An interactive television program guide system is provided in which the program guide may provide the user with a selectable list of combination categories. Combination categories are composed of multiple simple categories such as sports, news, comedy, movies, children, etc. Program listings are supplied to the program guide. At least some of the program listings are associated with combination categories. A combination category build process may be used to assign combination categories to program listings. The user is able to use the selectable categories list to quickly identify programming of interest.

20 Claims, 13 Drawing Sheets
FIG. 1
SUPPLY PROGRAM LISTINGS DATA

ASSIGN SIMPLE PROGRAMMING CATEGORIES TO PROGRAM LISTING

RETRIEVE LIST OF SUPPORTED PROGRAMMING CATEGORIES

IS GROUP OF SIMPLE CATEGORIES ON LIST OF SUPPORTED COMBINATION CATEGORIES?

NO

DISPLAY SELECTABLE LIST OF PROGRAMMING CATEGORIES

SEARCH PROGRAM LISTINGS DATA FOR PROGRAMMING MATCHING SELECTED CATEGORY

DISPLAY SEARCH RESULTS

ASSIGN COMBINATION CATEGORY TO PROGRAM LISTING

FIG. 2
FIG. 3(a)

PROGRAM LISTING
TITLE
THE NATURAL
CATEGORIES
DRAMA
SPORTS
BASEBALL

FIG. 3(c)

PROGRAM LISTING
TITLE
THE NATURAL
CATEGORIES
DRAMA
SPORTS
BASEBALL

FIG. 3(b)

SUPPORTED
COMBINATION
CATEGORIES
SPORTS - BASEBALL
SPORTS - COMEDY
SPORTS - DRAMA
SPORTS - FOOTBALL
SPORTS - SERIES...
FIG. 4

CATEGORIES

SPORTS

SPORTS - DRAMA

SPORTS - COMEDY

SPORTS - BASEBALL

SPORTS - FOOTBALL

SPORTS - SERIES

PRESS [SELECT] TO CHOOSE A CATEGORY
DISPLAY SELECTABLE LIST OF PROGRAMMING CATEGORIES

USER SELCETS CATEGORY

REDISPLAY LIST SUCH THAT SELECTED CATEGORY IS MOVED TO THE TOP OF LIST

FIG. 5(a)

FIG. 5(b)

CATEGORIES

△

COMEDY

NEWS

SPORTS

CHILDREN

DRAMA

CONCERTS

△
FIG. 5(c)
DISPLAY SELECTABLE LIST OF PROGRAMMING CATEGORIES

USER SELECTS CATEGORY

MONITOR FREQUENCY OF SELECTION OF EACH CATEGORY BY THE USER

REDISPLAY LIST SUCH THAT CATEGORIES ARE DISPLAYED ACCORDING TO FREQUENCY OF SELECTION

FIG. 6

DISPLAY SELECTABLE LIST OF PROGRAMMING CATEGORIES

USER SELECTS CATEGORY

PROVIDE OPTION OF DESIGNATING AN ORDER OF PLACEMENT ON LIST FOR THE SELECTED CATEGORY

REDISPLAY LIST SUCH THAT SELECTED PROGRAMMING CATEGORY IS DISPLAYED IN THE ORDER DESIGNATED

FIG. 7(a)
DISPLAY SELECTABLE LIST OF PROGRAMMING CATEGORIES

USER SELECTS CATEGORY

REDISPLAY LIST SUCH THAT SELECTED PROGRAMMING CATEGORY IS DELETED FROM LIST

RETAIN DELETED PROGRAMMING CATEGORY IN MEMORY

PROVIDE OPTION OF REDISPLAYING LIST SUCH THAT SELECTED CATEGORY IS RESTORED TO LIST

DISPLAY RESTORED LIST

FIG. 8
Fig. 11
USER TAKES ACTION TO SELECT A PROGRAM LISTING

DETAILED INFORMATION ON THE SELECTED PROGRAM LISTING

APPROPRIATE USER-SELECTABLE OPTIONS

FIG. 12
PROGRAM GUIDE SYSTEM WITH
COMBINATION CATEGORY SEARCH

This application is a continuation of U.S. patent appli-
cation Ser. No. 12/551,363, filed Aug. 31, 2009, which is a
continuation of U.S. patent application Ser. No. 11/254,554,
filed Oct. 19, 2005, now U.S. Pat. No. 7,603,685, which is a
continuation of U.S. patent application Ser. No. 09/410,332,
filed Oct. 1, 1999, now abandoned, which claims the benefit
of U.S. provisional application Ser. No. 60/106,855, filed
Nov. 3, 1998, which are incorporated by reference herein in
their entireties.

BACKGROUND OF THE INVENTION

This invention relates to interactive television program
guides, and more particularly, to television program guides
that provide programming categories or themes that are combi-
inations of individual categories, and in which users may
select particular subsets of programming by category or
theme.

Cable, satellites, and broadcast television systems provide
users with a large number of television channels. Users have
traditionally consulted printed television program schedules
to determine the programs being broadcast at a particular
time. More recently, interactive electronic television program
guides have been developed that allow television program
information to be displayed on a user’s television.

Interactive program guides are typically implemented, on
set-top boxes. Such program guides allow users to view tele-
vision program listings in different display formats. For
example, a user may instruct the program guide to display a
grid or table of program listings organized in a channel-
ordered or a time-ordered list. Users may also search and sort
program listings by category (e.g., movies, sports, etc.) or by
title (i.e., alphabetically).

Because there are so many television channels available,
particularly with cable and satellite television systems, tele-
vision program guides have been developed that allow users
to select favorite channels. During tuning, the program guide
may allow the user to tune to favorite channels only, while
skipping all other channels. Alternatively, a display screen
containing program listings may be organized in a way that
reflects which channels are favorites. For example, a table of
program listings may contain only favorite channels and all
other channels may be suppressed from view. According to
another approach, program listings for all channels are
displayed. However, when the user scans through the table of
program listings, the cursor control, which highlights a pro-
gram and allows the user to make a selection, will advance
among the favorite channels and skip over the other channels.

Another approach for assisting the user in selecting among
the television channels available is to allow users to search for
program listings in categories (sometimes referred to as
genres or themes). With this approach the user cannot narrow
the search beyond, that of the standard categories (e.g., sports,
comedy, etc.).

Other program guides allow the user to perform searches
based on multiple categories, but this requires that the user
select each category and then initiate the search, which may
be a cumbersome process.

Some program guides address this abundance of informa-
tion by having hierarchical categories. First, the user is pre-
sented with a relatively short list of higher-level or more
general categories. Typical higher-level categories include
movies, sports, or series programs. After the user, selects a
higher-level category, the program guide displays a list of
subcategories, such as comedy, action, or baseball, from
which the user may select one or more subcategories. This
process may continue through several levels of subcategori-
ization. While the list of categories at each level may be
relatively short and easier to view and comprehend, a draw-
back is that the user may not readily appreciate which high-
level category will lead to a desired specific category at a
lower level. The user may be required to enter multiple key-
strokes to find the desired category.

After tediously setting up a multiple category search or
navigating a complex hierarchical menu, the user may eventu-
ally locate a desired category only to discover that there are
no program listings for that category. Moreover, the user must
repeat this process whenever searching for program listings
involving a new category.

What is needed is a more sophisticated way in which a
program guide can handle programming categories.

It is therefore an object of the present invention to provide
an interactive television program guide system in which more
specific programming categories may be generated.

It is also an object of the invention to provide program
listings that may be displayed and searched according to
programming categories that are more reflective of a user’s
interests.

SUMMARY OF THE INVENTION

These and other objects of the invention are accomplished
in accordance with the principles of the present invention by
providing an interactive television program guide system in
which an interactive television program guide is at least par-
tially implemented on user equipment. The program guide
may be partially implemented at a server located, for
example, at a television distribution facility and partially
implemented on user television equipment or on user per-
sonal computer equipment.

The program guide displays program listings for a user on
the user equipment. Each program listing may be associated
with a plurality of programming categories. For example, a
program listing may be associated with three categories. The
categories associated with the program listing are indepen-
dent in that the user need only perform a single-level search
on any of the three categories to retrieve the associated pro-
gram listing. The categories may be simple categories or
combination categories. Combination categories are com-
posed of multiple simple categories. Examples of simple
categories are movies, comedy, sports and series. Examples
of combination categories are comedy-movies, comedy-seri-
es, and sports-baseball. Not all combinations of categories
need to be supported. For example, the program guide may
support the combination category horror-movies but not hor-
r-series. The combination categories that are supported are
preferably those that allow users to readily access desirable
groups of program listings.

The program guide may display the categories that are
available in a list from which a user may select a desired
category. The list may include both simple categories and
combination categories. The simple categories and the com-
bination categories may be intermixed. When the user selects
a given category from the list, the program guide displays all
program listings for that category.

The categories in the list may be displayed in a predefined
initial order. For example, the categories may be listed in
alphabetical order. All categories of a particular type may be
grouped together. For example, all movie categories may be
grouped together or all sports categories may be grouped
together.
The program guide may allow the user to modify the list of categories to make it easier to locate the user's favorite categories. For example, each time a category is accessed it may be moved, to the top of the list. Categories may also be moved to the top of the list based on how often they are accessed. The program guide may allow the user to change the order of the categories in the list directly by specifying a category to move to the top or bottom of the list or by otherwise rearranging the order of the categories. The program guide may also allow the user to remove a category from the list. The program guide may provide the user with an opportunity to add removed categories back to the list at a later time.

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

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagram of an interactive television program guide system.

FIG. 2 is a flow chart of steps involved in assigning categories to program listings, allowing the user to select a given category, and display a corresponding set of matching program listings in accordance with the present invention.

FIG. 3(a) is illustrative program listings data in accordance with the present invention.

FIG. 3(b) is a partial listing of exemplary combination categories supported by the program guide in accordance with the present invention.

FIG. 3(c) is illustrative program listings data similar to that shown in FIG. 3(a), but modified following a combination category build process in accordance with the present invention.

FIG. 4 is a diagram of a program guide screen for displaying and selecting categories in accordance with the present invention.

FIG. 5(a) is a flow chart of steps involved in providing options for selecting display configurations in accordance with the present invention.

FIG. 5(b) is an illustrative interactive program guide display screen for displaying and selecting categories in accordance with the present invention.

FIG. 5(c) is an illustrative interactive program guide display screen similar to FIG. 5(b), illustrating the redisplay of the categories after the selection of FIG. 5(b) in accordance with the present invention.

FIG. 6 is a flow chart of steps involved in providing options for selecting display configurations in accordance with an alternative embodiment of the present invention.

FIG. 7(a) is an illustrative interactive program guide display screen for displaying and selecting categories in accordance with the present invention.

FIG. 7(b) is a flow chart of steps involved in providing options for selecting display configurations in accordance with a third alternative embodiment of the present invention.

FIG. 9 is an illustrative program display screen containing program listings that match a selected category in accordance with the present invention.

FIG. 10 is an illustrative program guide display screen in which the program listings that match a selected category have been distinctively displayed in accordance with the present invention.

FIG. 11 shows an illustrative program listings by category screen in accordance with the invention.

FIG. 12 shows an illustrative interactive program guide display screen for providing information and user-selectable options with respect to program listings, in accordance with the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An illustrative interactive television program guide system 10 in accordance with the present invention is shown in FIG. 1. Main facility 12 may contain a back office processor 14 for organizing data, such as television program guide listings data, as will be described in greater detail below. Main facility 12 may also contain a program guide database 16 for storing program guide information, pay-per-view ordering information, television program promotional information, etc. Some of the information stored in database 16 may be from an external data source 18. Back office processor 14 is used to process the information stored in database 16.

Information from database 16 may be transmitted to multiple television distribution facilities such as television distribution facility 20 via communications links such as communications link 21. Only one television distribution facility is shown in FIG. 1 to avoid over-complicating the drawings. Each Link 21 may be a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, a combination of such links, or any other suitable communications path. If it is desired to transmit video signals over Link 21 in addition to data signals, a relatively high bandwidth link such as a satellite link is generally preferable to a relatively low bandwidth link such as a telephone line.

Television distribution facility 20 is a facility for distributing television signals to users. Television distribution facility 20 may be, for example, a cable system headend, a broadcast distribution facility, a satellite television distribution facility, or any other suitable distribution facility.

The program guide information transmitted by main facility 12 to television distribution facility 20 includes television program listings data for current and future television programs. The television program listings data for each program preferably includes numerous program characteristics, e.g., the title of the program, the channel for the program, a scheduled broadcast time (start time) and an ending time (or duration). Other typical program characteristics include ratings, critics' ratings, descriptions, categories (sports, movies, comedy, children, etc.), actors, etc. Transmitted program information may also include advertising information and pay program data such as pricing information for individual programs and subscription channels, time windows for ordering programs and channels, telephone numbers for placing orders that cannot be impulse ordered, etc.

Television distribution facility 20 distributes television programming and program guide information to the user television equipment 26 or the personal computer (PC) equipment 28 of multiple users via communications paths 30 and 32, respectively. PC equipment 28 is based on a central processing unit (CPU) 44 and may have a monitor 46 and keyboard 48. User television equipment 26 may be based on a set-top box 34 and may have optional videocassette recorder 38, or any other suitable recording device, such as a digital storage device (e.g., recordable DVD or hard disk) or a server located at a central location, a television 40, and remote control 42.

Various techniques may be used to distribute television programming and program guide information. For example,
television programming may be distributed over analog television channels and program guide data may be distributed over an out-of-band channel on paths 30. Data distribution may also involve using one or more digital channels on paths 30 and 32. Such digital channels may also be used for distributing advanced television programming and other information. Multiple television and audio channels (analog, digital, or both analog and digital) may be provided to set-top boxes 34 and PC equipment 28 via communications paths 30 and 32. In user television equipment 26, television programs may be tuned to user’s set-top box 34 and may be displayed by television 40. In user PC equipment 28, a video board or other such component may be used to tune to a television program, and the television program may be displayed on monitor 46. Program listings and other information may be distributed via communications paths 32 to PC equipment 28, which may have a cable modem or other such communications device for receiving or transmitting data. In addition, program listings and other data may be distributed by one or more distribution facilities that are similar to but separate from television distribution facility 20. Such data may be transmitted over telephone lines or other such data network.

The program guide system may use a client-server architecture whether or not the system involves the use of the Internet. In a client-server arrangement, the program guide is partially implemented on a server and partially implemented on a client. The server may be located at, for example, television distribution facility 20. Processors in the user equipment, such as set-top box 34 or PC 44, may act as the client processors. Program guide data that are distributed to a client-server program guide at television distribution facility 20 may be stored in a database 24 at television distribution facility 20 that is maintained by server 22. For clarity, the present invention is described primarily in the context of an interactive television program guide that is implemented on user equipment using a set-top box 34 or CPU 44 that receives data from television distribution facility 20, rather than in the context of program guides that are implemented using an on-line program guide configuration, are implemented partially on a server and partially on user equipment, or are implemented using any other such arrangements.

Certain functions such as pay program purchasing may require set-top boxes 34 to transmit data to television distribution facility 20 over communications paths 30. If desired, such data may be transmitted over telephone lines or other separate communications paths. If functions such as these are provided using facilities separate from television distribution facility 20, some of the communications involving set-top boxes 34 may be made directly with the separate facilities.

User television equipment 26 has a receiver, which is typically a set-top box such as set-top box 34, but which may be other suitable television equipment into which circuitry similar to set-top box circuitry has been integrated. For example, user television equipment 26 may be based on an advanced television receiver such as a high definition television (HDTV) receiver. Program guide data may be distributed to set-top boxes 34 periodically or continuously and stored in database 36. In a client-server architecture, this entire database need not be maintained on the set-top box. For example, the program guide may maintain a database such as database 24 using a server such as server 22 located at television distribution facility 20 or at some other appropriate location or locations. Television distribution facility 20 may poll set-top boxes 34 periodically for certain information (e.g., pay program account information or information regarding programs that have been purchased and viewed using locally-generated authorization techniques).

Main facility 12 preferably contains a processor to handle information distribution tasks. Each set-top box 34 preferably contains a processor to handle tasks associated with implementing a program guide application on the set-top box 34. User PC equipment 28 contains CPU 44 to handle tasks associated with implementing a program guide application. Television distribution facility 20 may contain a processor for tasks associated with monitoring a user’s interactions with the interactive program guides implemented on user PC equipment 28 and user television equipment 26 and for handling tasks associated with the distribution of program guide data and other information to user PC equipment and user television equipment 26. Moreover, the processor of television distribution facility 20 may be used to support the server functions of a client-server program guide.

In user television equipment 26, videocassette recorders 38 allow selected television programs to be recorded. Each videocassette recorder 38 is connected to a respective television 40. To record a program, set-top box 34 tunes to a particular channel and sends control signals to videocassette recorder 38 (e.g., using an infrared transmitter) that directs videocassette recorder 38 to start and stop recording at the appropriate times.

During use of the interactive television program guide implemented on set-top box 34, television program listings and other information may be displayed on television 40. Such program guide displays may be presented as an overlay on top of a television program to which the user has tuned with set-top box 34 or may be presented in place of such a program. Each set-top box 34, videocassette recorder 38, and television 40 may be controlled by one or more remote controls 42 or any other suitable user input interface such as a wireless keyboard, mouse, trackball, dedicated set of buttons, etc. Remote controls such as remote control 42 have various buttons that may be pressed by the user such as arrow keys (for directing on-screen movement of a highlight region, scrolling functions, etc.), an OK, select, enter, or other such selection key for making a selection (hereinafter referred to as an enter key), channel number keys (for selecting a television channel), a favorites key (to invoke functions related to user preferences), a delete key (to delete menu items or to express a disinterest in certain user preferences), etc.

PC equipment, such as PC equipment 28 is based on a CPU 44 that maintains a database 45. A program guide implemented on PC equipment 28 may be used to access and display program guide information on monitor 46. User selections and inputs may be made by a keyboard 48, mouse, trackball, or other PC input devices. It is understood that the following discussion, although directed to user television equipment and set-top boxes, is applicable to program guides used in connection with PC equipment.

Modern cable and satellite systems provide users with a wide range of programming, of which only a portion may be of interest to a user at a particular time. In order to locate programs of interest, program listings data is associated with each program. The program guide displays program listings for the user in various display formats. The program guide may allow the user to search for program listings of interest using keywords. For example, each program listing may be associated with one or more programming categories that
identify the subject matter of the program. Typical categories, which are also sometimes called themes or genres, include, e.g., sports, news, movies, comedy, children’s, adult, etc. As will be described in greater detail below, program listings data may be provided to the main facility 12 from an external data source 18. In the program listings data provided by external data source 18, each program listing may already be associated with one or more categories. Back office processor 14 and transmission system 33 may also perform functions associated with assigning program listings to appropriate programming categories.

Program guides typically display lists of available programming categories, and allow users to search through the program listings data by selecting one or more such categories. In accordance with the present invention, users may search for program listings of interest using both “simple” categories and “combination” categories. A simple category is an individual programming category, such as sports, comedy, horror, news, movies, children, adult, etc. A combination category is a programming category that is composed of multiple simple categories, such as comedy-movies, comedy-sports, sports-baseball, or sports-comedy. Where, not specified, the term programming category refers collectively to both simple and combination categories.

In main facility 12, program listings may initially be categorized into simple categories. This may be accomplished, for example, by manual data, entry. If desired, program listings data may be received from a data source 18 that already has been categorized in simple categories. An automatic process in back office processor 14 or transmission system 33 may process each program listing with associated simple categories to assign that program listing to appropriate combination categories from among the combination categories supported by the system.

This process is illustrated in greater detail in FIG. 2. As shown in step 150, program listings information is supplied to main facility 12 of FIG. 1 from one or more data sources, such as data source 18 of FIG. 1. The program listings information may be composed of programming titles, channels, broadcast times, program durations (or end times), ratings, critics ratings, descriptions, simple categories, actors, etc. At step 62, each program listing is reviewed and one or more simple categories are assigned to the program listing if necessary. This step may be performed by an operator after reviewing the program listings, a program synopsis or other information. This step may alternatively be automated by assigning categories based on key words appearing in the program description associated with the listing. If desired, simple categories may be assigned to the program listings prior to transmission of the program listings data from data source 18. The list of supported categories may be registered once and the list of supported categories need only be performed once and the list of supported categories may be updated automatically at the back office processor 14, at the transmission system 33, or any other suitable location.

Illustrative data structures of the type that may be used by the program guide system are shown in FIGS. 3(a)-3(c). An illustrative data structure 150 that contains title information 152 for the program “The Natural” is shown in FIG. 3(a). Several simple programming categories 154 have been assigned to this program listing, i.e., drama, sports, and baseball (e.g., at step 62 of FIG. 2). A portion of an illustrative list 156 of supported combination categories 158 is shown in FIG. 3(b). For example, sports-drama, sports-comedy, sports-sports, sports-baseball, and sports-football are in the list. Continuing with this example, other conceivable combination categories, such as drama-baseball are not supported. In steps 66 and 70 of FIG. 2, the simple categories associated with the program listings data such as the revised program listings data 160 illustrated in FIG. 3(c) has been produced. At step 66 of FIG. 2, the build process groups simple categories sports and drama, and determines that a combination category which includes sports and drama, i.e., sports-drama, is supported in list 156. Next, the program listing of FIG. 3(a) is assigned the combination category sports-drama at step 70. Steps 66 and 70 may be repeated as necessary until all possible groups of simple categories have been compared with the list 156 of supported combination categories. Thus, the build process notes the categories sports and baseball and assigns the combination category sports-baseball. It is understood that the process described above is exemplary only, and that other procedures for assigning combination categories to programs are contemplated. For example, all simple categories may be combined as combination categories first, and then unsupported combination categories subsequently deleted.

With continued reference to FIG. 2, program guide displays a selectable list of programming categories at step 72.
The list of supported combination categories described above may be used by the program guide to determine which categories to display to the user. The displayed categories may include both simple categories and supported combination categories. The program guide may search the program listings database for program listings in each of the categories. The program guide may then display only those categories having at least one program listing associated with that category, while suppressing categories having no associated program listings. As shown in FIG. 4, category list 172 may be displayed as part of program guide display screen 170. Category list 172 is more useful to the user than category lists that contain only simple categories or those that contain potentially confusing nested hierarchical lists described above. Category list 172 is more detailed than non-hierarchical lists based on simple categories because it is not limited to broad categories. Category list 172 has the advantage of the hierarchical list in that it provides more useful and specific program categories for the user while avoiding the disadvantage of the hierarchical list’s need to perform confusing searches by navigating through nested lists of categories. The user may initiate the display of list 172 using any suitable button or on-screen option provided by the program guide. The display of programming categories may be initially provided to the user by the program guide in alphabetical order. The program guide may display the name of the category 172, i.e., “sports-baseball,” by including the simple categories that have been joined, i.e., “sports” and “baseball.” Alternatively, the guide may display the name of one of the simple categories, e.g., “baseball” or another appropriate name for the category.

The order of the displayed categories may be modified to provide more useful information to the user. Commonly-assigned Rosenthal et al. U.S. patent application Ser. No. 09/262,658, filed Mar. 4, 1999 discloses several options for modifying the display of programming categories based on which categories are favorites of the user and is hereby incorporated by reference herein in its entirety. These and other examples of suitable ways in which the program guide may display programming categories in a manner which reflects user interest are described below.

According to a first option, the program guide displays a selectable list of programming categories at step 80 (FIG. 5(a)). FIG. 5(b) displays category list 172 on display screen 170. After the user chooses a favorite programming category 174, e.g., sports, and presses enter on the user remote, the program guide, redisplay the list of programming categories with the selected programming category removed to the top of the list of programming categories at step 84 (FIG. 5(a)). FIG. 5(c) displays favorite programming category 174 redisplayed at the top of category list 172.

A second option is illustrated in FIG. 6. As with the first option, the selectable list of programming categories is displayed by the program guide at step 86. As the user selects various categories and views the associated program listings, the program guide monitors the frequency of selection of each of the programming categories at step 90. The program guide redisplay the list of categories according to the frequency of selection of each program category at step 92. For example, the programming category selected, most frequently may appear at the top of the list. The category having the second highest frequency of access may be displayed second on the list, and so forth.

A third option is illustrated in FIGS. 7(a) and 7(b). The program guide in FIG. 7(a) displays the selectable list of program categories at step 94. After the user selects a category, the program guide provides the option of designating a particular location or order of placement in the category list 172 at step 96. The list is subsequently redisplayed by the program guide with the selected programming category appearing at the designated location at step 98. As illustrated in FIG. 7(b), screen 200, similar to screen 170, above, displays category list 202 wherein each category has an initial ranking, such as ranking 203. The user may wish to select the category 204, i.e., sports, and designate the second position in the list to be used for that category. Such designation may be made by entering the number “2” in box 206 by using numerical keys or the arrow keys on the user remote. The list is subsequently redisplayed by the program guide with the selected programming category appearing at the designated.

Continuing with the example, the programming category “sports” will appear in the second position on the category list 202 (not shown).

According to a fourth option, the program guide displays a selectable list of programming categories at step 100 of FIG. 8. After the user selects a programming category, the program guide redispaly list 172 of programming categories with the selected programming category deleted from the list 172 at step 104. The deleted category may be permanently discarded or may be retained by the program guide in step 106. At step 108, the program guide selects the user with the option of redisplaying the list such that the selected programming category is restored to the list. If the user opts to restore the deleted category to the list, the restored list may be displayed at step 109. The option to retain and restore or delete categories is particularly useful if the user’s interests change or if multiple users share the program guide. A programming category that may have been of little interest to the user at one time may subsequently attract greater interest for the user or may be of interest to another one of the users.

As shown in FIG. 2, after the program guide displays the selectable list of categories, at step 72, the user may select a desired category. As shown in FIG. 4, the program guide may allow the user to use arrow keys on remote control 42 (FIG. 1) to position a highlight region such as highlight region 174 on a particular programming category 176, e.g., “sports-dramas”. After the desired category has been highlighted, the user may press enter on remote control 42. This directs the program guide to use the selected category (e.g., the category “sports-dramas”) as a search criterion for searching the program listings data for programming having the “sports-dramas” combination category. As illustrated in FIG. 2, the program guide searches for program listings data matching the selected category at step 76. The search may be performed in database 36 or 45 by the user equipment 26 or 28, or alternatively, in database 24 at television distribution facility 20 when a client-server architecture is used (FIG. 1). If an online program guide configuration is used, the search may be performed by the web server that provides the on-line program listings.

At step 78, the program guide displays the results of the search, i.e., the program listings that match the selected category.

Program listings that match the selected category “sports-drama” are displayed (as an example) in FIG. 9. The program listings displayed in screen 300 of FIG. 9 are organized by broadcast time 302 and by channel 304. Cells 306 for program listings that satisfy the search by matching the selected
category are displayed, whereas programs which do not satisfy the search are suppressed from view. Channels which have no matching programs may be suppressed from the display. For example, channels 7 and 8 would not be displayed in display screen 300 if they are not broadcasting programs in the “sports-drama” category.

In the example of FIG. 9, only programming that has the category “sports-drama” is displayed. Another approach is shown in FIG. 10. With the approach of FIG. 10, screen 350 is used to display all available program listings to the user organized by broadcast time 352 and by channel 354. Cells 356 containing program listings that satisfy the search may be distinguishedly displayed to attract the user’s attention. For example, each program listing satisfying the search may be represented in a distinctive color. In addition (or alternatively), an icon or label 358, e.g., “sports-drama” may be provided in the program listing cell 356 to indicate a match of that listing with the selected programming category. Thus, all programming is displayed, but only programming having the “sports-drama” category is distinctively displayed.

A further example of a program listings by category screen is shown in FIG. 11. The illustrative screen 400 of FIG. 11 includes program listings that match the category sports-drama. It is understood that screen 400 may be used to display program listings for any suitable category. The program listings by category screen of FIG. 11 shows an alternative way in which program listings may be displayed and navigated through for any display screen in which listings are displayed for multiple time slots. Program listings within list 404 may be displayed in cells 406, and divided into predefined time slots, such as into 30 minute time slots. Users may quickly change between time slots by, for example, pressing a “right” or “left” arrows on remote control 42. Between each time slot, separator 410 may be displayed to indicate to a user that a user may skip separator 410. If desired, separators 410 may be displayed only for those time slots for which there are listings. For example, if there were no sports-drama programs starting at 7:30 PM, that separator would not be displayed. If desired, there may also be a “watch previews” selectable feature that users may select to view a preview for a highlighted listing. Users may also view additional information for a listing by, for example, highlighting the listing and pressing an “info” key on remote control 42.

In the program listings screens of FIG. 11, program listings may be displayed within each time slot sorted in any suitable manner. Listings may be displayed, for example, by title, channel, start time, or using any other suitable approach. The program listings screen of FIG. 11 has also been shown as including various other screen elements. Program listings display screens may include, for example, selectable advertisements, advertisement banners, brand logos, service provider logos, clocks, message indicators, arrow indicators 420, or any other suitable screen element. (It is understood that such elements may also be displayed on screens illustrated in FIGS. 9-10, above.) In the illustrative program listings screen of FIG. 11, the program guide may also adjust the time displayed in timerbar 422 as the user scrolls or pages through program listings to reflect the time of the program listing at the top of the list.

Regardless of the techniques used to display the search results, the program guide preferably allows the user to navigate through the program listings and select a desired listing (e.g., by positioning a highlight region such as highlight region 360 (FIG. 9), 362 (FIG. 10), or 412 (FIG. 11)). When the user selects a given program listing from the search results, the program guide may take various actions, depending on the type of program listing that was selected. For example, if a program for the selected listing is currently being broadcast, the program guide may provide the user with an option to tune to that program. If the program for the selected listing is scheduled to be broadcast in the future, the program guide may ask the user if they wish to set a reminder for the program. The program guide may also provide the user with an opportunity to direct the guide to record the program or to purchase the program if it is a pay-per-view event. These various post-search-result features are well known. If desired, the user may simply scroll through the program listings to review which programs are available. Further examples of searching and displaying programming categories are described in U.S. application Ser. No. 09/262, 658, incorporated by reference above.

When a user selects a listing, such as 360/362/412 described above, the program guide may display an interactive information display screen such as interactive information display screen 500 of FIG. 12 (which is substantially identical to a portion of FIG. 4c of David M. Rudnick et al. U.S. patent application Ser. No. 09/356,268, entitled PROGRAM GUIDE WITH INTERACTIVE INFORMATION DISPLAY SCREEN, filed Jul. 16, 1999, and incorporated by reference in its entirety herein). Interactive information display screen 500 may include detailed information portion 510 and may include a set of user-selectable options 512.

The content of interactive information display screen 500 may depend on the type of program selected. For example, detailed information portion 510 may include several lines of text providing information appropriate for display for a program which may include, for example, a list of all simple categories and combination categories associated with the program, etc. User-selectable options 512, for example, in a menu, may include options that may depend on which type of program is selected and the information associated with the selected item.

The foregoing is merely illustrative of the principles of this invention and various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention.

What is claimed is:

1. A method for using program listings information to locate programs of interest to a user, the method comprising:
   receiving a plurality of program listings with user equipment, wherein at least one of the program listings is associated with two or more simple categories; and generating at least one combination category with the user equipment, the generating comprising:
   identifying the two or more simple categories associated with at least one program listing; and
   combining at least a subset of the identified simple categories associated with the at least one program listing into the at least one combination category, wherein the combination category comprises more than one of the identified simple categories.

2. The method of claim 1, wherein combining at least a subset of the identified simple categories associated with the at least one program listing into the at least one combination category comprises:
   combining the identified simple categories into groups of two or more of the identified simple categories; and
determining, for each of the groups of simple categories, whether the respective group is contained within a list of supported categories;

wherein the at least one combination category comprises one of the groups of simple categories contained within the list of supported categories.

3. The method of claim 2 further comprising:

automatically identifying a plurality of simple categories that are of high interest to the user; and

generating the list of supported categories from the plurality of simple categories that are of high interest to the user.

4. The method of claim 3, wherein automatically identifying a plurality of simple categories that are of high interest to the user comprises automatically identifying a first simple category that received more user selections than a second simple category.

5. The method of claim 1, wherein the at least one combination category is one of a plurality of combination categories, and wherein the simple categories included within any given one of the plurality of combination categories are associated with a single one of the plurality of program listings.

6. The method of claim 1, wherein each of the plurality of program listings has associated metadata, the method further comprising automatically assigning each of the plurality of program listings at least one of a plurality of simple categories based on the associated metadata.

7. The method of claim 1 further comprising assigning the at least one combination category to the at least one program listing.

8. The method of claim 1 further comprising presenting at least a subset of the two or more simple categories associated with the at least one program listing in a selectable list on a display at the user equipment.

9. The method of claim 8 further comprising presenting the at least one combination category in the selectable list on the display.

10. The method of claim 9 further comprising:

searching, with the user equipment, for program listings that match a category selected from the selectable list by the user; and

presenting the matching program listings on the display.

11. A system for locating programs of interest to a user the system comprising:

a receiver that receives a plurality of program listings, wherein at least one of the program listings is associated with two or more simple categories; and

a processor that generates at least one combination category by:

identifying the two or more simple categories associated with the at least one program listing; and

combining at least a subset of the identified simple categories associated with the at least one program listing into the at least one combination category, wherein the combination category comprises more than one of the identified simple categories.

12. The system of claim 11, wherein the processor is configured to combine at least a subset of the identified simple categories associated with the at least one program listing into the at least one combination category by:

combining the identified simple categories into groups of two or more of the identified simple categories; and

determining, for each of the groups of simple categories, whether the respective group is contained within a list of supported categories;

wherein the at least one combination category comprises one of the groups of simple categories contained within the list of supported categories.

13. The system of claim 12, wherein the processor is further configured to:

automatically identify a plurality of simple categories that are of high interest to the user; and

generate the list of supported categories from the plurality of simple categories that are of high interest to the user.

14. The system of claim 13, wherein the processor is configured to automatically identify a plurality of simple categories that are of high interest to the user by identifying a first simple category that received more user selections than a second simple category.

15. The system of claim 12, wherein the at least one combination category is one of a plurality of combination categories, and wherein the simple categories included within any given one of the plurality of combination categories are associated with a single one of the plurality of program listings.

16. The system of claim 12, wherein each of the plurality of program listings has associated metadata, and wherein the processor is further configured to automatically assign each of the plurality of program listings at least one of a plurality of simple categories based on the associated metadata.

17. The system of claim 12, wherein the processor is further configured to assign the at least one combination category to the at least one program listing.

18. The system of claim 12 further comprising a display, wherein the processor is further configured to present at least a subset of the two or more simple categories associated with the at least one program listing in a selectable list on the display.

19. The system of claim 18, wherein the processor is further configured to present the at least one combination category in the selectable list on the display.

20. The system of claim 19, wherein the processor is further configured to:

search for program listings that match a category selected from the selectable list by the user; and

present the matching program listings on the display.