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G06F 17/30

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G4A AUDB AUXX

(56) Documents Cited:
WO 2002/008925 A1 **US 6249810 B1**
http://www.live365.com/downloads/radio365-mac/index.live
http://www.atpm.com/7.12/itunes.shtml

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UK CL (Edition X) **G4A**
INT CL[7] **G06F**
Other: **ONLINE: EPODOC, WPI, INTERNET**

(54) Abstract Title: **Internet radio interface system**

(57) A internet radio interface system 10 for listing and accessing internet radio stations, which includes a client 12 and a server 14, interconnected by an application protocol 16. The client 12 includes a menu driven interface 22 that is dynamically generated based on information stored on the server's 14 database 24. This menu interface 22 is navigated using five functions. These functions are implemented using a keypad, or touch screen, or a dial, or by combination of these input types.

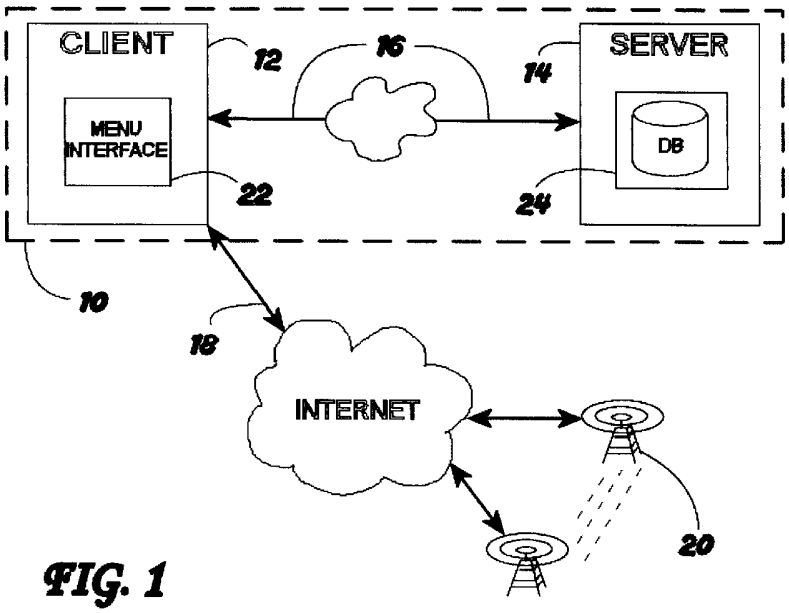

FIG. 1

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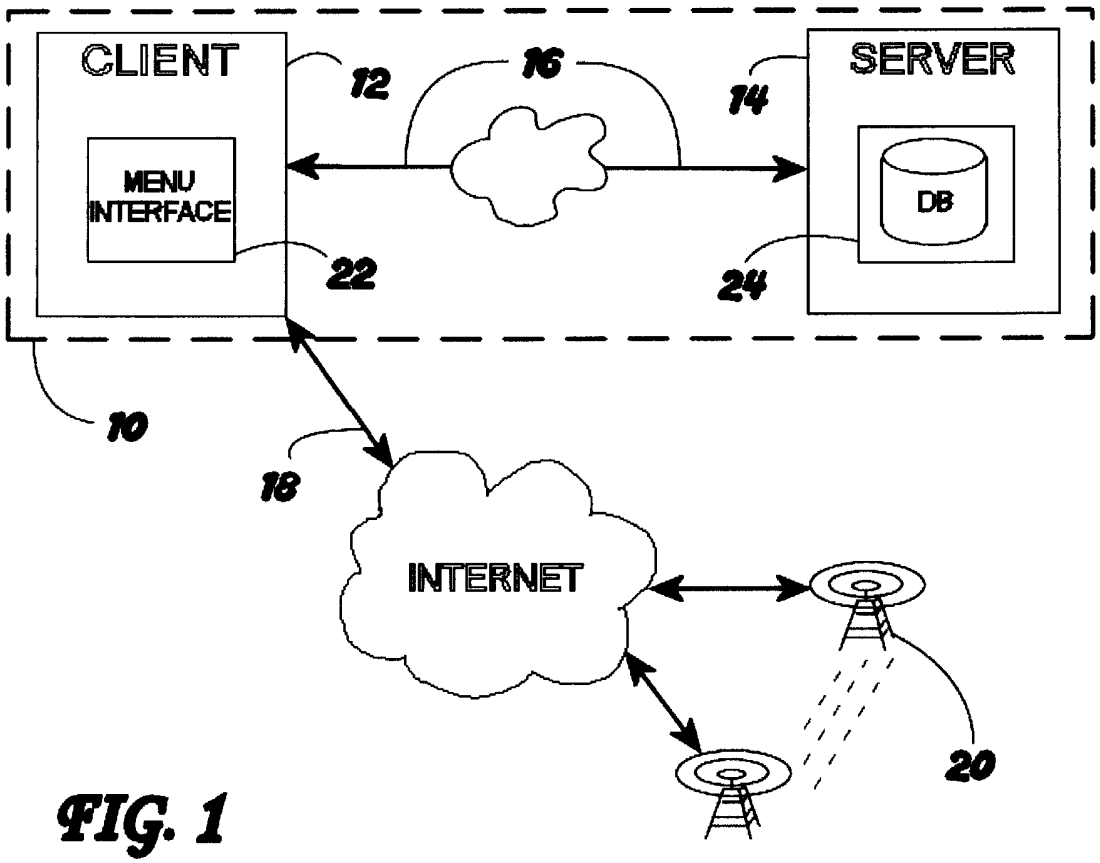
CLIENT
12
16
14
SERVER
MENU
INTERFACE
DB
22
24
10
18
INTERNET
20

FIG. 1

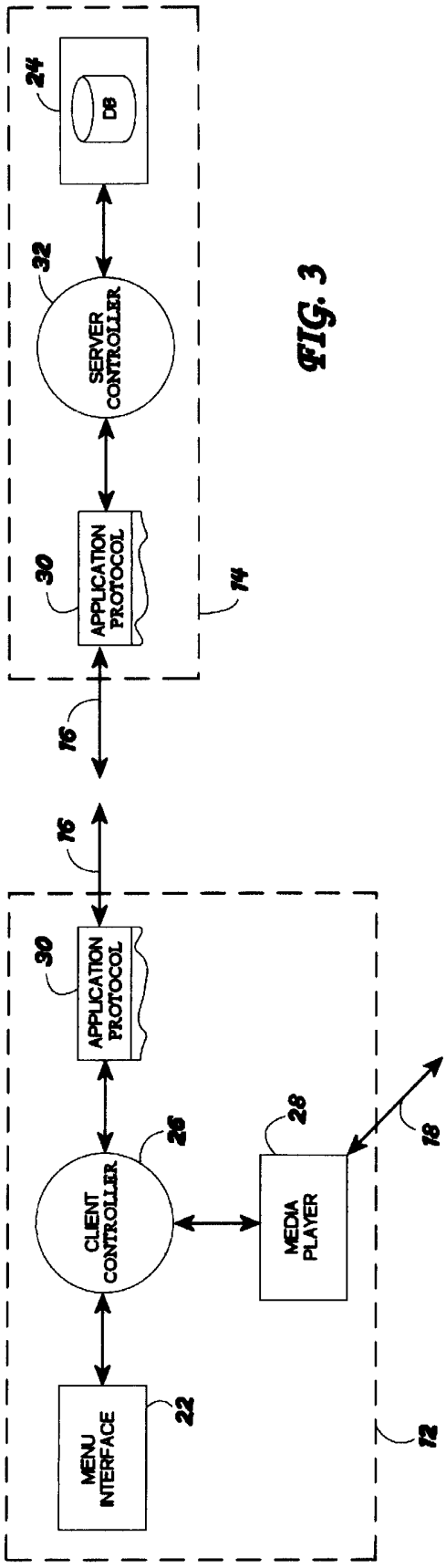
24
DB
32
SERVER CONTROLLER
30
APPLICATION PROTOCOL
14
16
16
30
APPLICATION PROTOCOL
26
CLIENT CONTROLLER
28
MEDIA PLAYER
18
22
MENU INTERFACE
12

FIG. 3

FIG. 2

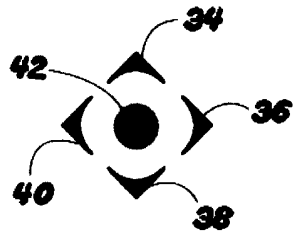
34
42
36
40
38

FIG. 4

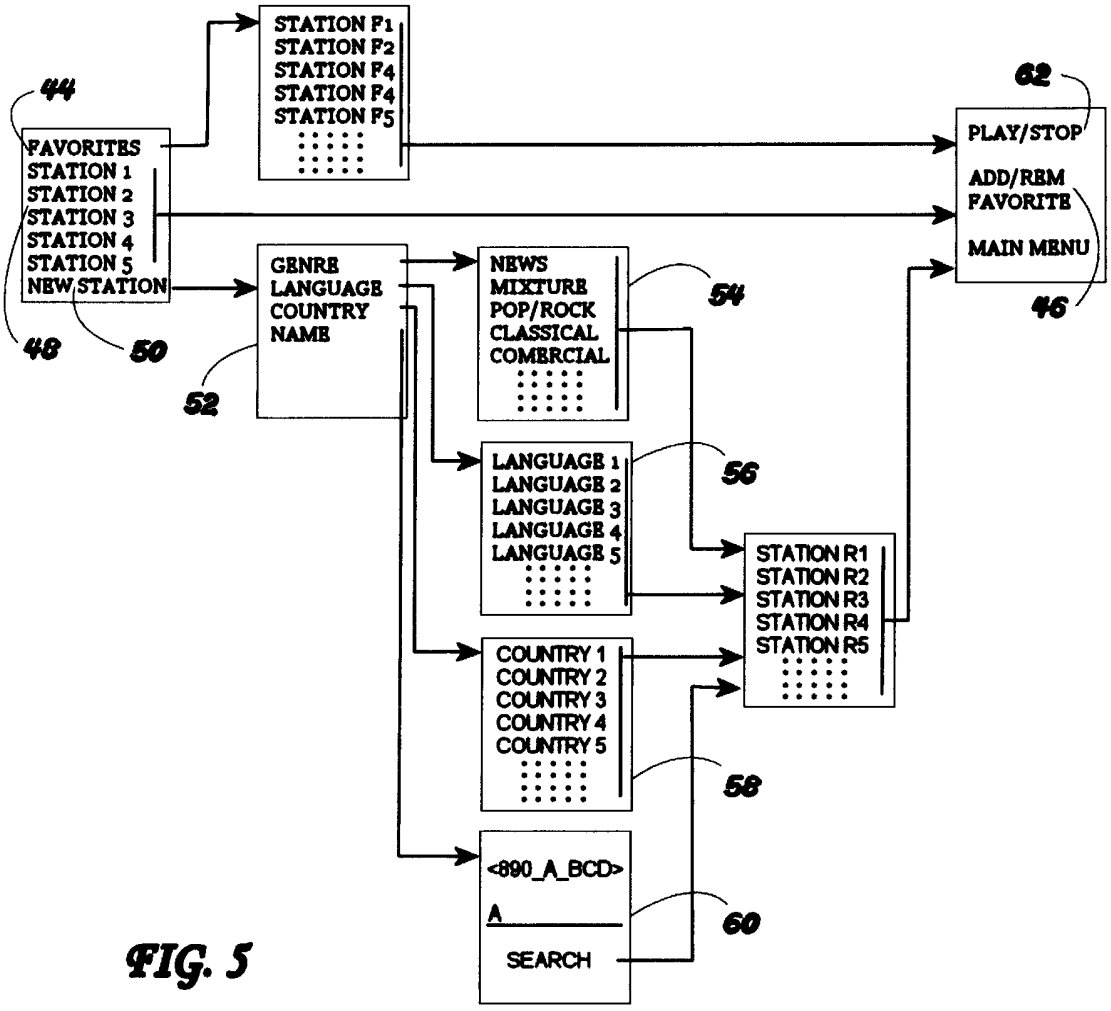
44
FAVORITES
STATION 1
STATION 2
STATION 3
STATION 4
STATION 5
NEW STATION
48
50
STATION F1
STATION F2
STATION F4
STATION F4
STATION F5
GENRE
LANGUAGE
COUNTRY
NAME
52
NEWS
MIXTURE
POP/ROCK
CLASSICAL
COMERCIAL
54
LANGUAGE 1
LANGUAGE 2
LANGUAGE 3
LANGUAGE 4
LANGUAGE 5
56
COUNTRY 1
COUNTRY 2
COUNTRY 3
COUNTRY 4
COUNTRY 5
58
<890_A_BCD>
A
SEARCH
60
STATION R1
STATION R2
STATION R3
STATION R4
STATION R5
62
PLAY/STOP
ADD/REM FAVORITE
MAIN MENU
46

FIG. 5

INTERNET RADIO INTERFACE SYSTEM

The invention generally relates to computer graphical user interfaces. More specifically, the present invention relates to methods and systems that allow the use of internet radio stations.

Through the internet many radio stations are freely accessible, which enables anyone to tune into these services. The problem arises that for inexperienced individuals, it is not trivial to access or even to know about the existence of such internet radio stations.

An object of this invention is to provide an intuitive way to list and play internet radio stations. Thus making it trivial, to know about the existence and to access these internet radio stations.

Accordingly, to acknowledge the existence and to access an internet radio station, this invention sets up a system of two core components, a client side and a server side component. These are interconnected by an application layer protocol. This protocol provides information, from a database on the server to the client. This information is then used for the dynamic generation of intuitive to use menus. Through five functions it is possible to navigate these menus. These menus include options of listing, searching, adding, maintaining favorites and provide a list of most recently accessed internet radio stations. Ultimately the system results in a straight-forward access to an internet radio station so that it can be heard.

A preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

FIGURE 1 shows an overview of the whole system with its interconnections;

FIGURE 2 is a block diagram of the client with its core components and interconnections;

FIGURE 3 is a block diagram of the server with its core components and interconnections;

FIGURE 4 shows an implementation of the five main functions for navigating the menu interface;

FIGURE 5 shows an implementation of an intuitive menu interface structure dynamically generated by the system;

As shown in Figure 1, the system 10 comprises of a client 12 and server 14 components. These two components are interconnected by a logical link 16. This logical link 16 may be implemented over the physical link 18. This physical link 18 interconnects the client 12 with the internet. This interconnection may be based on a private network or on a public network, or a combination of both. Through this physical link 18 the client 12 is able to connect and listen to an internet radio station 20.

Figure 2 shows that the client 12 is comprised of four main core components: A client controller 26 which is the engine that controls and interconnects the client's 12 components. A media player 28 which is the component responsible for connecting to and playing an internet radio station 20. A menu interface 22 which is dynamically generated based upon information received from the server's 14 database 24. And an application protocol 30 which comprises of retrieving information from the server 14 to generate the menu interface 22.

Figure 3 shows that the server 14 is comprised of three main core components: A server controller 32 which is the engine that controls and interconnects the server's 14 components. A database 24 which is where information such as, id, name, country, genre and stream URL, regarding internet radio stations is stored. And an application protocol 30 which comprises of supplying the client 14 with information from the database 24.

Figure 4 shows an implementation, using keypad buttons, for the menu interface 22 navigation. These buttons comprise of five functions: A function for selecting the previous option, this is expressed as selecting the option above, therefore pressing the upper button 34. A function for selecting the next option, this is expressed as selecting the option below, therefore pressing the lower button 38. A function for displaying the menu of a selected option, this is expressed as moving in the right direction, therefore pressing the right button 36. A function for leaving a menu into the previous one, this is expressed as moving in the left direction, therefore pressing the left button 40. And a function for executing a selected option, this is expressed as entering it, therefore pressing on the middle button 42. This implementation provides an easy an intuitive way to navigate through the menu interface 22.

Figure 5 shows an implementation of a menu interface 22. This menu is dynamically generated based on information that is received form the server's 14 database 24. These menus are navigated using the five buttons 34, 36, 38, 40, 42 described in Fig 4. The main options on such a menu interface 22 include; access to favorite internet radio stations 44; configuration of favorite radio stations 46; access to the most recently accessed internet radio stations 48; access to a new internet radio station 50, selecting it by genre 54, or language 56, or country 58, or name 60, or a combination of these 52; playing and stop playing a selected internet radio station 62.

The client 12 is designed such that when initialized it will eventually display the main menu. Preferably, if it's the first time the client has been initialized it will only output one option. This option is to add new internet radio station 50. When this option, to add new internet radio station 50, is selected, another menu will be displayed. This menu displays options that include the selection of new radio stations by genre or type, or language, or country, or name, or a combination of these. Navigating through menus which enable the selection of a new internet radio station, such as described in Figure 5, may result in the selection of an internet radio station. When internet radio station is selected a option for playing it becomes available. Optionally another options such as to add or remove selected internet radio station from the favorites menu 44, become available. These options allows the selected radio station to be classified, or declassified, as favorite thus providing it with a differentiated, or not, method of access. Resulting in a menu structure with features and options implemented as shown in Figure 5.

Preferably once an internet radio station 20 is played the recently accessed internet radios 48 list is updated. This list, of recently accessed internet radios stations 48, may be sorted by time of access or number of accesses, or a combination of both.

A main aspect of the invention is the fact that the server 14 comprises of a database 24 where updated information on internet radio stations is stored. This information which includes the id, status, names, genre, language, country and streams URLs of internet radio stations, is then transmitted to the client. This transmission is done through an application protocol 30 and via a logical link 16. This logical link 16 may be part of a private network, or a public network, or a combination of both. The client 12 in possession of the transmitted information is then able to dynamically generate menus, such as for searching and adding new internet radio stations. And ultimately using the media player 28 to connect and play an internet radio station 20.

Preferably the client 14 requests information from the server's 14 database 24 regarding the status on an internet radio stations before any attempt of playing an internet radio station. This may result in providing the user with a justification in case of any problem.

Another main aspect of the menu interface is that navigation is accomplished by five functions. These functions as described in Figure 4 are comprised of, selecting previous option 34, selecting next option 38, entering option's menu 36, returning from option's menu to the previous menu 40, and executing menu option 42. This key aspect furthers the simplicity of the system.

The media player 28 is fully transparent to the user using the client 12. This transparency is so that connecting, requesting, receiving and playing the internet radio stream is performed by a single function execution, such as pressing the middle button 42 in the play menu option. Similarly, requesting an end of stream, stop playing, and closing the connection to an internet radio station, is done by a single function execution, again by pressing the middle button 42. Such transparencies abstract the user from any complexity in the processes of playing and stop playing an internet radio station 20.

Optionally, in addition to the keypad, the five functions to navigate the menu interface 22 may be implemented using a touch screen or a dial, or a combination of all these input types.

Optionally the information transmitted over the application protocol 30 may be compressed, or encrypted, or a combination of both.

It will be evident to those skilled in the art that various modifications and changes may be made there-to without departing from the broader scope of the invention.

CLAIMS

1. An internet radio interface system including a client and a server, interconnected by an application protocol.

2. A system as claimed in Claim 1, wherein the said client includes main core components comprising of:

a client controller which controls and interconnects with the client's components; and

a menu interface which is capable of generating dynamic menus; and

a said application layer protocol in which information is transmitted and received to and from the said server; and

a media player which is capable of connecting to an internet radio station and playing it.

3. A system as claimed in Claim 1, wherein the said server includes main core components comprising of:

a server controller which controls and interconnects with the server's components; and

a database which stores information regarding internet radio stations; and

a said application layer protocol in which information is transmitted and received to and from the said client.

4. A system as claimed in Claim 1, wherein the said client and said server are interconnected by a said application protocol, being this said application protocol on top of a physical link, whereas this physical link may be part of a public or private network, or a combination of both.

5. A system as claimed in all preceding claims, wherein the said client's menu interface includes the means of:

searching internet radio stations, by genre, or language, or country, or name, or a combination of these properties; and

adding a new internet radio station; and

accessing and configuring favorite internet radio stations; and

accessing recently used internet radio stations.

6. A system as claimed in Claim 5, wherein the said client's controller requests information from the said server's database to dynamically generate the said menu interface.

7. A system as claimed in Claim 6, wherein the said client's menu interface is navigated using five functions consisting of, selecting next option, selecting previous option, entering selected option menu, returning to previous menu and executing selected option.

8. A system as claimed in Claim 7, wherein said five functions are implemented using a keypad, or touch screen, or dial, or using a combination of these inputs types.

9. A internet radio interface system substantially as herein above described and illustrated in the accompanying figures.

Application No:	GB0404662.9	**Examiner:**	Matthew Cope
Claims searched:	1-9	**Date of search:**	27 April 2005

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-9	http://www.live365.com/downloads/radio365-mac/index.live
X	1-9	http://www.atpm.com/7.12/itunes.shtml
X	1-9	WO02/08925 A1 ARRIO - Whole doc relevant
X	1-9	US6249810 B1 CHAINCAST - Whole doc relevant

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

G4A

Worldwide search of patent documents classified in the following areas of the IPC^{07}

G06F

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI, INTERNET