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[54] UNIVERSAL DIRECTORY SERVICE

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[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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[58] Field of Search 340/825.34; 348/17;
379/89, 201, 67, 88, 112, 114, 207, 308,
93, 266; 707/101, 200, 10, 102; 395/200.57,
187.01; 455/414

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[57] ABSTRACT

A universal directory service (UDS) provides the communication addresses of individuals associated with numerous different institutions, and can be accessed via more than one communication channel. A UDS server communicates with one or more data sources to provide directory information to a user. The UDS also provides supplemental information such as company name, logo, and specialty. The UDS can be accessed via numerous communication channels including the internet, on-line service providers, wireless devices, modem, dedicated access channels, voice access via an attendant, and voice access via a speech recognition and synthesis system.

34 Claims, 2 Drawing Sheets

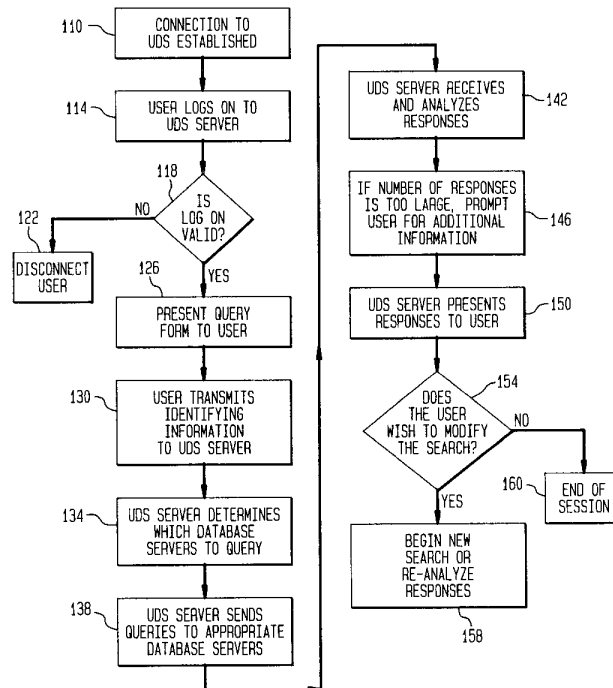


FIG. 1

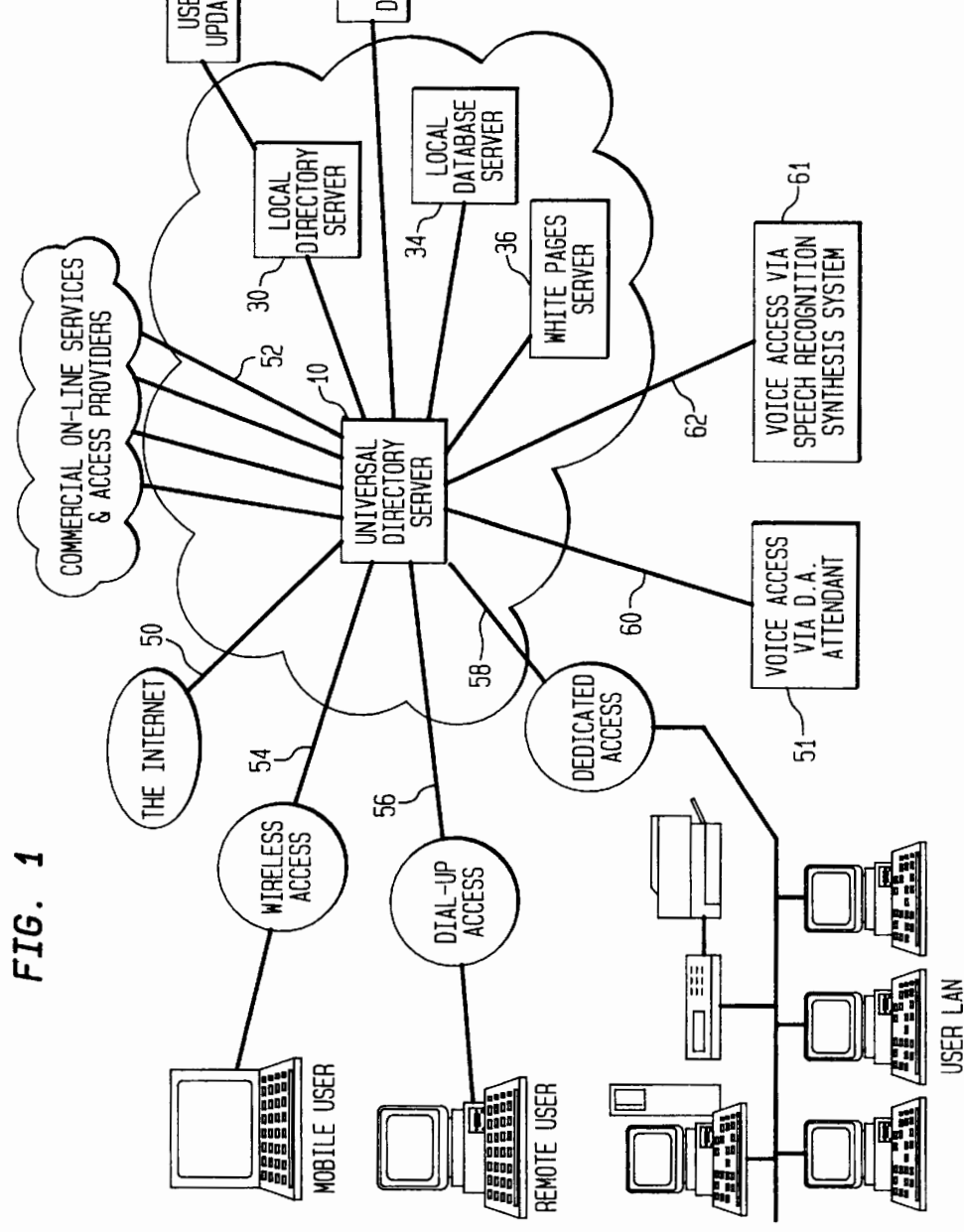
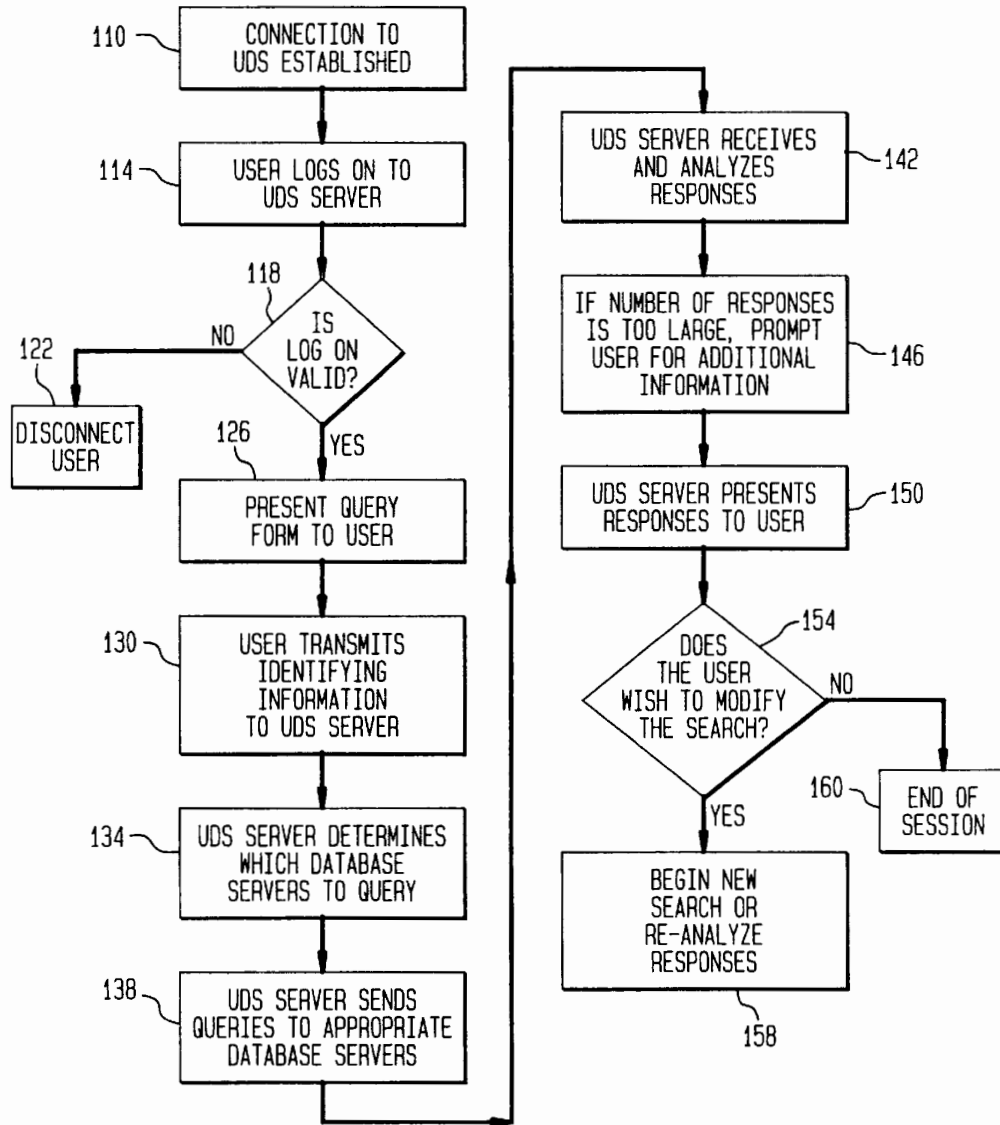


FIG. 2



UNIVERSAL DIRECTORY SERVICE**BACKGROUND OF THE INVENTION**

This invention relates to directory services. More particularly, this invention relates to a directory service which provides the communication addresses of individuals associated with numerous different institutions, and which can be accessed via more than one communication channel.

Due to the rapid growth in on-line and wireless technology, many individuals today (especially white-collar professionals) can be reached at numerous communications addresses. An individual's communication addresses may include a business telephone number, a home telephone number, a fax number, a cellular telephone number, a pager number, a personal reach service number, an e-mail address, a home page URL, a personal communications service (PCS) number, and a secretary/reach telephone number.

Obtaining this information for a particular individual can be difficult and time consuming. Often, several sources must be consulted before the desired information is tracked down, forcing one to make repeated attempts to locate the information. This can be time consuming and potentially costly, especially if the person is far away or in another country. Sometimes the information appears on business cards, but one often does not have the necessary business card at-hand when attempting to reach a person. Furthermore, the number of ways to reach someone has become so large that business cards have become cumbersome, awkward, unattractive, and confusing.

Currently, there is no centralized directory service which provides a person's numerous communications addresses. Furthermore, there is no centralized directory service which provides all of the communication addresses of individuals associated with different companies. The list of phone numbers contained in local "white pages" directories is typically limited to home and front-desk business numbers. Some corporations and universities maintain on-line directories which are accessible via the internet. However, these directories provide limited information such as a primary telephone number and e-mail address. Some companies, such as AT&T, maintain internal directories which can only be accessed by employees. AT&T's internal directory provides the telephone number, FAX number, e-mail address, and mailing address of certain individuals associated with AT&T, among other information such as company organizational information and the individual's work location and room number.

Looking for the communication addresses of individuals associated with different companies using on-line directories maintained by corporations and other institutions can be time consuming for several reasons. First, one has to determine the e-mail address of the particular institution where the desired information resides. Second, such directories may not have the particular communication address one is looking for. Third, one is required to access a separate on-line directory for each company, which can be tedious and time consuming when searching for the numbers of several individuals employed at different companies.

In view of these and other drawbacks of current directory services, it is an object of this invention to provide a directory service that enables a user to obtain from a centralized location the communication addresses of individuals from numerous different institutions.

It is a more particular object of this invention to provide a directory service which provides all of the communication addresses of an individual in a centralized location.

It is a still more particular object of this invention to provide a directory service which provides supplemental information in addition to an individual's communications addresses.

It is a further object of this invention to provide a directory which can be accessed via numerous communication channels.

SUMMARY OF THE INVENTION

These and other objects of the invention are accomplished in accordance with the principles of the invention by providing a universal directory service ("UDS") server which communicates with one or more database servers containing directory information relating to individuals from various different companies. In a preferred embodiment, the UDS server communicates with (1) a local directory server containing directory information relating to the UDS provider and additional hosted companies, (2) on-line directory servers maintained by corporations from which the provider has received proper permission to access, (3) a local database server which contains directory information gathered by the provider and third parties, and (4) a white pages directory server which contains directory information relating to private individuals.

The UDS server can be accessed via the internet, on-line service providers, wireless communication channels, dial-up communication channels, dedicated communication channels, telephone connections to attendants, and telephone connections to a voice recognition and synthesis system.

In addition to the numerous communication addresses of an individual, the UDS server also provides supplemental information such as the type of business the individual or company is engaged in, specialties or particular accomplishments, business hours, prices, organizational charts, responsibilities of the individual within the company, and maps logos, trademarks, and other graphical images.

This invention provides a convenient, inexpensive, and quick way for a user to obtain the communication addresses of someone with whom they wish to communicate. It eliminates the need to make repeated telephone calls to obtain a communications address, and the need to maintain printed directories. Furthermore, by maintaining current communication addresses on the UDS, one can avoid the time and expense of having to reprint business cards whenever one's company title, business address, or communication address changes. This invention may also facilitate a return to the time when business cards contained only a person's name and company since all of a person's communications addresses are available through the universal directory.

Further features of the invention, its nature and various advantages will be more apparent from the accompanying drawing and the following detailed description of the preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a simplified block diagram of preferred apparatus for implementing a directory service in accordance with this invention.

FIG. 2 illustrates a preferred sequence of steps for operating the apparatus of FIG. 1 in accordance with this invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

This invention can be used to provide the communication addresses and supplemental information of any entity that

desires to be listed on the universal directory. Such entities include, but are not limited to, corporations, universities, colleges, non-profit organizations, government agencies, partnerships, individuals, and the like. Institutions and corporations are referred to for purposes of illustration throughout this text.

In a preferred embodiment of this invention shown in FIG. 1, UDS server 10 communicates with local directory server 30, on-line corporate directory servers 32, local database server 34, and white pages server 36.

Local directory server 30 preferably is maintained by the UDS provider and may be located near UDS server 10. In addition to maintaining directory information relating to the UDS provider itself, local server 30 preferably contains directory information of hosted institutions which have contracted with the UDS provider to maintain their directories. Thus, local server 30 preferably contains the communication addresses of individuals associated with both the UDS provider and hosted institutions.

On-line corporate directory servers 32 are maintained by corporations or other institutions and can be accessed via the internet. UDS server 10 communicates with the on-line directory servers of those corporations and institutions that have given the universal directory service provider proper permission to do so. In this manner, the UDS server is able to access the directories of corporations and institutions other than those hosted by the UDS provider.

Database server 34 preferably contains information collected by the UDS provider. This information may be collected from customers who have given the provider permission to provide information relating to them, and from updates provided by UDS users (discussed further below). Such information may also be collected during the course of ordinary business. Server 34 preferably also includes information collected by third parties including subscription lists of professional and trade journals, member lists of professional societies, alumni lists, and other sources.

White pages server 36 preferably contains the communication addresses of private individuals. With the growing popularity of the internet, many individuals may wish to have their personal e-mail address(es), home page URL, and the like listed on the UDS. Such information, as well as the communication addresses of other individuals and institutions, preferably is maintained on white pages server 36. In an alternate embodiment (not shown), rather than providing a separate white pages server, the communications addresses of private individuals are stored on the local directory server 30. This eliminates the need to maintain a separate white pages directory.

In a preferred embodiment, those listed on the service can log-on to the service at any time in order to update their directory information. The information maintained on the UDS is thus kept current and complete.

In FIG. 1, local directory server 30, local database server 34, and white pages server 36 are shown as separate from the UDS server 10. However, in alternative embodiments (not shown), one or more of servers 30, 32, and 34 are maintained on the same hardware, and controlled by the same software, as the UDS server.

UDS server 10 can be accessed via numerous communication channels. A user having an internet account can access server 10 via internet communication channel 50. A user subscribing to an on-line access provider can access the UDS server via on-line communication channel 52. A user having a computer (such as a laptop) capable of wireless

communication can access the UDS server via wireless communication channel 54. A user having a computer with a modem can access the UDS server using dial-up communication channel 56.

A user may also access the UDS server via a dedicated communication channel. As shown in FIG. 1, the user is part of a local area network (LAN) having dedicated communication channel 58 which communicates with the UDS server.

A user may also access the UDS using a conventional telephone. A user can phone attendant 59 operating a computer which communicates with the UDS server via attendant communication channel 60. In this case, the user tells the attendant the information he or she is looking for and the attendant initiates a search on the UDS. The attendant then relays the search results to the user over the telephone.

The user can also access the UDS server by phoning voice recognition and synthesis system 61. The voice recognition system communicates with the UDS server via communication channel 62. The user is able to search for information on UDS by speaking appropriate commands to the voice recognition system. The voice recognition system initiates a search on the UDS and conveys the results to the user using a synthesized or pre-recorded voice. The voice recognition system can be implemented using voice recognition techniques known to those skilled in the art.

The UDS server is able to provide directory information about individuals associated with many different companies. This invention eliminates the need for one to consult several different sources in order to find a particular communication address. When looking for the communication addresses of several individuals associated with different companies, the user need consult only the UDS, rather than the directories of the separate companies.

The UDS preferably provides all of the communication addresses of those listed on the service. Such addresses include, but are not limited to, a business telephone number, a home telephone number, a fax number, a cellular telephone number, a pager number, a personal reach service number, an e-mail address, a home page URL, a personal communications service number, a secretary/reach telephone number, and other addresses. In this manner, a user can obtain any one of an individual's communication addresses from a convenient, centralized source.

The UDS preferably provides supplemental information in addition to communication addresses. Supplemental information provided by the UDS preferably includes, but is not limited to, the type of business the individual or company is engaged in (e.g., a "yellow pages" type of category), specialties or particular accomplishments of the individual or company, business hours, prices, organizational charts, responsibilities of the individual within the company, and maps, logos, trademarks, and other graphical images.

FIG. 2 shows a preferred sequence of steps for operating the universal directory service of FIG. 1 in accordance with this invention.

In step 110, user connection to the UDS server is established via any one of communication channels 50, 52, 54, 56, 58, and 62 discussed above. When a user accesses the UDS using attendant communication channel 60, the attendant carries out the steps described below using information provided by the user, with the exception that the attendant preferably does not log on separately for each user, but is continuously logged on the UDS server. The user in this case may be required to provide a password or personal identification number (PIN) for billing purposes.

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