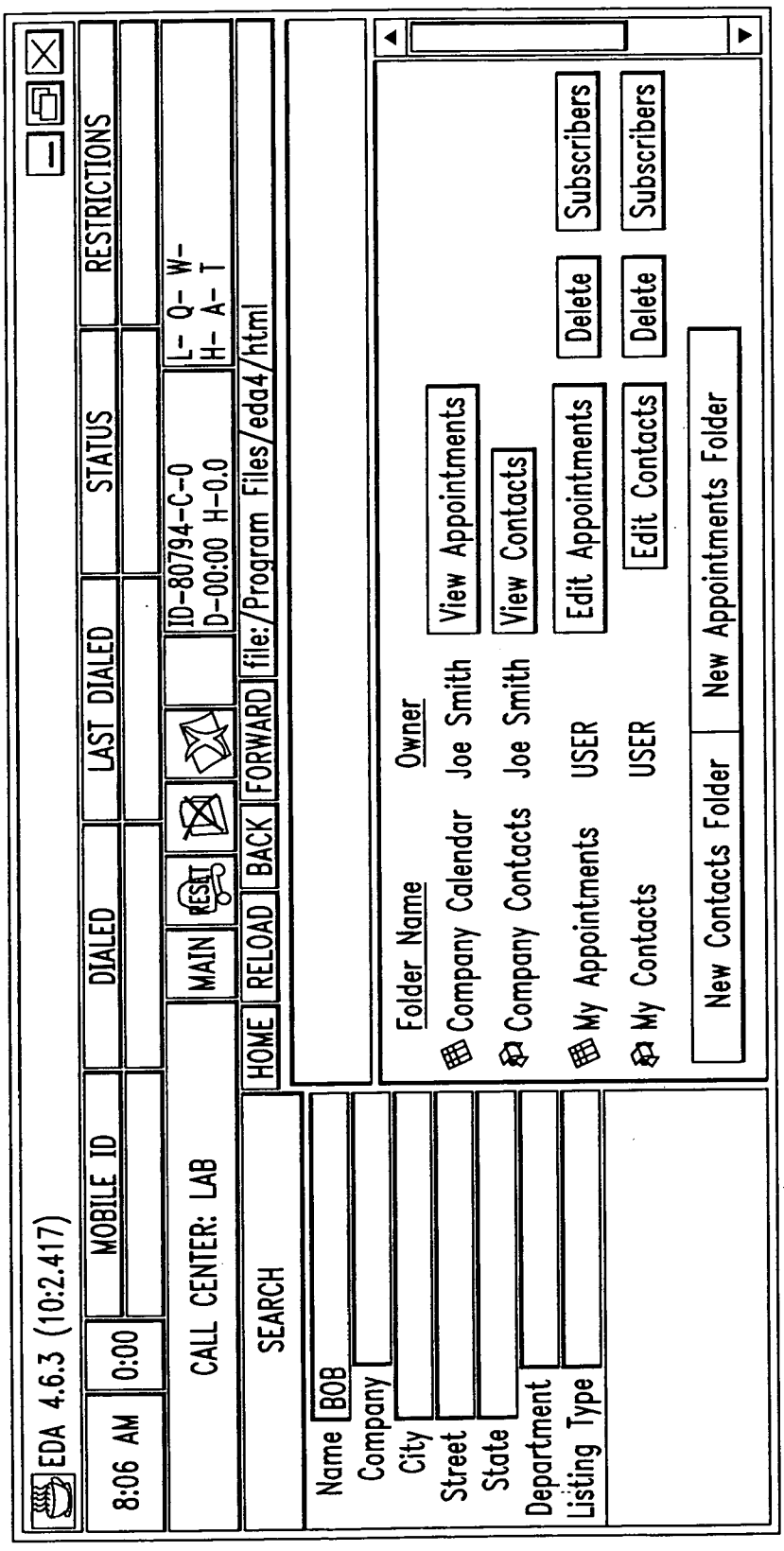

780
EDA 4.6.3 (10:2.417)
8:06 AM
0:00
MOBILE ID
DIALED
LAST DIALED
STATUS
RESTRICTIONS
CALL CENTER: LAB
MAIN
RESET
ID-80794-C-0
D-00:00 H-0.0
L- Q- W-
H- A- T
SEARCH
HOME
RELOAD
BACK
FORWARD
file:/Program Files/eda4/html
Name
BOB
Company
City
Street
State
Department
Listing Type
Folder Name
Owner
Company Calendar
Joe Smith
View Appointments
Company Contacts
Joe Smith
View Contacts
My Appointments
USER
Edit Appointments
Delete
Subscribers
My Contacts
USER
Edit Contacts
Delete
Subscribers
New Contacts Folder
New Appointments Folder
782
785

FIG. 13

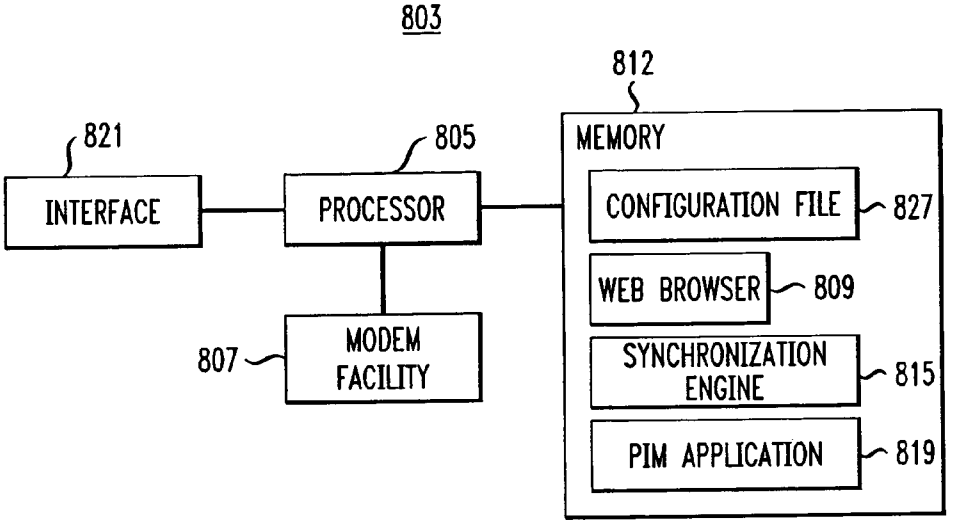

803
812
821
805
INTERFACE
PROCESSOR
MEMORY
CONFIGURATION FILE
827
WEB BROWSER
809
807
MODEM FACILITY
SYNCHRONIZATION ENGINE
815
PIM APPLICATION
819

FIG. 14

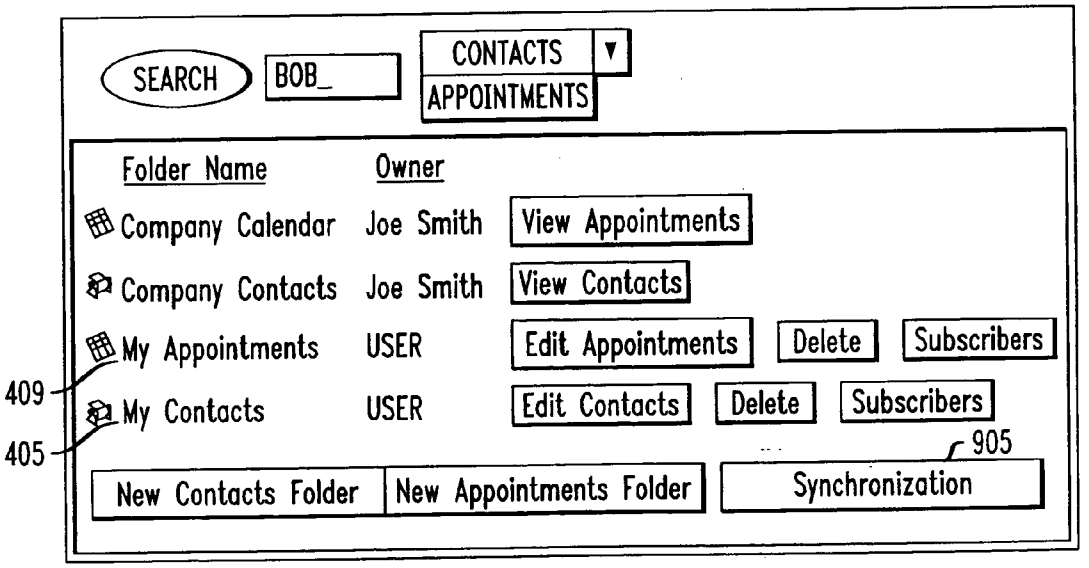

SEARCH
BOB_
CONTACTS
APPOINTMENTS
Folder Name
Owner
Company Calendar
Joe Smith
View Appointments
Company Contacts
Joe Smith
View Contacts
My Appointments
USER
Edit Appointments
Delete
Subscribers
My Contacts
USER
Edit Contacts
Delete
Subscribers
409
405
905
New Contacts Folder
New Appointments Folder
Synchronization

FIG. 15

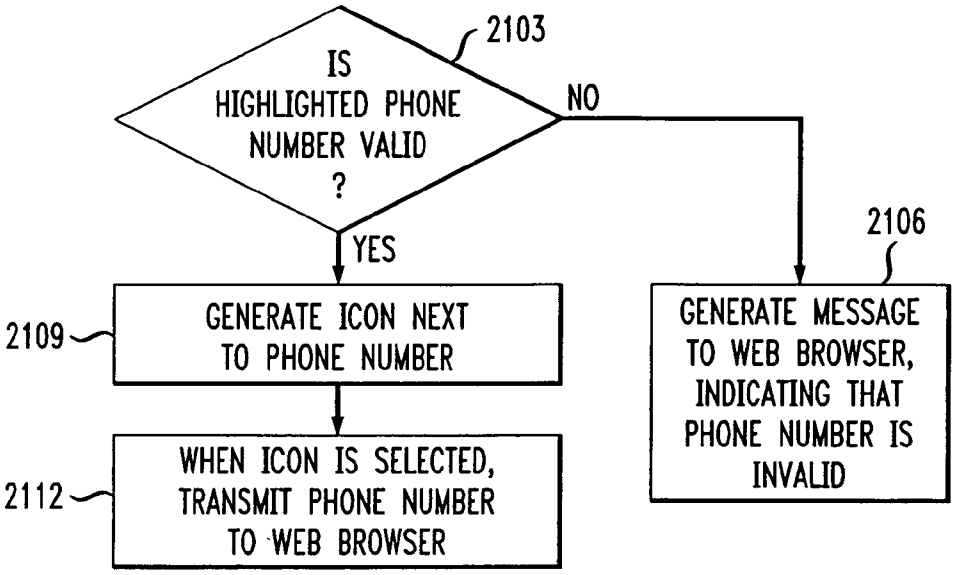
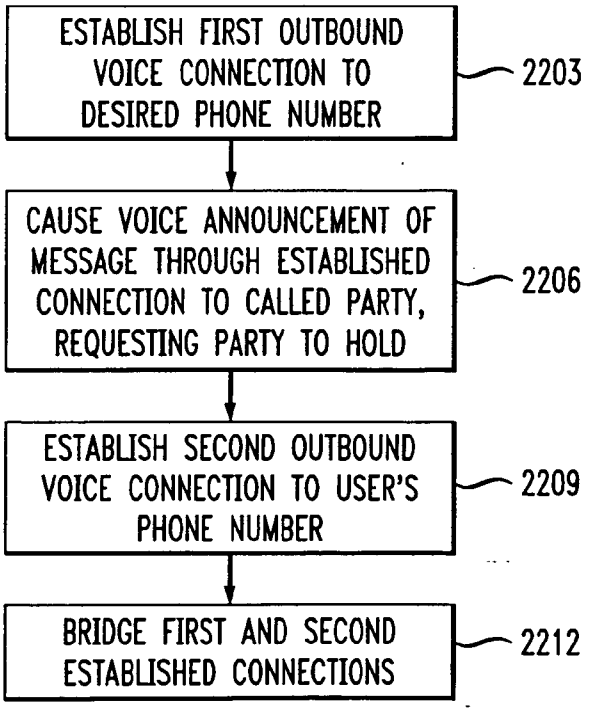

2103
IS HIGHLIGHTED PHONE NUMBER VALID ?
NO
YES
2106
GENERATE MESSAGE TO WEB BROWSER, INDICATING THAT PHONE NUMBER IS INVALID
2109
GENERATE ICON NEXT TO PHONE NUMBER
2112
WHEN ICON IS SELECTED, TRANSMIT PHONE NUMBER TO WEB BROWSER

FIG. 16


ESTABLISH FIRST OUTBOUND VOICE CONNECTION TO DESIRED PHONE NUMBER
2203
CAUSE VOICE ANNOUNCEMENT OF MESSAGE THROUGH ESTABLISHED CONNECTION TO CALLED PARTY, REQUESTING PARTY TO HOLD
2206
ESTABLISH SECOND OUTBOUND VOICE CONNECTION TO USER'S PHONE NUMBER
2209
BRIDGE FIRST AND SECOND ESTABLISHED CONNECTIONS
2212

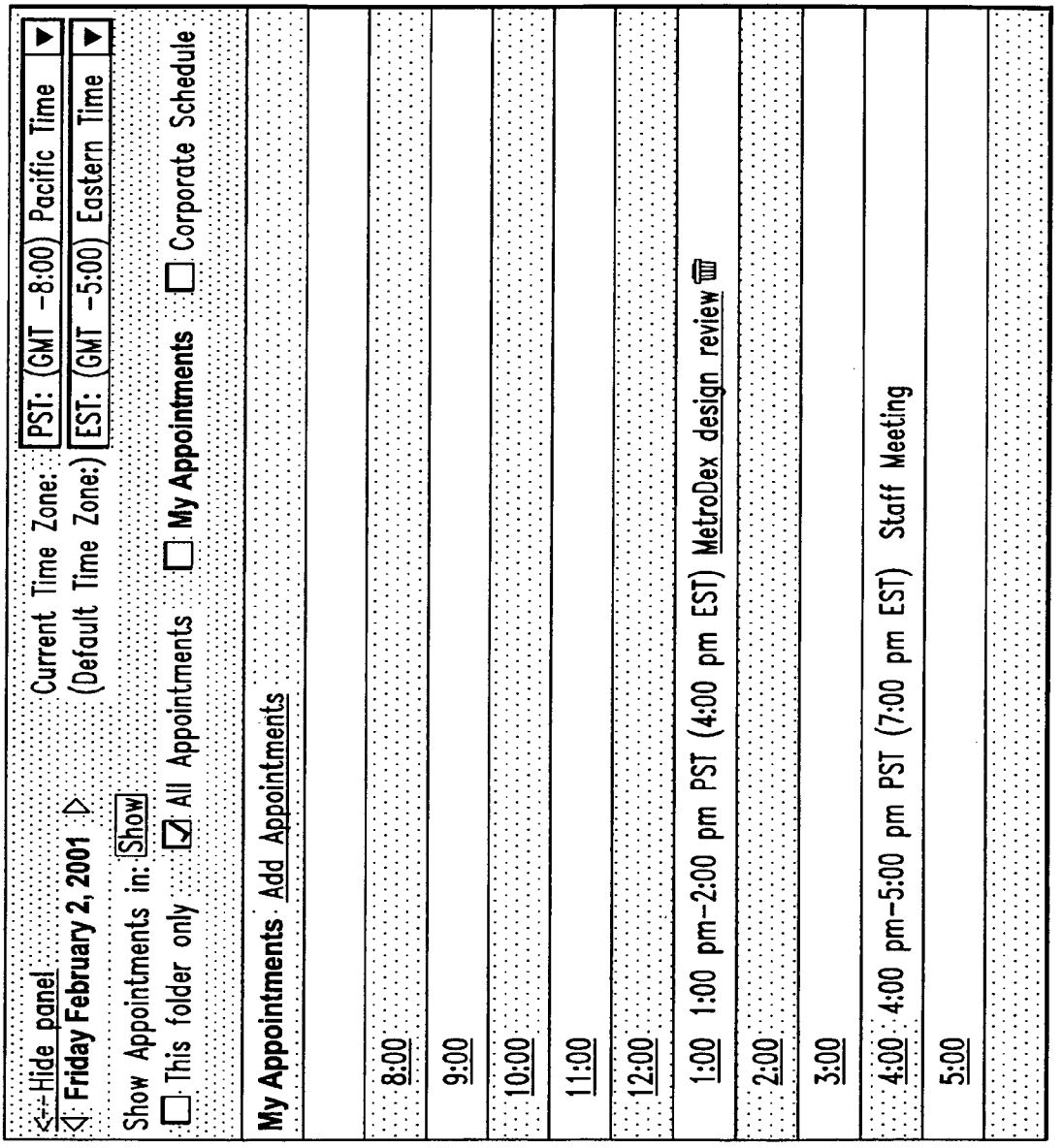

Hide panel
Current Time Zone:
PST: (GMT -8:00) Pacific Time
Friday February 2, 2001
(Default Time Zone:)
EST: (GMT -5:00) Eastern Time
Show Appointments in: Show
This folder only
All Appointments
My Appointments
Corporate Schedule
My Appointments
Add Appointments
8:00
9:00
10:00
11:00
12:00
1:00 1:00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

FIG. 17

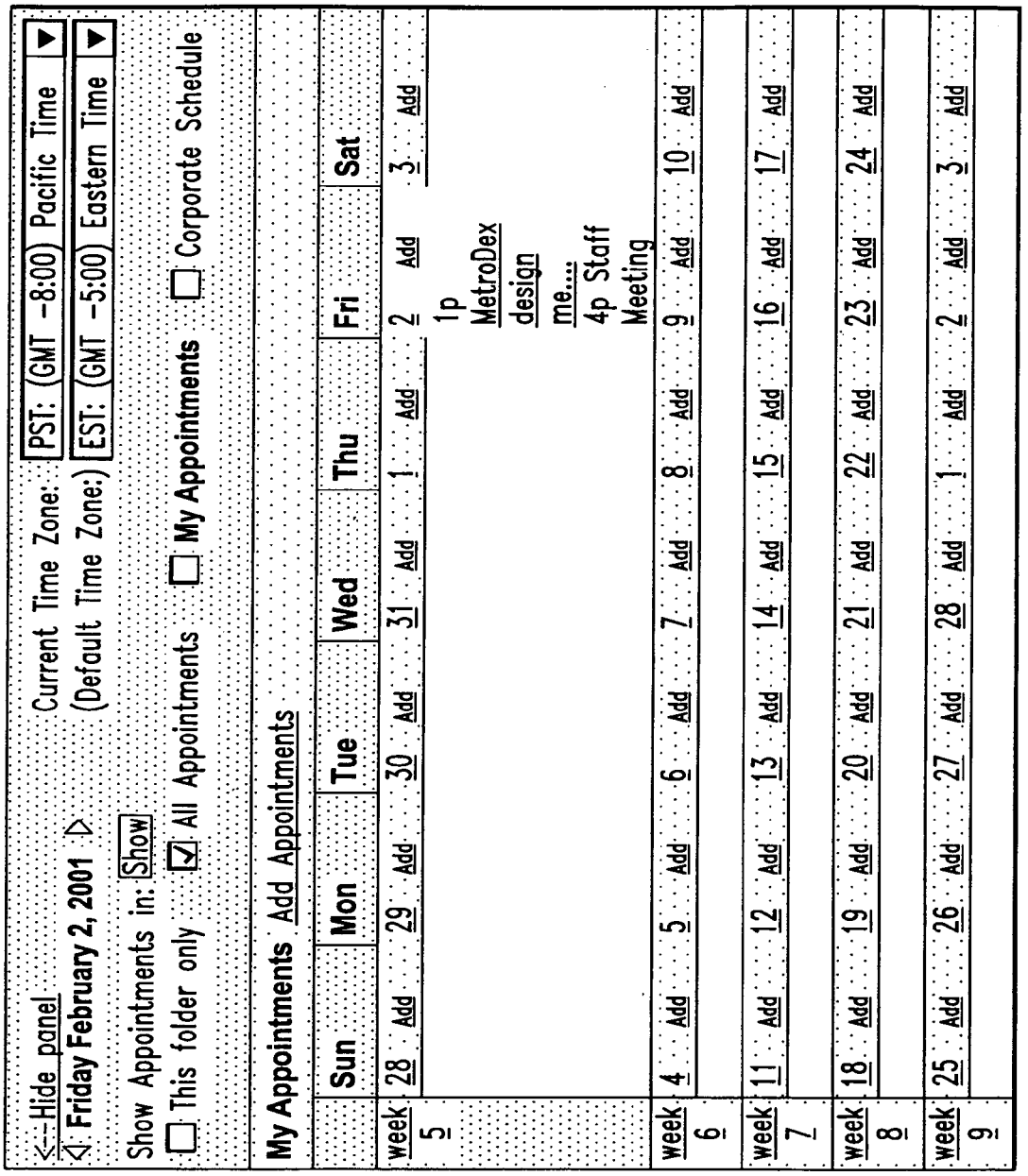

<<- Hide panel
Current Time Zone: PST: (GMT -8:00) Pacific Time
Friday February 2, 2001
(Default Time Zone:) EST: (GMT -5:00) Eastern Time
Show Appointments in: Show
This folder only
All Appointments
My Appointments
Corporate Schedule
My Appointments Add Appointments
Sun Mon Tue Wed Thu Fri Sat
week 5
28 Add 29 Add 30 Add 31 Add 1 Add 2 Add 3 Add
1p MetroDex design me....
4p Staff Meeting
week 6
4 Add 5 Add 6 Add 7 Add 8 Add 9 Add 10 Add
week 7
11 Add 12 Add 13 Add 14 Add 15 Add 16 Add 17 Add
week 8
18 Add 19 Add 20 Add 21 Add 22 Add 23 Add 24 Add
week 9
25 Add 26 Add 27 Add 28 Add 1 Add 2 Add 3 Add

FIG. 18

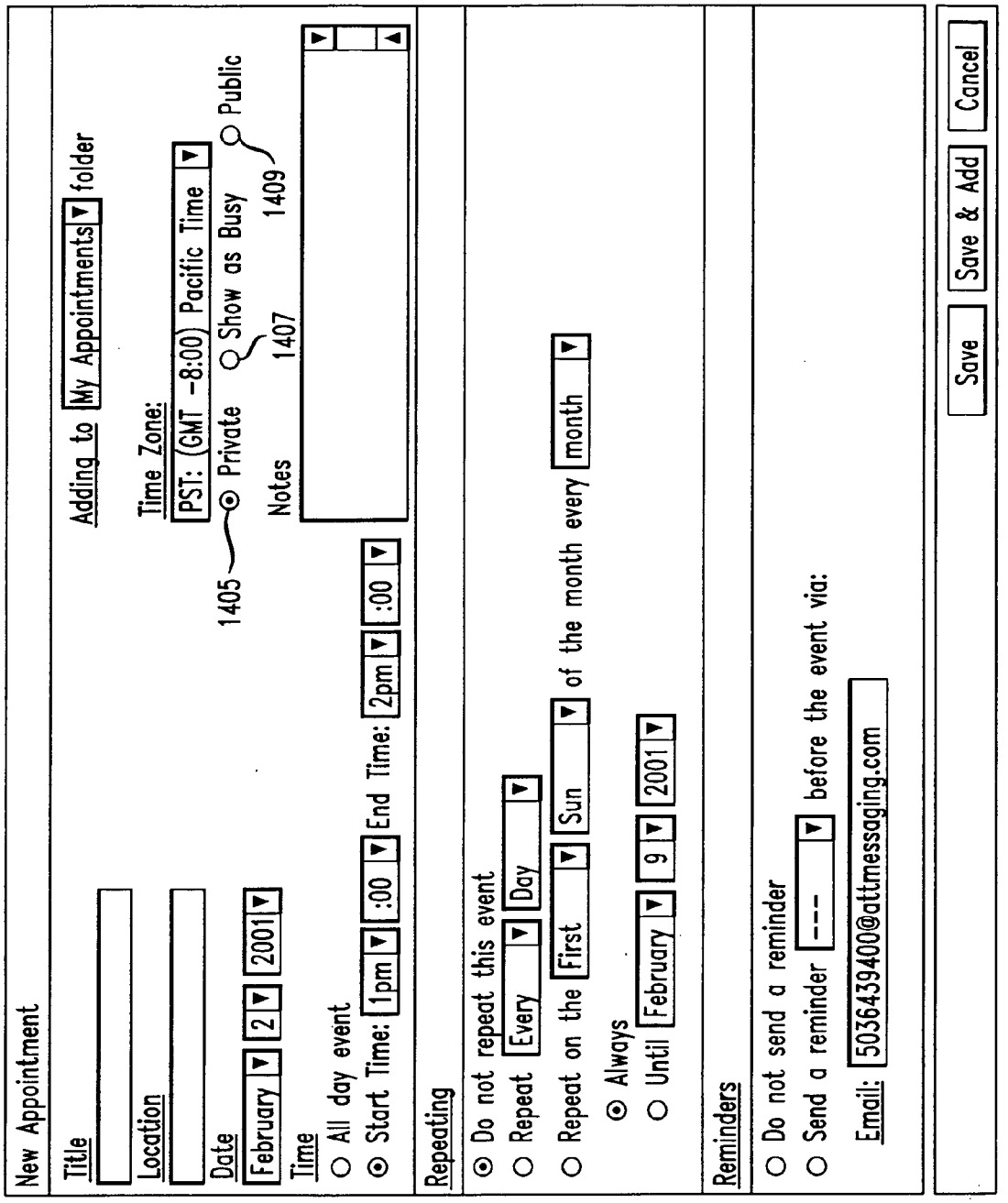

New Appointment
Title
Adding to My Appointments folder
Location
Time Zone:
PST: (GMT -8:00) Pacific Time
Date
1405
Private
Show as Busy
Public
1409
February 2 2001
Notes
1407
Time
All day event
Start Time: 1pm :00 End Time: 2pm :00
Repeating
Do not repeat this event
Repeat Every Day
Repeat on the First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

FIG. 19

FIG. 20

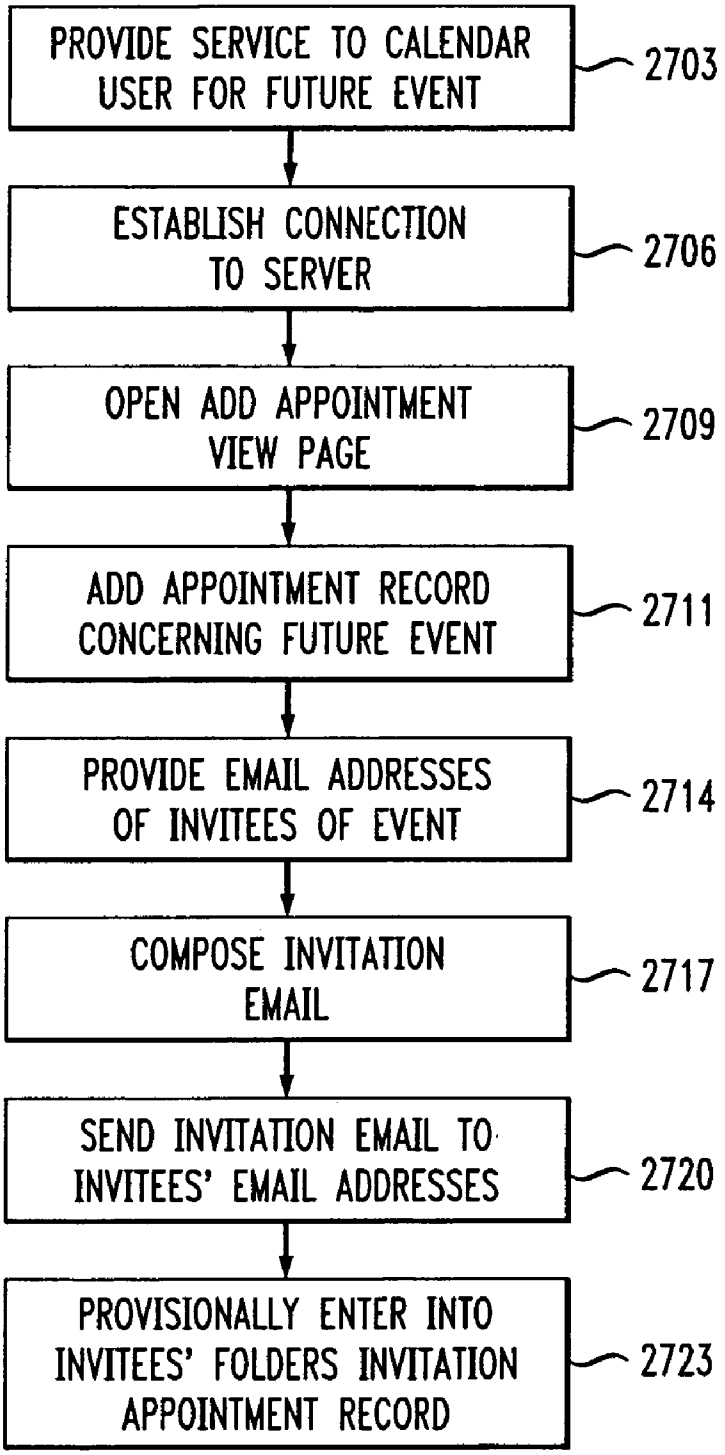

PROVIDE SERVICE TO CALENDAR USER FOR FUTURE EVENT
2703
ESTABLISH CONNECTION TO SERVER
2706
OPEN ADD APPOINTMENT VIEW PAGE
2709
ADD APPOINTMENT RECORD CONCERNING FUTURE EVENT
2711
PROVIDE EMAIL ADDRESSES OF INVITEES OF EVENT
2714
COMPOSE INVITATION EMAIL
2717
SEND INVITATION EMAIL TO INVITEES' EMAIL ADDRESSES
2720
PROVISIONALLY ENTER INTO INVITEES' FOLDERS INVITATION APPOINTMENT RECORD
2723

FIG. 21

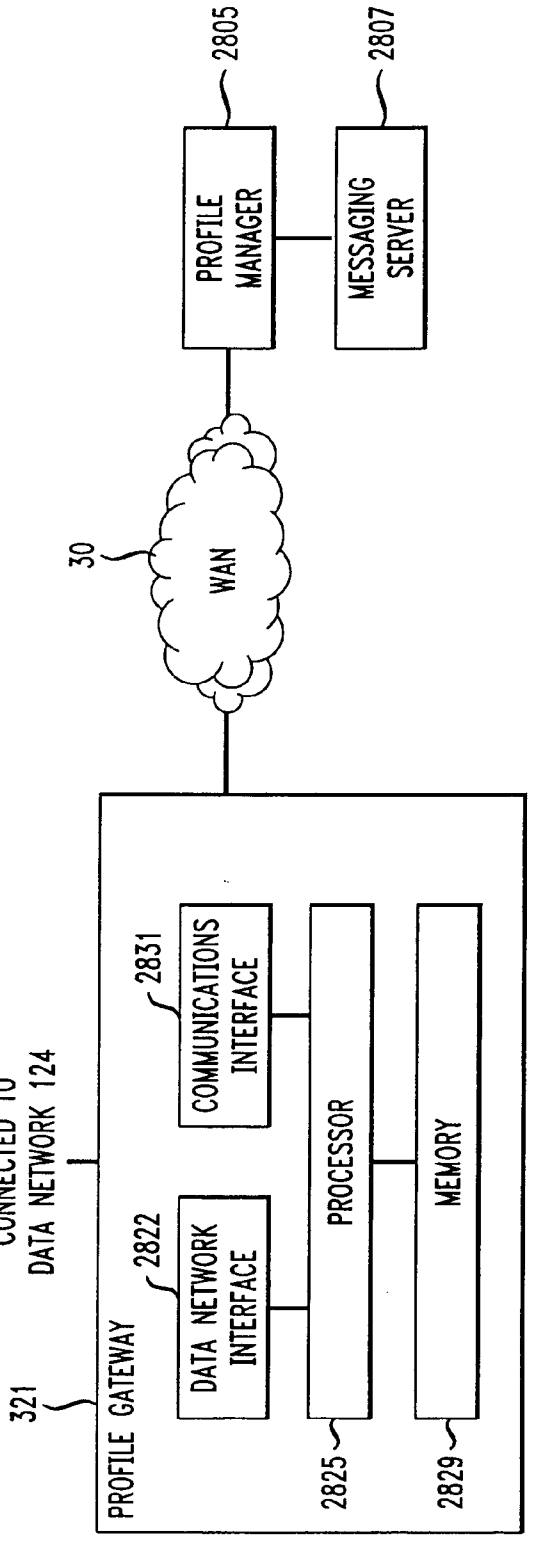


FIG. 22

2900

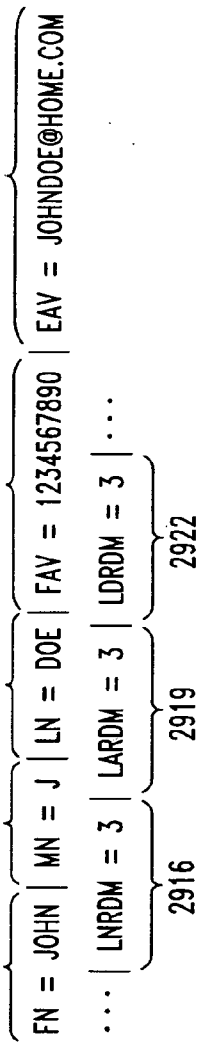


FIG. 23

```
<Profile>
:
:
        <PersonalInfo>
                <firstName>John<firstName>
                <middleName>J</middleName>
                <laseName>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>
:
:
<Profile>
```

TECHNIQUE FOR PROVIDING PERSONALIZED INFORMATION AND COMMUNICATIONS SERVICES

[0001] The present application 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 accessible 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. **2**B. 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 information 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 prerecorded 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 cuing 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 declina-

tion 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 originating 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.

[0087] Direct Connect Feature

[0088] 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.

[0089] 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**.

[0090] 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.

[0091] 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.

[**0092**] Calendaring Feature

[**0093**] 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.

[**0094**] 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**.

[**0095**] 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.

[**0096**] 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.

[**0097**] 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.

[**0098**] 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.

[**0099**] **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.

[**0100**] 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.

[**0101**] 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.

[**0102**] 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.

[**0103**] 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.

[**0104**] 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 information 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.

[**0105**] 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.

[**0106**] User Profile

[**0107**] 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.

[**0108**] 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.

[0109] 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**.

[0110] 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 infomation/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 nonvolatile memories. When a particular profile in gateway **321** is updated at manager **2805**, the latter notifies gateway **321** that the particular profile is expired.

[0111] 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.

[0112] 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.

[0113] 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**.

[0114] 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.

[0115] 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.

[0116] 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.

[0117] 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.

[**0118**] 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**.

[**0119**] 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.

[**0120**] 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.

[**0121**] 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.

[**0122**] 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.

[**0123**] 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 (massaging servers) experiencing a lesser load.

[**0124**] 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 TeleConcierge® 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.

[0125] 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.

1-18 (cancelled).

19. A directory system comprising:

an interface for locating contact information concerning a party in a directory;

a processor for verifying whether the contact information is valid, and generating a selectable option of initiating a communication connection with the party based on the contact information when the contact information is verified to be valid; and

a device for selecting the option to initiate the communication connection.

20. The system of claim 19 wherein the contact information includes a telephone number of the party.

21. The system of claim 20 wherein the communication connection includes a voice connection.

22. The system of claim 21 wherein the voice connection includes a voice over Internet protocol (VoIP) connection.

23. The system of claim 19 wherein the interface includes a graphic user interface (GUI), and the selectable option includes an icon.

24. The system of claim 19 comprising a personal computer (PC).

25. The system of claim 24 wherein the device includes a mouse device connected to the PC.

26-96 (cancelled).

97. A method for use in a directory system comprising:

locating contact information concerning a party in a directory;

verifying whether the contact information is valid;

generating a selectable option of initiating a communication connection with the party based on the contact information when the contact information is verified to be valid; and

selecting the option to initiate the communication connection.

98. The method of claim 97 wherein the contact information includes a telephone number of the party.

99. The method of claim 97 wherein the communication connection includes a voice connection.

100. The method of claim 99 wherein the voice connection includes a VoIP connection.

101. The method of claim 97 wherein the selectable option includes an icon.

102-153 (cancelled).

* * * * *