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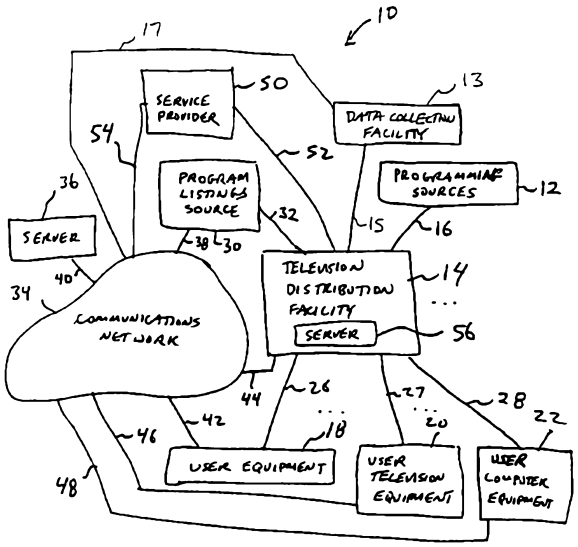
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(54) Title: INTERACTIVE TELEVISION SYSTEMS WITH DATA COLLECTION




(57) Abstract: A system is provided based on user equipment such as a set-top box or computer on which an interactive television application may be implemented. Information may be collected on the television viewing activities of a user and the user's interactions with the interactive television application. The interactive television application may be an interactive television program guide. The collected information may be transmitted to a data collection facility using e-mail protocols, using the communications capabilities of a web browser, using a stand-alone FTP application, or using the communications capabilities of an operating system installed on the user equipment.

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# INTERACTIVE TELEVISION SYSTEMS WITH DATA COLLECTION

## Background of the Invention

This invention relates to television systems, and more particularly, to interactive television systems such as interactive television program guide systems in which data is collected on user activities.

Interactive television program guides are typically implemented on set-top boxes connected to televisions. Such program guides may be used to present screens of interactive television program listings to users.

Program guides may also be used to control which television channels the set-top box tunes to when a user is watching television. For example, a program guide may tune to different television channels in response to channel-changing commands from the user's remote control. Users may also select programs from the program guide for recording or viewing. Additional information may be obtained for a program by selecting the displayed listing for that program with a highlight region. Reminders may be set for programs.

The user's interactions with the program guide and the television programs that the user watches are indicative of the user's interests. These activities may be monitored. The information that is collected on the viewer's interests may be used for marketing purposes. For example, information that is collected on the viewer's interests may be used to target program guide advertisements to the user as described in Knudson et al. U.S. patent application Serial No. 09/034,939, filed March 4, 1998, which is hereby incorporated by reference herein in its entirety. Viewer monitoring is described, for example, in Thomas et al. U.S. patent application Serial No. 09/139,798, filed August 25, 1998, which is hereby incorporated by reference herein in its entirety.

It is an object of the present invention to provide arrangements for collecting information on the viewing habits and other activities of the user.

Summary of the Invention

A system is provided that gathers information on a user's television viewing activities and interactions with an interactive television program guide or other interactive television application.

The user's activities may be monitored by an interactive television program guide or other application. The monitoring software may maintain, for example, information on which channels the user watches, the duration that each channel is watched, and information on which household members are in the room while the television is being viewed. Information may also be collected on the user's interactions with the

interactive television program guide or other interactive television application. For example, information may be collected on which interactive buttons the user selects, which screens the user views, etc.

The user information that is collected may be transmitted to a data collection facility for analysis. Analysis may reveal that certain television programs are more popular than others, that certain program guide screens are more popular than others, etc. Analysis may also reveal the particular interests of a viewer and may reveal data trends. Correlations may be observed between certain viewer interactions with the program guide and certain viewer activities.

The user may participate in a monitoring scheme that requires the user to periodically submit information to a data collection facility for analysis. If desired, user information may be collected and transmitted to the data collection facility automatically and without user intervention.

User data may be transmitted to the data collection facility using e-mail, using the communications capabilities of the user's browser application (e.g., the forms capabilities of such browsers), using communications capabilities associated with the operating system on the user's equipment, using a stand-alone FTP application, etc.

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 illustrative interactive television system with data collection capabilities in accordance with the present invention.

FIG. 2 is a diagram of illustrative user television equipment in accordance with the present invention.

FIG. 3 is a diagram of additional illustrative user television equipment in accordance with the present invention.

FIG. 4 is a diagram of an illustrative remote control in accordance with the present invention.

FIG. 5 is a diagram of illustrative user computer equipment in accordance with the present invention.

FIG. 6 is a generalized diagram of illustrative user equipment in accordance with the present invention.

FIG. 7 shows an illustrative menu screen in accordance with the present invention.

FIG. 8 shows an illustrative program guide screen in accordance with the present invention.

FIG. 9 is a flow chart of illustrative steps involved in gathering user information and automatically reporting such information to a data collection facility in accordance with the present invention.

FIG. 10 is a flow chart of illustrative steps involved in gathering user information and reporting such information to a data collection facility when authorized by the user in accordance with the present invention.

FIG. 11 shows an illustrative e-mail message that may be presented to the user to allow the user to authorize transmission of a user report to a data collection facility in accordance with the present invention.

FIG. 12 is a flow chart of illustrative steps involved in providing the e-mail message of FIG. 11 in accordance with the present invention.

FIG. 13 shows an illustrative program guide screen containing an interactive prompt that allows a user to decide whether or not to submit a user report in accordance with the present invention.

FIG. 14 shows an illustrative program guide settings screen that may be provided in accordance with the present invention.

FIG. 15 shows an illustrative personalization settings screen that may be provided by a program guide in accordance with the present invention.

Detailed Description of the Preferred Embodiments

An illustrative interactive television system 10 in accordance with the present invention is shown in FIG. 1. Television programming and digital music may be provided from programming sources 12 to television distribution facilities such as television distribution facility 14 using communications path 16. Programming sources 12 may be any suitable sources of television and music programming, such as television and music production studios, etc.

Television distribution facility 14 may be a cable system headend, a satellite television distribution facility, a television broadcast facility,

or any other suitable facility for distributing television and music programming to users. There are typically numerous television distribution facilities 14 in system 10, but only one is shown in FIG. 1 to avoid overcomplicating the drawings.

Communications path 16 may be a satellite path, a fiber-optic path, a cable path, or any other suitable wired or wireless communications paths or combinations of such paths.

Television distribution facility 14 may be connected to various user equipment devices 18. Such user equipment 18 may, for example, be located in the homes of users. User equipment 18 may include user television equipment 20 or user computer equipment 22.

The user equipment may receive television and music programming and other information from television distribution facility 14 over communications paths such as communications paths 26, 27, and 28. The user equipment may also transmit signals to television distribution facility 14 over paths 26, 27, and 28. Paths 26, 27, and 28 may be cables or other wired connections, free-space connections (e.g., for broadcast or other wireless signals), satellite links, etc.

Program listings source 30 may be used to provide the user with television program schedule information such as scheduled broadcast times, titles, channels, ratings information (e.g., parental ratings and critic's ratings), detailed title descriptions, genre or category information (e.g., sports, news, movies, etc.), information on actors and actresses, running times, etc.

Program listings source 30 may provide program schedule information to television distribution facility 14 over communications path 32 for distribution to the associated user equipment over paths 26, 27, and 28. Communications path 32 may be any suitable communications path such as a satellite communications path or other wireless path, a fiber-optic or other wired communications path, a combination of such paths, etc.

User equipment devices such as user television equipment and personal computers may use the program schedule information to display program listings and information on digital music for the user. An interactive television program guide application or other suitable application may be used to display such information on the user's display.

An on-line program guide may be provided by a server connected to communications network 34 such as server 36. Server 36 may receive program schedule information from program listings source 30 via communications path 38, communications network 34, and communications path 40. Paths 38 and 40 may be satellite paths, fiber-optic paths, wired paths, etc. Communications network 34 may be any suitable communications network, such as the Internet, the public switched telephone network, a packet-based network, etc.

User equipment 18 may access the on-line program guide via communications path 42, which may be any suitable communications path such as a wired path, a cable path, fiber-optic path, satellite path, a combination of such paths, or any other suitable path.

User equipment 18 may also access the on-line program guide via communications path 26, television distribution facility 14, and communications path 44. For example, a cable modem or the like may be used by user equipment 18 to communicate with television distribution facility 14. Television distribution facility 14 may communicate with communications network 34 over any suitable path 44, such as a wired path, a cable path, fiber-optic path, satellite path, a combination of such paths, etc.

User equipment such as user television equipment 20 and user computer equipment 22 may access the on-line program guide using similar arrangements. User television equipment 20 may access the on-line program guide using communications path 46 or using path 27, television distribution facility 14, and path 44. User computer equipment 22 may access the on-line program guide using communications path 48 or using path 28, television distribution facility 14, and path 44. Paths 46 and 48 may be any suitable paths, such as wired paths, cable paths, fiber-optic paths, satellite paths, a combination of such paths, etc.

Interactive television applications other than program guide applications may use service providers such as service provider 50. For example, a home shopping service may be supported by a service provider such as service provider 50 that has sales representatives, order fulfillment facilities, account maintenance facilities, and other equipment for supporting interactive home shopping features. A home shopping application that is implemented using the user equipment may be used to access the service provider to

provide these features to the user. The user equipment may access service provider 50 via television distribution facility 14 and communications path 52 or via communications network 34 and communications path 54. Communications paths such as paths 52 and 54 may be any suitable paths, such as wired paths, cable paths, fiber-optic paths, satellite paths, a combination of such paths, etc.

Another example of an interactive television application is a home banking application. A home banking service may be supported using personnel at facilities such as service provider 50. An interactive home banking application that is implemented using the user equipment may access the home banking service via television distribution facility 14 and communications path 52 or via communications network 34 and communications path 54.

If desired, an interactive television application such as a video-on-demand application may be supported using server 56. Videos may be stored on server 56 and provided to the user equipment when requested by users.

If desired, applications such as the interactive television program guide application, a home shopping application, a home banking application, a video-on-demand application, and other applications (e.g., applications related to e-mail and chat or other communications functions, etc.) may be provided as separate applications that are accessed through a navigation shell application (i.e., a menu application with menu options corresponding to the applications). The features of such applications may be combined. For

example, video-on-demand, home shopping, and communications functions may be incorporated into the program guide.

Moreover, the interactive television program guide application, the home banking application, and the home shopping application, the video-on-demand application, the communications application, and the navigation shell application, are only a few illustrative examples of the types of interactive television applications that may be supported by system 10. Other suitable applications that may be supported include, news services, Internet services, interactive wagering services (e.g., for wagering on horse races and the like), communications services (e.g., e-mail, chat, etc.), and any other suitable interactive applications.

These applications may be implemented locally on the user equipment. The applications may also be implemented using a client-server architecture in which the user equipment serves as a client processor and a server such as server 56 at television distribution facility 14 or other suitable location acts as a server processor. Other distributed architectures may also be used if desired. Regardless of the particular arrangement used to implement interactive television features related to program guides, home shopping, home banking, video-on-demand, Internet, communications, etc., the software that supports these features may be referred to as an application.

As the user interacts with the application and as the user watches television on the user equipment, information may be gathered on the user's

activities. For example, information may be gathered regarding which television channels the user tunes to and the times at which the user watches each television channel. Because the programs that are being aired at any given time may be determined from program schedule data, gathering information on the television channels that the user tunes to and the times at which these channels are tuned to allows the viewing habits of the user to be monitored. Information may also be gathered on which selectable on-screen interactive television application options the user selects when interacting with interactive television applications. This may reveal, for example, information on the advertisements that the user responds to, information on the user's favorite genres of television programming, information on other user interests (e.g., sports, news, etc.).

The information that is collected on the user's activities may be reported back to a suitable data collection facility for processing. For example, the information may be collected at user equipment 18 and reported back to computer equipment at data collection facility 13 via communications path 26, television distribution facility 14, and communications path 15 or via communications path 42, communications network 34 (e.g., the Internet), and communications path 17. Communications paths 15 and 17 may be fiber-optic paths, cable or other wired paths, wireless paths, or any other suitable communications paths.

If desired, the data collection facility may be located at television distribution facility 14. Data may, for example, be collected using a server such as server 56. User data may also be collected at a

server connected to the Internet or other communications network. For example, information on the user's activities may be collected using a server such as server 36. These examples are merely illustrative. User information may be collected using any suitable facility.

Moreover, user information may be collected regardless of the type of architecture used to provide television programming and interactive television services to the user. For example, if a client-server arrangement is used to provide program guide services to the user, information that has been gathered on the user at the server may be provided to the data collection facility using a communications path between the server and the data collection facility. Such a path may, for example, involve a communications network such as communications network 34.

Illustrative user television equipment 20 that is based on a set-top box arrangement is shown in FIG. 2. Input/output 60 may be connected to communications paths such as paths 27 and 46. Television programming and other information may be received using input/output 58. Commands and requests and other information from the user may also be transmitted over input/output 58.

Set-top box 60 may be any suitable analog or digital set-top box. Set-top box 60 may contain an analog tuner for tuning to a desired analog television channel. Set-top box 60 may also contain digital decoding circuitry for receiving digital television and music channels. Both analog and digital channels may be handled together if desired. Set-top box 60 also

contains a processor (e.g., a microcontroller or microprocessor or the like) that is used to execute software applications. Set-top box 60 may contain memory such as random-access memory for use when executing applications. Nonvolatile memory may also be used (e.g., to launch a boot-up routine and other instructions). Hard disk storage may be used to back up data and to otherwise support larger databases than may be supported using random-access memory approaches.

Set-top box 60 may have infrared (IR) or other communications circuitry for communicating with a remote control. Set-top box 60 may also have dedicated buttons and a front-panel display. The front-panel display may, for example, be used to display the current channel to which the set-top box is tuned.

Set-top box 60 may also have communications circuitry such as a cable modem for cable communications over a cable, an integrated services digital network (ISDN) modem for ISDN communications, a digital subscriber line (DSL) modem for DSL communications, a telephone modem for communications over telephone lines, paging communications circuitry for paging communications (e.g., wireless radio-frequency transmissions using paging frequencies), cellular telephone communications circuitry (e.g., for digital cellular telephone data communications), and other equipment for communications using other approaches. Such communications may involve the Internet or any other suitable communications networks or paths.

A videocassette recorder 62 or other suitable recording device may be connected to set-top box 60.

This allows videos from set-top box 60 to be recorded. For example, if set-top box 60 is tuned to a given television channel, the video signal for that television channel may be passed to videocassette recorder 62 for recording on a videocassette. If desired, videocassette recorder functions such as start, stop, record, etc. may be controlled by set-top box 60. For example, set-top box 60 may control videocassette recorder 62 using infrared commands directed toward the remote control inputs of videocassette recorder 62.

The output of videocassette recorder 62 may be provided to television 64 for display to the user. If videocassette recorder 62 is not being used, the video signals from set-top box 58 may be provided directly to television 64. If desired, any suitable monitor may be used to display the video.

Another illustrative arrangement for user television equipment 20 is shown in FIG. 3. In the example of FIG. 3, user television equipment 20 includes a digital video recorder 66 (e.g., a personal video recorder (PVR)) and a television 68. Input/output 70 may be connected to communications paths such as paths 27 and 46. Television programming and other information may be received using input/output 70. Commands and requests and other information from the user may be transmitted over input/output 70.

Digital video recorder 66 may be similar to a standard set-top box, except that a hard disk or other suitable storage medium may be used for video storage

in lieu of videocassettes. The hard disk may be internal to digital video recorder 66.

Digital video recorder 66 may contain an analog tuner for tuning to a desired analog television channel. Digital video recorder 66 may also contain digital decoding circuitry for receiving digital television and music channels. If desired, digital video recorder 66 may contain circuitry for handling both analog and digital channels. Digital video recorder 66 also contains a processor (e.g., a microcontroller or microprocessor or the like) that is used to execute software applications. Digital video recorder 66 may contain memory such as random-access memory for use when executing applications. Nonvolatile memory may also be used to store a boot-up routine or other instructions. The hard disk and other storage in digital video recorder 66 may be used to support databases (e.g., program guide databases or interactive television application databases).

Digital video recorder 66 may have IR communications circuitry or other suitable communications circuitry for communicating with a remote control. Digital video recorder 66 may also have dedicated buttons and a front-panel display. The front-panel display may, for example, be used to display the current channel to which the digital video recorder is tuned.

Digital video recorder 66 may also have communications circuitry such as a cable modem, an integrated services digital network (ISDN) modem, a digital subscriber line (DSL) modem, a telephone modem, etc. for communications with other equipment. Such

communications may involve the Internet or any other suitable communications networks or paths.

If desired, digital video recorder 66 of FIG. 3 or set-top box 60 of FIG. 2 may be a satellite receiver or other equipment that has wireless communications circuitry for receiving satellite signals.

Television programming may be recorded on the hard disk of digital video recorder 66. Digital video recorder 66 may record new video while previously recorded video is being played back on television 68. This allows users to press a pause button during normal television viewing. When the pause button is pressed, the current television program is stored on the hard disk of digital video recorder 66. When the user presses play, the recorded video may be played back. This arrangement allows the user to seamlessly pause and resume television viewing.

The set-top box arrangement of FIG. 2 and the digital video recorder set-top box arrangement of FIG. 3 are merely illustrative. Other arrangements may be used if desired. For example, user television equipment may be based on a WebTV box, a personal computer television (PC/TV), or any other suitable television equipment arrangement. If desired, the functions of components such as set-top box 60, digital video recorder 66, a WebTV box, or PC/TV or the like may be integrated into a televison or personal computer or other suitable device.

An illustrative remote control 72 for operating user television equipment 20 is shown in FIG. 4. Remote control 72 may have keys 74 such as channel

up and down keys, a power on/off key, numeric keys, a favorites key (e.g., for setting favorites in a program guide application or other interactive television application), an info key (for requesting that additional information on a selection be displayed), etc. Arrow keys 76 may be used to position an on-screen cursor or highlight region on options of interest. Highlighted options may be selected using OK key 78. Menu key 80 may be used to direct an interactive television application (e.g., a program guide application, a nav shell application, or any other suitable application) to display a menu of available options.

Help key 82 may be used to invoke help functions such as context-sensitive on-screen help, etc.

Illustrative user computer equipment 22 is shown in FIG. 5. In the arrangement of FIG. 5, personal computer 84 may be controlled by the user using keyboard 86 or other suitable user input device, such as a trackball, mouse, touch pad, touch screen, voice recognition system, etc. Television programming and interactive television application content may be displayed on monitor 88. Television programming and other information may be received from paths 28 and 48 (FIG. 1) using input/output 90. The user may also send commands and other information to remote services over input/output line 90.

Personal computer unit 84 may contain a television tuner card for decoding analog and digital television channels. The television tuner card may contain an analog tuner for tuning to a given analog

channel and digital decoding circuitry for filtering out a desired digital television or music channel from a packetized digital data stream.

The user computer equipment arrangement of FIG. 5 is merely illustrative. Any suitable computer equipment arrangement may be used if desired.

Moreover, the user television equipment and user computer equipment arrangements described above are merely illustrative. A more generalized embodiment of illustrative user equipment is shown in FIG. 6.

As shown in FIG. 6, control circuitry 92 is connected to input/output 94. Input/output 94 may be connected to communications paths such as paths 26, 27, 28, 42, 46, and 48 of FIG. 1. Television and music programming may be received via input/output 94 (e.g., from programming sources 12 and television distribution facility 14). Program scheduled information for an interactive television program guide may also be received via input/output 94. Input/output 94 may also be used to receive information for other interactive television applications. The user may use control circuitry 92 to send commands, requests, and other suitable information using input/output 94.

Information that is collected locally on the user such as information on the user's television viewing habits and information on the user's interactions with interactive television applications such as an interactive television program guide application may be sent to a data collection facility via input/output 94. Any suitable technique may be used to transmit the information that is collected about the user. For example, information may be

transmitted using a cable return path in a cable system, using fiber-optic links, using a dial up modem connection (e.g., over a telephone link, a DSL or ISDN link, etc.), using a wireless link (e.g., using a cellular or paging frequency), using combinations of such paths, etc. Information that is collected at a server (e.g., a server used to support a client-server program guide) may be passed from the server to the data collection facility using paths such as these or any other suitable paths.

Control circuitry 94 may be based on any suitable processor such as a microprocessor, microcontroller, etc. Memory or other suitable storage devices may be provided as part of control circuitry 94. Tuning circuitry such as an analog tuner, an MPEG-2 decoder or other digital tuning circuitry, or any other suitable tuning circuits or combinations of such circuits may also be included as part of circuitry 92. The tuning circuitry may be used to tune the user equipment to a particular television or music channel. The state of the tuning circuitry may be monitored by an interactive television application such as an interactive television program guide or may be monitored by a monitoring application, or by monitoring functions embedded in any other suitable application. Monitoring may also involved gathering information on the time of day, whether the user equipment is on or off, the status of various button presses, or any other function or hardware state of the user equipment. The information that is monitored may be stored in storage in control circuitry 92 (e.g., on a hard disk or on random-access memory, etc.).

Television programming and on-screen options and information may be displayed on display 100. Display 100 may be a monitor, a television, or any other suitable equipment for displaying visual images. Speakers 102 may be provided as part of a television or may be stand-alone units. Digital music and the audio component of videos displayed on display 100 may be played through speakers 102.

A user may control the control circuitry using user input interface 96. The user input interface may be any suitable user interface, such as a mouse, trackball, keypad, keyboard, touch screen, touch pad, or any other suitable user input interface. A microphone 98 and video camera 104 may be used to supply audio and video information to control circuitry 92.

A user of user equipment 18 (e.g., a user of user television equipment or a user of user computer equipment, or a user of any other suitable user equipment device) may invoke an interactive television menu by pressing menu button 80 (FIG. 4). An illustrative interactive television navigation shell or menu 106 is shown in FIG. 7. Remote control 72 (FIG. 4) may be used to position highlight region 108 on top of options 110, 112, 114, 116, 118, and 120. If the user selects option 110, a screen of program listings may be displayed. Option 112 may be used to invoke a home shopping application. Option 114 may be selected to display options related to video-on-demand services. If the user selects option 116, the user may be presented with an opportunity to access home banking functions. Selecting Internet option 118 may launch a

web browser or the like. Option 120 may be used to access a settings screen that allows the user to adjust various settings. If desired, the user may use such a menu option to access a program guide settings screen with which the user may adjust program guide settings.

An illustrative program guide screen 122 that may be displayed for the user is shown in FIG. 8. Program guide screen 122 may be displayed, for example, when the user selects program listings option 108 of FIG. 7 or when the user selects a suitable option from within an interactive television program guide application. Program guide screen 122 may contain a grid or list of program listings 124. Program listings 124 may include program titles, channels, scheduled broadcast times, and any other suitable program schedule information. Advertisements may be displayed if desired.

A highlight region such as highlight region 126 may be used to select a desired program listing. If the user presses an OK key when a program listing for a current program is highlighted, the program guide may tune to the channel for that program. If the user presses an OK key when a program listing for a future program is highlighted, the program guide may provide the user with an opportunity to set a reminder for that program. Other functions that the program guide may provide include the ability to set favorite channels and establish other preferences and settings. For example, the user may select a particular channel for the program guide to automatically tune to when the user equipment is powered on. The user may also select favorite programs, favorite channels, etc. The program

guide may provide the user with the ability to establish parental control settings, the ability to search for programming of interest, and the ability to view program descriptions, advertisements, text, graphics, and video, etc. The use of any of these functions by the user may be monitored. Moreover, these are merely illustrative examples of program guide functions that may be provided by an interactive television program application. Any other suitable program guide functions may be provided if desired. The program guide may be invoked from an option such as option 110 of FIG. 7, by pressing a dedicated guide button on a remote control, by selecting any other suitable button or on-screen option, etc.

The user's response to any interactive content in the interactive program guide may be monitored. For example, the user's response to interactive advertisements that are presented by the program guide may be monitored.

Illustrative steps involved in monitoring the user are shown in FIG. 9. At step 128, the program guide or other application may monitor the user's interactions with the program guide or other interactive television application and may monitor other user activities (e.g., which television programs the user is watching, etc.). The television program guide or other interactive television application or a monitoring application or the like may be used to collect information on the user's activities. Information on the televison programs that the user is watching may be gathered by comparing information on the channels and times at which the user is watching

television with information on the programs scheduled to be broadcast at those times on those channels. This comparison may be performed locally (e.g., at user equipment 18) prior to or during monitoring or may be performed remotely (e.g., a the data collection facility after monitoring or at a server or other computer during monitoring). These are merely illustrative examples. Any suitable monitoring techniques may be used if desired. The information that is collected on the television viewing habits of the user and the user's interactions with the interactive program guide or other interactive television application may be gathered using the interactive television program guide or other interactive television application or may be gathered using a monitoring application or any other suitable application.

At step 130, the program guide or other application may automatically transmit the collected user information to the data collection facility (e.g., a data collection facility such as data collection facility 13 of FIG. 1). The user data may be transmitted using an e-mail protocol such as the standard Post Office Protocol (POP) or Simple Mail Transport Protocol (SMPT). The program guide or interactive television application or other monitoring application or the like may access e-mail communications functions such as these through an existing e-mail application or other application or the like that is installed on user equipment 18. Accordingly, with an e-mail transport arrangement a proprietary communications protocol need not be

developed for transmitting collected user data to the data collection facility.

If desired, the gathered information on the user may be reported to the data collection facility using communications functions that are part of an existing web browser implemented on user equipment 18. For example, the gathered information may be sent to the data collection facility using the forms capabilities of a web browser. If desired, such capabilities may be accessed directly by the reporting application (e.g., the program guide) without displaying forms on the display of the user equipment. Alternatively, keystrokes or a clickstream or other inputs for the browser's forms may be generated by the program guide automatically to emulate the commands that would be provided by the user should the user need to use such capabilities.

Another way in which the user information may be transmitted to the data collection facility is using the existing communications capabilities of the operating system installed on user equipment 18. If a web browser or stand-alone file transfer protocol (FTP) application is provided on user equipment 18, the user information may be transmitted to the data collection facility using FTP techniques.

At step 132, after the data collection facility has received the information on the user, the data collection facility may analyze the information on the user and other users. This analysis may be used to determine the rates to charge for interactive advertising in the interactive television program guide, which types of advertisements should be

displayed, whether certain types of interactions with the interactive television program guide are correlated with certain user interests in television programming, or for other marketing or business purposes.

If desired, the user may be notified before information on the user is transmitted to the data collection facility. This is shown in FIG. 10. At step 134, the user's interactions with the interactive television program guide and other activities (e.g., television watching activities) may be monitored.

At step 136, the user may be provided with an opportunity to authorize the submission of a report containing information on the user's interactions with the interactive television program guide an other user activities. If the user does not authorize submission of the report, the report may not be submitted for processing. If, however, the user authorizes submission of the report at step 136, the report may be provided to the data collection facility at step 138 using e-mail protocols, browser communications protocols, FTP protocols, etc.

At step 140, the data collection facility may analyze the information that has been gathered on the user.

One way in which the user may be provided with an opportunity to authorize the release of the information gathered on the user is shown in FIG. 11. In the screen 142 of FIG. 11, the user has been sent an e-mail 144 with an attachment 146. The attachment 146 may be automatically generated and may be a report containing information on the user's monitored interactions with the program guide and other

activities. The e-mail may be generated by the program guide or other application used for monitoring the user (e.g., an application that is installed on the user's set-top box). The reply address in the e-mail may be automatically set to that of the data collection facility. Accordingly, when the user responds to the e-mail on the screen of the user equipment the response may be automatically routed to the data collection facility. The user need not memorize the correct e-mail address for the data collection facility. The ability to place the correct address in the reply address field may be supported by standard e-mail applications. If desired, e-mail 144 may contain text 148 that asks the user to reply.

Illustrative steps involved in sending a report to the data collection device using an arrangement such as shown in FIG. 11 are shown in FIG. 12. At step 150, the program guide may generate an e-mail. Information that has been collected on the user may be embedded into the e-mail or may be attached to the e-mail in the form of a report.

At step 152, the e-mail may be sent to the user using the program guide to access e-mail functions of an e-mail application installed on the user equipment 18 or using the program guide to perform e-mail functions. The reply e-mail address for the e-mail may be automatically set to the e-mail address of the data collection facility.

At step 152, the user may be allowed to reply to the e-mail. For example, a reply button may be provided. The user may select the reply button, which directs an e-mail application on the user equipment or

the program guide to send the e-mail to the data collection facility at step 156. The approach of FIGS. 11 and 12 in which the user is provided with an opportunity to authorize the transmission of the report to the data collection facility may be used, for example, in situations in which the user has agreed with a data collection agency to allow their households data to be monitored (e.g., in return for a fee).

If desired, the program guide may provide the user with a screen 158 containing a notification 160 of the type shown in FIG. 13. If the user responds by selecting yes option 162, the program guide may submit the report to the data collection facility. If the user responds by selecting no option 164, the program guide will not submit the report.

If desired, the user may be provided with an opportunity to adjust data reporting settings using program guide setup screens or the like. For example, if the user selects set up option 120 of FIG. 7, the program guide may display a screen such as program guide settings screen 166 of FIG. 14. Screen 166 may include audio settings option 168 and video settings option 170 that allow the user to adjust the audio and video settings of the program guide or the user's set-top box or other user equipment. Language settings option 172 may be used to change the default language used for program guide text or audio tracks for programs that have multiple audio tracks. The user may select parental control settings option 174 to adjust settings related to program blocking (e.g., based on rating, keyword, etc.) or title blocking (e.g., in the program guide listings grids).

The program guide may also provide an option such as personalization settings 176. If the user selects option 176, the program guide may provide the user with a screen such as screen 178 of FIG. 15. Screen 178 may contain options related to the collection and transmission of data on the user's activities in the program guide. The user may use right and left remote control keys or other suitable user interface arrangement to select between various entries for each option (e.g., the user may press a right remote control arrow key to select an on option and may press a left remote control arrow key to select an off option). The user may use up and down remote control arrow keys or any other suitable user interface to select between various options. A highlight region may be used to indicate the user's current position in the options of screen 178 and other program guide screens.

The user may toggle option 180 to turn the reports collection feature on or off. For example, if the user desires to have information on the user's television viewing activities and other information on the user's activities reported to a data collection facility, the user may turn option 180 on. If the user desires not to have information on the user's television viewing activities and other user activities collected or reported to the data collection facility, the user may turn option 180 off.

If the reports function is turned on, the user may be provided with an opportunity to adjust the frequency with which reports are transmitted to the data collection facility using option 182. The user

may, for example, select between available transmission frequencies of continuously, once per hour, once per day, once per week, etc.

The user may desire to be notified before reports are sent. If the user wishes to receive notifications, the user may use option 184 to turn the program guide's notification capabilities. If the user does not wish to receive notifications, option 184 may be used to turn notification off.

When the user has finished making the selections available on screen 178, the user may select done option 186 (e.g., by navigating a highlight region to done option 186 and pressing a remote control OK key or the like).

Although described primarily in the context of interactive television program guides, the user's interactions with any suitable interactive television applications may be monitored. For example, the user's interactions with a video-on-demand application may be monitored, etc. Moreover, any suitable application (e.g., a program guide, an interactive television application, or a stand-alone monitoring application may be used to provide the monitoring functions of the present invention).

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 collecting information on the television viewing activities of a user at user equipment and providing that information to a data collection facility, comprising:

collecting information on the television viewing activities of the user by monitoring which television channels the user tunes to with the user equipment; and

transmitting the collected information on the viewing activities of the user to the data collection facility using e-mail protocols.

2. The method defined in claim 1 further comprising using an e-mail application to transmit the collected information.

3. The method defined in claim 1 further comprising using the post office protocol to transmit the collected information.

4. The method defined in claim 1 further comprising using the Simple Mail Transport Protocol to transmit the information.

5. The method defined in claim 1 further comprising collecting the information on the television viewing habits of the user with an interactive television program guide.

6. The method defined in claim 1 further comprising:

collecting the information on the television viewing habits of the user with an interactive television program guide; and

transmitting the information on the television viewing habits of the user that were collected with the interactive television program guide to the data collection facility.

7. The method defined in claim 1 further comprising collecting the information on the television viewing habits of the user with an interactive television application.

8. The method defined in claim 1 further comprising:

collecting the information on the television viewing habits of the user with an interactive television application; and

transmitting the information on the television viewing habits of the user that were collected with the interactive television application to the data collection facility.

9. The method defined in claim 1 further comprising collecting information on interactions of the user with an interactive television program guide.

10. The method defined in claim 1 further comprising using an interactive television program guide to collect information on interactions of the user with the interactive television program guide.

11. The method defined in claim 1 further comprising:

collecting information on interactions of the user with an interactive television program guide; and

transmitting the information collected on the interactions of the user with the interactive television program guide to the data collection facility.

12. The method defined in claim 1 further comprising collecting information on interactions of the user with an interactive television application.

13. The method defined in claim 1 further comprising using an interactive television application to collect information on interactions of the user with the interactive television application.

14. The method defined in claim 1 further comprising:

collecting information on interactions of the user with an interactive television application; and

transmitting the information collected on the interactions of the user with the interactive television application to the data collection facility.

15. The method defined in claim 1 further comprising collecting information on what times the user tunes to the television channels.

16. The method defined in claim 1, wherein the user equipment includes a set-top box, the method further comprising allowing the user to use an interactive television program guide to tune the set-top box to a given television channel.

17. The method defined in claim 1, wherein the user equipment includes a digital video recorder, the method further comprising allowing the user to use an interactive television program guide to tune the digital video recorder to a given television channel.

18. The method defined in claim 1, wherein the user equipment includes a personal computer, the method further comprising allowing the user to use an interactive television program guide to tune the personal computer to a given television channel.

19. The method defined in claim 1 further comprising using an interactive television program guide to display program listings on the user equipment for the user.

20. The method defined in claim 1 further comprising displaying an interactive menu on the user equipment that includes options that allow the user to invoke at least an interactive television program guide and a video-on-demand application.

21. The method defined in claim 1 wherein collecting information on the television viewing habits of the user comprises collecting information on the

television viewing habits of the user by monitoring the time and by monitoring the channels tuned to by the user with an interactive television program guide.

22. The method defined in claim 1 wherein collecting information on the television viewing habits of the user comprises storing information on the television viewing habits of the user in storage on the user equipment.

23. The method defined in claim 1, wherein an interactive television program guide is implemented on the user equipment, the user equipment is connected to a television distribution facility by a communications path, and program listings data is provided from a program listings source, the method further comprising:

receiving the program listings data at the television distribution facility from the program listings source; and

providing the program listings data from the television distribution facility to the interactive television program guide on the user equipment over the communications path.

24. The method defined in claim 1, wherein transmitting the collected information comprises transmitting the collected information using paging frequencies.

25. The method defined in claim 1, wherein transmitting the collected information comprises

transmitting the collected information using digital subscriber line communications.

26. The method defined in claim 1, wherein transmitting the collected information comprises transmitting the collected information using cable communications.

27. The method defined in claim 1, wherein transmitting the collected information comprises transmitting the collected information using communications over telephone lines.

28. The method defined in claim 1, wherein transmitting the collected information comprises transmitting the collected information to a server.

29. The method defined in claim 1 further comprising transmitting the collected information to the data collection facility over a wireless path.

30. The method defined in claim 1 further comprising notifying the user before transmitting the collected information to the data collection facility.

31. The method defined in claim 1 further comprising:

notifying the user before transmitting the collected information to the data collection facility; and

providing the user with an opportunity to choose whether to send the collected information to the data collection facility.

32. The method defined in claim 1 further comprising transmitting the collected information in an e-mail attachment.

33. The method defined in claim 1 further comprising transmitting the collected information in the body of an e-mail message.

34. The method defined in claim 1 further comprising:

using a program guide to generate an e-mail message with which to provide the collected information to the data collection facility as a report; and

automatically setting the reply address in the e-mail message to the e-mail address of the data collection facility.

35. The method defined in claim 1 further comprising sending an e-mail message to an in-box associated with the user equipment before transmitting the collected information to the data collection facility.

36. The method defined in claim 1 further comprising providing the user with an opportunity to authorize submission of the collected information

before transmitting the collected information to the data collection facility.

37. The method defined in claim 1 further comprising analyzing the collected information at the data collection facility.

38. The method defined in claim 1 wherein the data collection facility is in communication with a television distribution facility.

39. The method defined in claim 1 wherein the data collection facility is in communication with a cable system headend.

40. The method defined in claim 1 wherein the data collection facility is in communication with a television distribution facility and wherein the user equipment is in communication with the television distribution facility, the method further comprising transmitting the collected information to the data collection facility through the television distribution facility.

41. The method defined in claim 1 further comprising transmitting the collected information to the data collection facility over the Internet.

42. The method defined in claim 1 further comprising allowing the user to authorize transmission of the collected information using a setup option.

43. The method defined in claim 1 further comprising allowing the user to select a desired frequency for transmitting the collected information.

44. The method defined in claim 1 further comprising providing the user with a setup option that allows the user to choose whether to notify the user prior to transmitting the collected information to the data collection facility.

45. A system including user equipment in which information on the television viewing activities of a user at the user equipment is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the television viewing activities of the user by monitoring which television channels the user tunes to with the control circuitry; and

transmit the collected information on the viewing activities of the user to the data collection facility using e-mail protocols.

46. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to use an e-mail application to transmit the collected information.

47. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to use the post office protocol to transmit the collected information.

48. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to use the Simple Mail Transport Protocol to transmit the information.

49. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to collect the information on the television viewing habits of the user with an interactive television program guide.

50. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to:

collect the information on the television viewing habits of the user with an interactive television program guide; and

transmit the information on the television viewing habits of the user that were collected with the interactive television program guide to the data collection facility.

51. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to collect the information on the television viewing habits of the user with an interactive television application.

52. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to:

collect the information on the television viewing habits of the user with an interactive television application; and

transmit the information on the television viewing habits of the user that were collected with the interactive television application to the data collection facility.

53. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to collect information on interactions of the user with an interactive television program guide.

54. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to use an interactive television program guide to collect information on interactions of the user with the interactive television program guide.

55. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to:

collect information on interactions of the user with an interactive television program guide; and

transmit the information collected on the interactions of the user with the interactive

television program guide to the data collection facility.

56. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to collect information on interactions of the user with an interactive television application.

57. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to use an interactive television application to collect information on interactions of the user with the interactive television application.

58. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to:

collect information on interactions of the user with an interactive television application; and

transmit the information collected on the interactions of the user with the interactive television application to the data collection facility.

59. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to collect information on what times the user tunes to the television channels.

60. The system defined in claim 45, wherein the user equipment includes a set-top box, and wherein

the control circuitry, display, and user interface are further configured to allow the user to use an interactive television program guide to tune the set-top box to a given television channel.

61. The system defined in claim 45, wherein the user equipment includes a digital video recorder, and wherein the control circuitry, display, and user interface are further configured to allow the user to use an interactive television program guide to tune the digital video recorder to a given television channel.

62. The system defined in claim 45, wherein the user equipment includes a personal computer, and wherein the control circuitry, display, and user interface are further configured to allow the user to use an interactive television program guide to tune the personal computer to a given television channel.

63. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to use an interactive television program guide to display program listings on the user equipment for the user.

64. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to display an interactive menu on the user equipment that includes options that allow the user to invoke at least an interactive television program guide and a video-on-demand application.

65. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to collect information on the television viewing habits of the user by monitoring the time and by monitoring the channels tuned to by the user with an interactive television program guide.

66. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to store the collected information on the television viewing habits of the user in storage on the user equipment.

67. The system defined in claim 45, wherein an interactive television program guide is implemented on the user equipment, the user equipment is connected to a television distribution facility by a communications path, and program listings data is provided from a program listings source, and the television distribution facility is configured to receive the program listings data at the television distribution facility from the program listings source and provide the program listings data from the television distribution facility to the interactive television program guide on the user equipment over the communications path.

68. The system defined in claim 45, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using paging frequencies.

69. The system defined in claim 45, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using digital subscriber line communications.

70. The system defined in claim 45, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using cable communications.

71. The system defined in claim 45, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using communications over telephone lines.

72. The system defined in claim 45, wherein the control circuitry, display, and user interface are further configured to transmit the collected information to a server.

73. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to transmit the collected information to the data collection facility over a wireless path.

74. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to notify the user before transmitting the collected information to the data collection facility.

75. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to:

notify the user before transmitting the collected information to the data collection facility; and

provide the user with an opportunity to choose whether to send the collected information to the data collection facility.

76. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to transmit the collected information in an e-mail attachment.

77. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to transmit the collected information in the body of an e-mail message.

78. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to:

use a program guide to generate an e-mail message with which to provide the collected information to the data collection facility as a report; and

automatically set the reply address in the e-mail message to the e-mail address of the data collection facility.

79. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to send an e-mail message to an in-box associated with the user equipment before transmitting the collected information to the data collection facility.

80. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to provide the user with an opportunity to authorize submission of the collected information before transmitting the collected information to the data collection facility.

81. The system defined in claim 45 further comprising means for analyzing the collected information at the data collection facility.

82. The system defined in claim 45 wherein the data collection facility is in communication with a television distribution facility.

83. The system defined in claim 45 wherein the data collection facility is in communication with a cable system headend.

84. The system defined in claim 45 wherein the data collection facility is in communication with a television distribution facility, wherein the user equipment is in communication with the television distribution facility, and wherein the control circuitry, display, and user interface are further

configured to transmit the collected information to the data collection facility through the television distribution facility.

85. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to transmit the collected information to the data collection facility over the Internet.

86. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to allow the user to authorize transmission of the collected information using a setup option.

87. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to allow the user to select a desired frequency for transmitting the collected information.

88. The system defined in claim 45 wherein the control circuitry, display, and user interface are further configured to provide the user with a setup option that allows the user to choose whether to notify the user prior to transmitting the collected information to the data collection facility.

89. A method for collecting information on interactions of a user at user equipment with an interactive television application implemented on the

user equipment and providing that information to a data collection facility, comprising:

collecting information on the interactions of the user with the interactive television application; and

transmitting the collected information on interactions of the user with the interactive television application to the data collection facility using e-mail protocols.

90. The method defined in claim 89 further comprising using an e-mail application to transmit the collected information.

91. The method defined in claim 89 further comprising using the post office protocol to transmit the collected information.

92. The method defined in claim 89 further comprising using the Simple Mail Transport Protocol to transmit the information.

93. The method defined in claim 89 further comprising collecting the information with an interactive television program guide.

94. The method defined in claim 89 further comprising collecting information on the television viewing habits of the user with an interactive television program guide and collecting the information on the user's interactions with the interactive

television application using the interactive television program guide.

95. The method defined in claim 89 further comprising:

collecting information on the television viewing activities of the user with an interactive television program guide; and

transmitting the information collected on the television viewing activities of the user to the data collection facility.

96. The method defined in claim 89 further comprising collecting information on the television viewing activities of the user with the interactive television application.

97. The method defined in claim 89 further comprising using an interactive television program guide to collect information on the television viewing habits of the user.

98. The method defined in claim 89 further comprising collecting information on what times the user tunes to television channels.

99. The method defined in claim 89, wherein the user equipment includes a set-top box, the method further comprising allowing the user to use an interactive television program guide to tune the set-top box to a given television channel.

100. The method defined in claim 89, wherein the user equipment includes a digital video recorder, the method further comprising allowing the user to use an interactive television program guide to tune the digital video recorder to a given television channel.

101. The method defined in claim 89, wherein the user equipment includes a personal computer, the method further comprising allowing the user to use an interactive television program guide to tune the personal computer to a given television channel.

102. The method defined in claim 89 further comprising using an interactive television program guide to display program listings on the user equipment for the user.

103. The method defined in claim 89 further comprising displaying an interactive menu on the user equipment that includes options that allow the user to invoke at least an interactive television program guide and a video-on-demand application.

104. The method defined in claim 89 further comprising collecting information on the television viewing habits of the user comprises by monitoring the time and by monitoring the channels tuned to by the user with an interactive television program guide.

105. The method defined in claim 89 wherein collecting the information comprises storing the information in storage on the user equipment.

106. The method defined in claim 89, wherein an interactive television program guide is implemented on the user equipment, the user equipment is connected to a television distribution facility by a communications path, and program listings data is provided from a program listings source, the method further comprising:

receiving the program listings data at the television distribution facility from the program listings source; and

providing the program listings data from the television distribution facility to the interactive television program guide on the user equipment over the communications path.

107. The method defined in claim 89, wherein transmitting the collected information comprises transmitting the collected information using paging frequencies.

108. The method defined in claim 89, wherein transmitting the collected information comprises transmitting the collected information using digital subscriber line communications.

109. The method defined in claim 89, wherein transmitting the collected information comprises transmitting the collected information using cable communications.

110. The method defined in claim 89, wherein transmitting the collected information comprises

transmitting the collected information using communications over telephone lines.

111. The method defined in claim 89, wherein transmitting the collected information comprises transmitting the collected information to a server.

112. The method defined in claim 89 further comprising transmitting the collected information to the data collection facility over a wireless path.

113. The method defined in claim 89 further comprising notifying the user before transmitting the collected information to the data collection facility.

114. The method defined in claim 89 further comprising:

notifying the user before transmitting the collected information to the data collection facility; and

providing the user with an opportunity to choose whether to send the collected information to the data collection facility.

115. The method defined in claim 89 further comprising transmitting the collected information in an e-mail attachment.

116. The method defined in claim 89 further comprising transmitting the collected information in the body of an e-mail message.

117. The method defined in claim 89 further comprising:

using a program guide to generate an e-mail message with which to provide the collected information to the data collection facility as a report; and

automatically setting the reply address in the e-mail message to the e-mail address of the data collection facility.

118. The method defined in claim 89 further comprising sending an e-mail message to an in-box associated with the user equipment before transmitting the collected information to the data collection facility.

119. The method defined in claim 89 further comprising providing the user with an opportunity to authorize submission of the collected information before transmitting the collected information to the data collection facility.

120. The method defined in claim 89 further comprising analyzing the collected information at the data collection facility.

121. The method defined in claim 89 wherein the data collection facility is in communication with a television distribution facility.

122. The method defined in claim 89 wherein the data collection facility is in communication with a cable system headend.

123. The method defined in claim 89 wherein the data collection facility is in communication with a television distribution facility and wherein the user equipment is in communication with the television distribution facility, the method further comprising transmitting the collected information to the data collection facility through the television distribution facility.

124. The method defined in claim 89 further comprising transmitting the collected information to the data collection facility over the Internet.

125. The method defined in claim 89 further comprising allowing the user to authorize transmission of the collected information using a setup option.

126. The method defined in claim 89 further comprising allowing the user to select a desired frequency for transmitting the collected information.

127. The method defined in claim 89 further comprising providing the user with a setup option that allows the user to choose whether to notify the user prior to transmitting the collected information to the data collection facility.

128. A system including user equipment on which an interactive television application is implemented in which information on the interactions of a user at the user equipment with the interactive television application is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the interactions of the user with the interactive television application; and

transmit the collected information on interactions of the user with the interactive television application to the data collection facility using e-mail protocols.

129. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to use an e-mail application to transmit the collected information.

130. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to use the post office protocol to transmit the collected information.

131. The system defined in claim 128 wherein the control circuitry, display, and user interface are

further configured to use the Simple Mail Transport Protocol to transmit the information.

132. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to collect the information with an interactive television program guide.

133. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to collect information on the television viewing habits of the user with an interactive television program guide and collecting the information on the user's interactions with the interactive television application using the interactive television program guide.

134. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to:

collect information on the television viewing activities of the user with an interactive television program guide; and

transmit the information collected on the television viewing activities of the user to the data collection facility.

135. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to collect information on the television viewing activities of the user with the interactive television application.

136. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to collect information on the television viewing habits of the user.

137. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to collect information on what times the user tunes to television channels.

138. The system defined in claim 128, wherein the user equipment includes a set-top box, and wherein the control circuitry, display, and user interface are further configured to allow the user to use an interactive television program guide to tune the set-top box to a given television channel.

139. The system defined in claim 128, wherein the user equipment includes a digital video recorder, and wherein the control circuitry, display, and user interface are further configured to allow the user to use an interactive television program guide to tune the digital video recorder to a given television channel.

140. The system defined in claim 128, wherein the user equipment includes a personal computer, and wherein the control circuitry, display, and user interface are further configured to allow the user to use an interactive television program guide to tune the personal computer to a given television channel.

141. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to use an interactive television program guide to display program listings on the user equipment for the user.

142. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to display an interactive menu on the user equipment that includes options that allow the user to invoke at least an interactive television program guide and a video-on-demand application.

143. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to collect information on the television viewing habits of the user comprises by monitoring the time and by monitoring the channels tuned to by the user with an interactive television program guide.

144. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to store the information in storage on the user equipment.

145. The system defined in claim 128, wherein an interactive television program guide is implemented on the user equipment, the user equipment is connected to a television distribution facility by a communications path, and program listings data is provided from a program listings source, and wherein

the television distribution facility is configured to receive the program listings data at the television distribution facility from the program listings source and provide the program listings data from the television distribution facility to the interactive television program guide on the user equipment over the communications path.

146. The system defined in claim 128, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using paging frequencies.

147. The system defined in claim 128, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using digital subscriber line communications.

148. The system defined in claim 128, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using cable communications.

149. The system defined in claim 128, wherein the control circuitry, display, and user interface are further configured to transmit the collected information using communications over telephone lines.

150. The system defined in claim 128,wherein the control circuitry, display, and user interface are

further configured to transmit the collected information to a server.

151. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to transmit the collected information to the data collection facility over a wireless path.

152. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to notify the user before transmitting the collected information to the data collection facility.

153. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to:

notify the user before transmitting the collected information to the data collection facility; and

provide the user with an opportunity to choose whether to send the collected information to the data collection facility.

154. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to transmit the collected information in an e-mail attachment.

155. The system defined in claim 128 wherein the control circuitry, display, and user interface are

further configured to transmit the collected information in the body of an e-mail message.

156. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to:

use a program guide to generate an e-mail message with which to provide the collected information to the data collection facility as a report; and

automatically set the reply address in the e-mail message to the e-mail address of the data collection facility.

157. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to send an e-mail message to an in-box associated with the user equipment before transmitting the collected information to the data collection facility.

158. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to provide the user with an opportunity to authorize submission of the collected information before transmitting the collected information to the data collection facility.

159. The system defined in claim 128 further comprising means for analyzing the collected information at the data collection facility.

160. The system defined in claim 128 wherein the data collection facility is in communication with a television distribution facility.

161. The system defined in claim 128 wherein the data collection facility is in communication with a cable system headend.

162. The system defined in claim 128 wherein the data collection facility is in communication with a television distribution facility and wherein the user equipment is in communication with the television distribution facility, and wherein the control circuitry, display, and user interface are further configured to transmit the collected information to the data collection facility through the television distribution facility.

163. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to transmit the collected information to the data collection facility over the Internet.

164. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to allow the user to authorize transmission of the collected information using a setup option.

165. The system defined in claim 128 wherein the control circuitry, display, and user interface are

further configured to allow the user to select a desired frequency for transmitting the collected information.

166. The system defined in claim 128 wherein the control circuitry, display, and user interface are further configured to provide the user with a setup option that allows the user to choose whether to notify the user prior to transmitting the collected information to the data collection facility.

167. A method for collecting information on the television viewing activities of a user at user equipment and providing that information to a data collection facility, comprising:

collecting information on the television viewing activities of the user by monitoring which television channels the user tunes to with the user equipment; and

transmitting the collected information on the viewing activities of the user to the data collection facility using a web browser's communications capabilities.

168. The method defined in claim 167 further comprising using the browser's forms capabilities to transmit the collected information.

169. The method defined in claim 167 further comprising transmitting the collected information using the File Transfer Protocol (FTP).

170. The method defined in claim 167 further comprising using an interactive television program guide to access the web browser's communications capabilities.

171. The method defined in claim 167 further comprising using an interactive television program guide to generate inputs for the web browser to emulate user commands.

172. A system including user equipment in which information on the television viewing activities of a user at the user equipment is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the television viewing activities of the user by monitoring which television channels the user tunes to with the control circuitry; and

transmit the collected information on the viewing activities of the user to the data collection facility using a web browser's communications capabilities.

173. The system defined in claim 172 wherein the control circuitry, display, and user interface are further configured to use the browser's forms capabilities to transmit the collected information.

174. The system defined in claim 172 wherein the control circuitry, display, and user interface are further configured to transmit the collected information using the File Transfer Protocol (FTP).

175. The system defined in claim 172 wherein the control circuitry, display, and user interface are further configured to use an interactive television program guide to access the web browser's communications capabilities.

176. The system defined in claim 172 wherein the control circuitry, display, and user interface are further configured to use an interactive television program guide to generate inputs for the web browser to emulate user commands.

177. A method for collecting information on the interactions of a user at user equipment with an interactive television application implemented on the user equipment and providing that information to a data collection facility, comprising:

collecting information on the interactions of the user with the interactive television application implemented on the user equipment; and

transmitting the collected information to the data collection facility using a web browser's communications capabilities.

178. The method defined in claim 177 further comprising using the browser's forms capabilities to transmit the collected information.

179. The method defined in claim 177 further comprising transmitting the collected information using the File Transfer Protocol (FTP).

180. The method defined in claim 177 further comprising using an interactive television program guide to access the web browser's communications capabilities.

181. The method defined in claim 177 further comprising using an interactive television program guide to generate inputs for the web browser to emulate user commands.

182. A system including user equipment in which information is collected on the interactions of a user with an interactive television program guide implemented on the user equipment is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the interactions of the user with the interactive television application implemented on the user equipment; and

transmit the collected information to the data collection facility using a web browser's communications capabilities.

183. The system defined in claim 182 wherein the control circuitry, display, and user interface are further configured to use the browser's forms capabilities to transmit the collected information.

184. The system defined in claim 182 wherein the control circuitry, display, and user interface are further configured to transmit the collected information using the File Transfer Protocol (FTP).

185. The system defined in claim 182 wherein the control circuitry, display, and user interface are further configured to use an interactive television program guide to access the web browser's communications capabilities.

186. The system defined in claim 182 wherein the control circuitry, display, and user interface are further configured to use an interactive television program guide to generate inputs for the web browser to emulate user commands.

187. A method for collecting information on the television viewing activities of a user at user equipment and providing that information to a data collection facility, comprising:

collecting information on the television viewing activities of the user by monitoring which

television channels the user tunes to with the user equipment; and

transmitting the collected information on the viewing activities of the user to the data collection facility using a stand-alone FTP application.

188. A system including user equipment in which information on the television viewing activities of a user at the user equipment is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the television viewing activities of the user by monitoring which television channels the user tunes to with the control circuitry; and

transmit the collected information on the viewing activities of the user to the data collection facility using a stand-alone FTP application.

189. A method for collecting information on the interactions of a user at user equipment with an interactive television application implemented on the user equipment and providing that information to a data collection facility, comprising:

collecting information on the interactions of the user with the interactive

television application implemented on the user equipment; and

transmitting the collected information to the data collection facility using a stand-alone FTP application.

190. A system including user equipment in which information is collected on the interactions of a user with an interactive television program guide implemented on the user equipment is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the interactions of the user with the interactive television application implemented on the user equipment; and

transmit the collected information to the data collection facility using a stand-alone FTP application.

191. A method for collecting information on the television viewing activities of a user at user equipment and providing that information to a data collection facility, comprising:

collecting information on the television viewing activities of the user by monitoring which television channels the user tunes to with the user equipment; and

transmitting the collected information on the viewing activities of the user to the data collection facility using the communications capabilities of an operating system installed on the user equipment.

192. A system including user equipment in which information on the television viewing activities of a user at the user equipment is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the television viewing activities of the user by monitoring which television channels the user tunes to with the control circuitry; and

transmit the collected information on the viewing activities of the user to the data collection facility using the communications capabilities of an operating system installed on the user equipment.

193. A method for collecting information on the interactions of a user at user equipment with an interactive television application implemented on the user equipment and providing that information to a data collection facility, comprising:

collecting information on the interactions of the user with the interactive

television application implemented on the user equipment; and

transmitting the collected information to the data collection facility using the communications capabilities of an operating system installed on the user equipment.

194. A system including user equipment in which information is collected on the interactions of a user with an interactive television program guide implemented on the user equipment is provided to a data collection facility, comprising:

control circuitry;

a display; and

a user input interface, wherein the control circuitry, display, and user interface are configured to:

collect information on the interactions of the user with the interactive television application implemented on the user equipment; and

transmit the collected information to the data collection facility using the communications capabilities of an operating system installed on the user equipment.

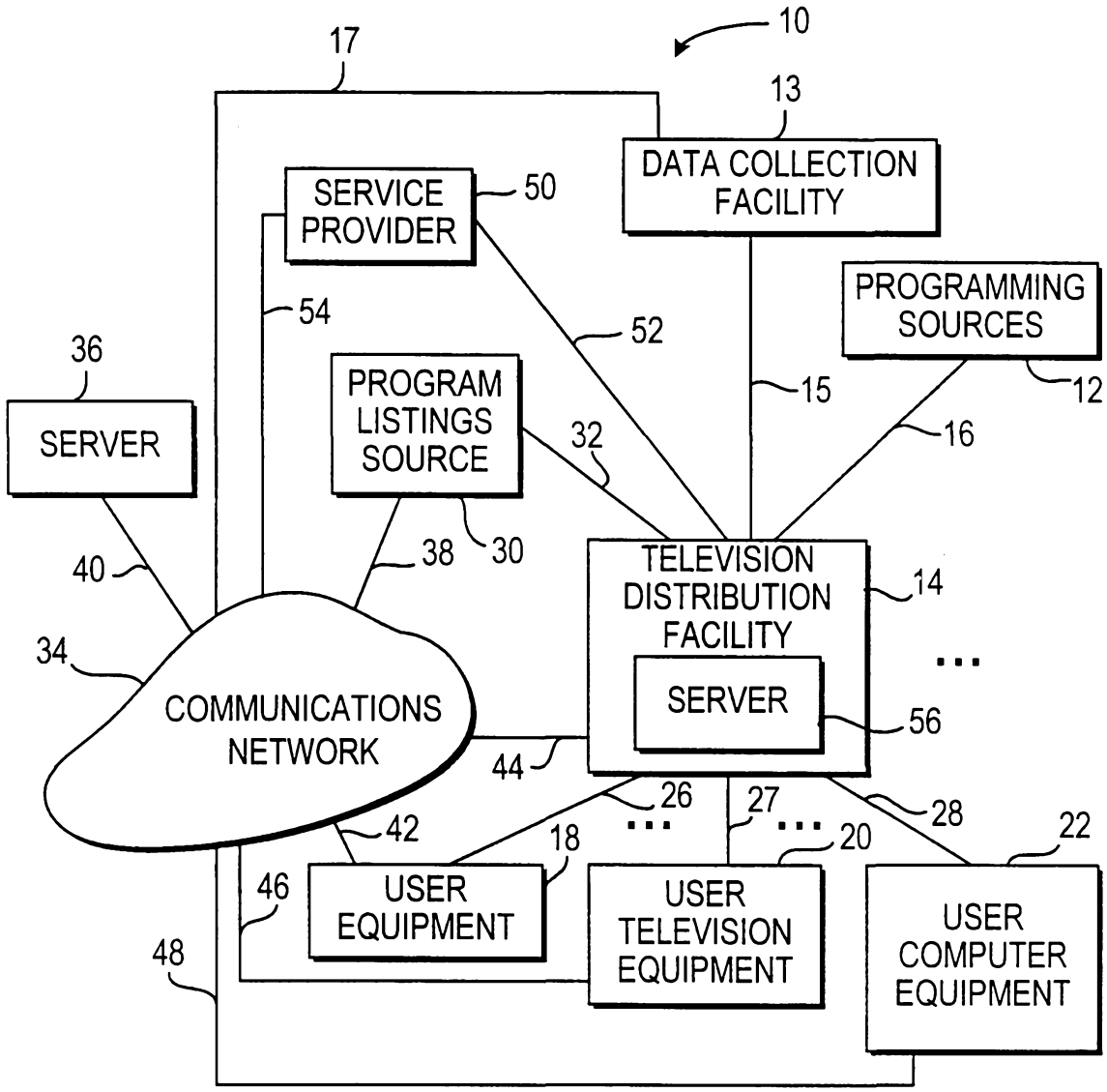

10
17
13
DATA COLLECTION FACILITY
SERVICE PROVIDER
50
54
52
PROGRAMMING SOURCES
12
36
SERVER
PROGRAM LISTINGS SOURCE
32
15
16
40
38
30
TELEVISION DISTRIBUTION FACILITY
14
34
COMMUNICATIONS NETWORK
SERVER
56
44
26
27
28
42
18
20
22
46
USER EQUIPMENT
USER TELEVISION EQUIPMENT
USER COMPUTER EQUIPMENT
48

FIG. 1

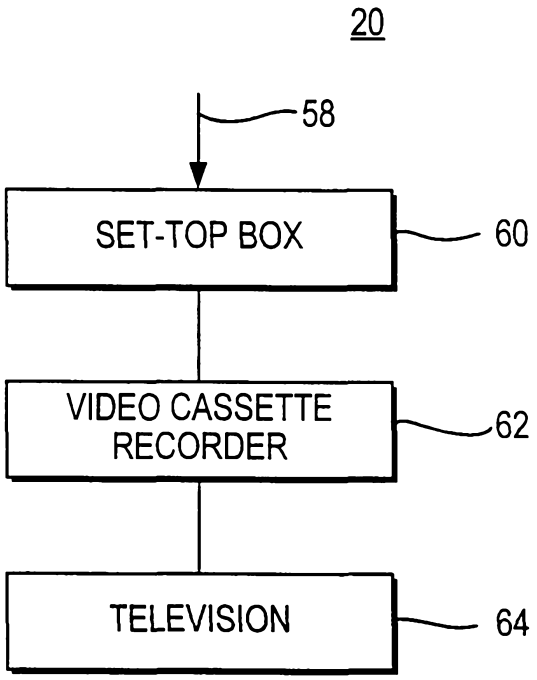

20
58
SET-TOP BOX
60
VIDEO CASSETTE RECORDER
62
TELEVISION
64

FIG. 2

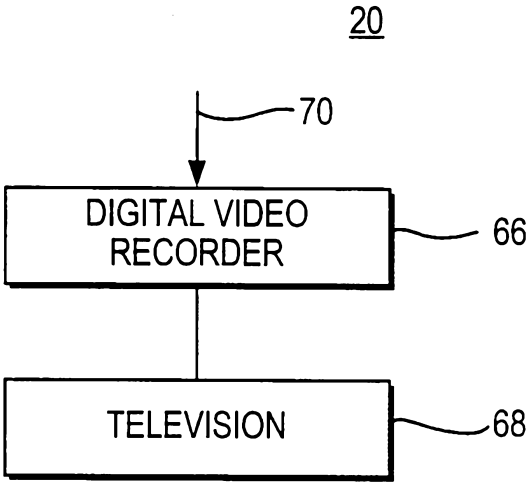



FIG. 3

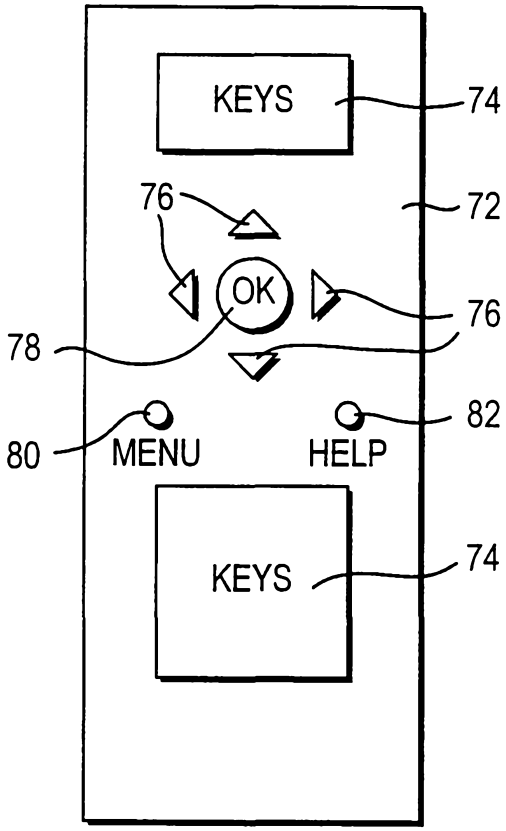



FIG. 4

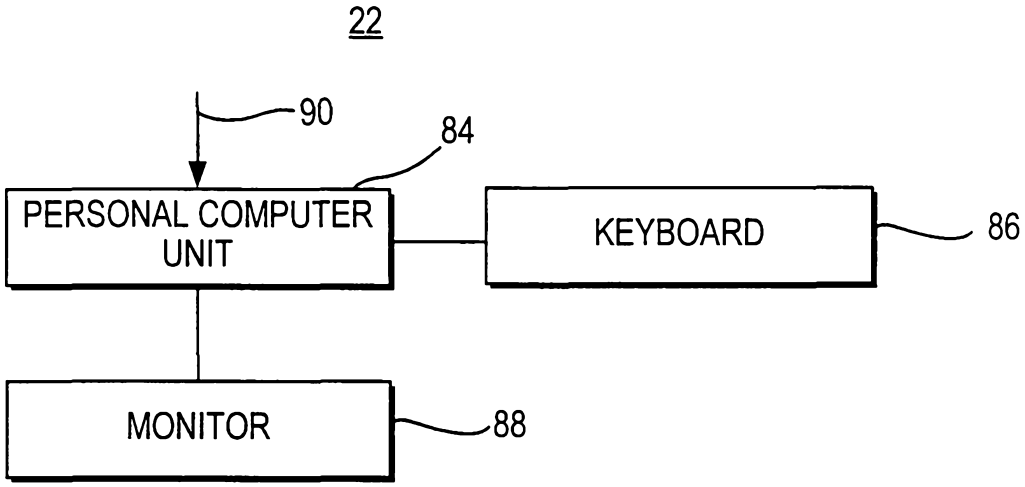



FIG. 5

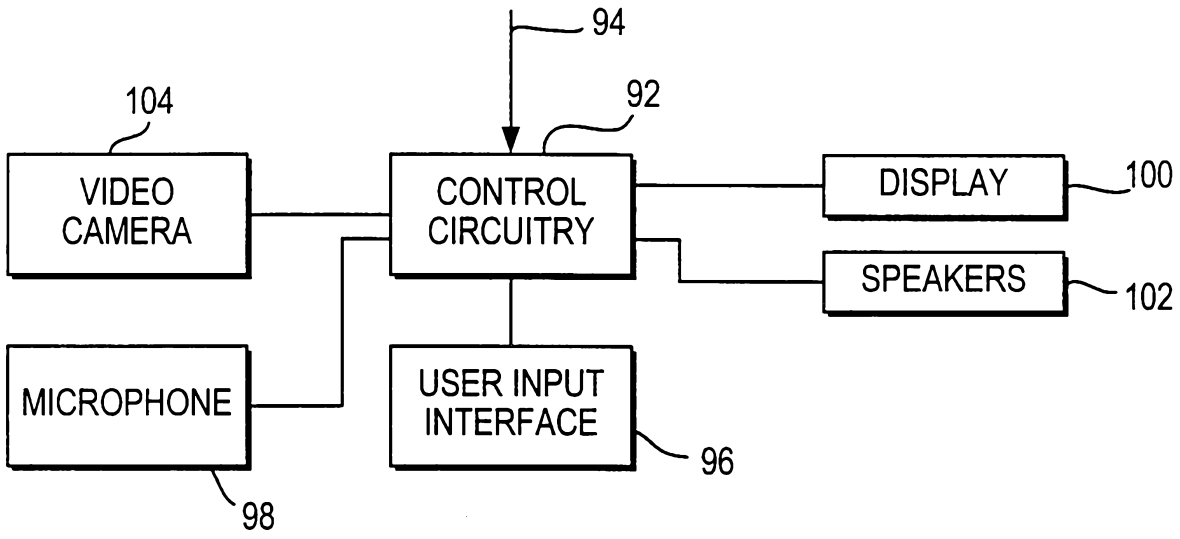

94
104
92
VIDEO CAMERA
CONTROL CIRCUITRY
DISPLAY
100
SPEAKERS
102
MICROPHONE
USER INPUT INTERFACE
96
98

FIG. 6

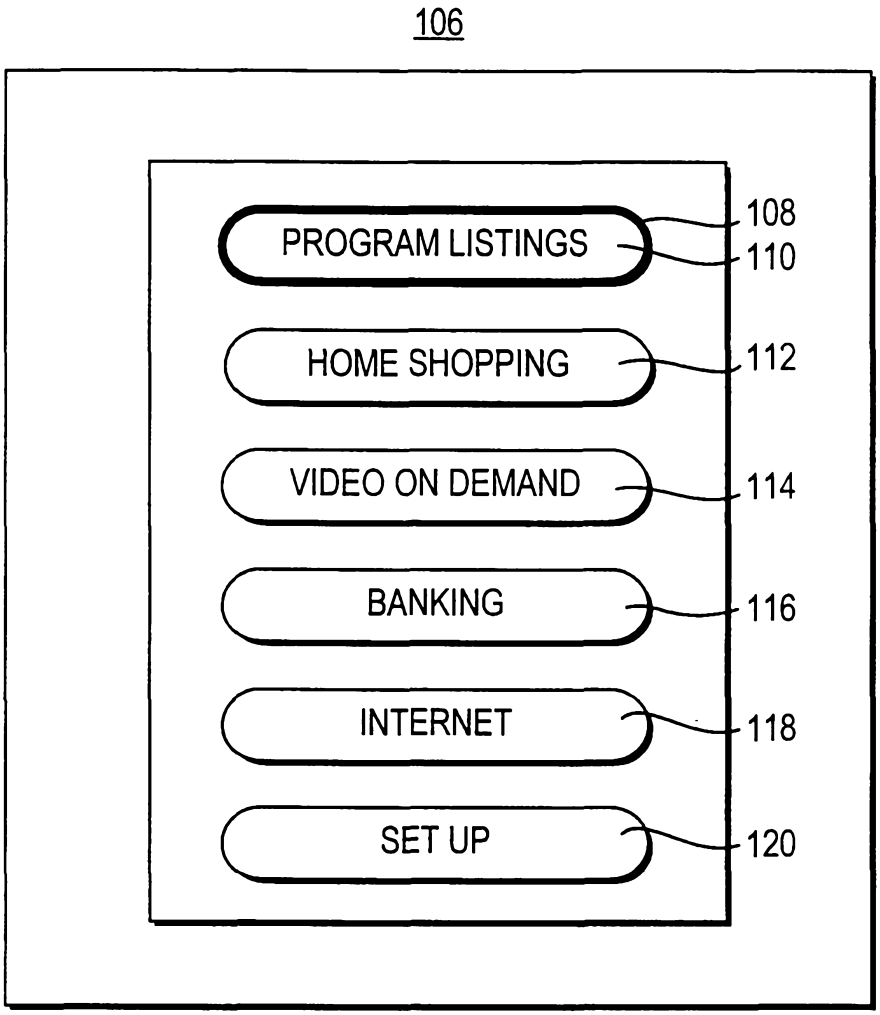

106
PROGRAM LISTINGS
108
110
HOME SHOPPING
112
VIDEO ON DEMAND
114
BANKING
116
INTERNET
118
SET UP
120

FIG. 7

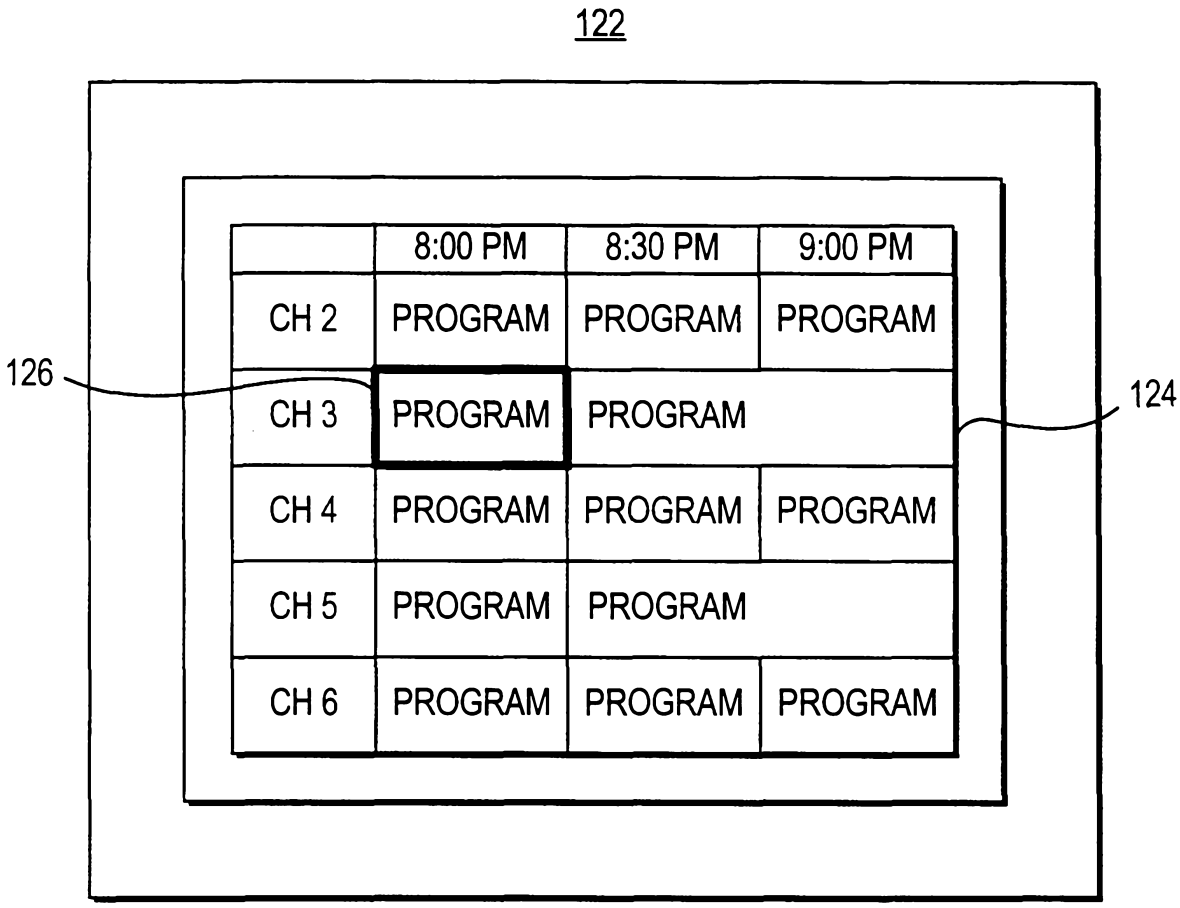

122
126
124
8:00 PM
8:30 PM
9:00 PM
CH 2
PROGRAM
PROGRAM
PROGRAM
CH 3
PROGRAM
PROGRAM
CH 4
PROGRAM
PROGRAM
PROGRAM
CH 5
PROGRAM
PROGRAM
CH 6
PROGRAM
PROGRAM
PROGRAM

FIG. 8

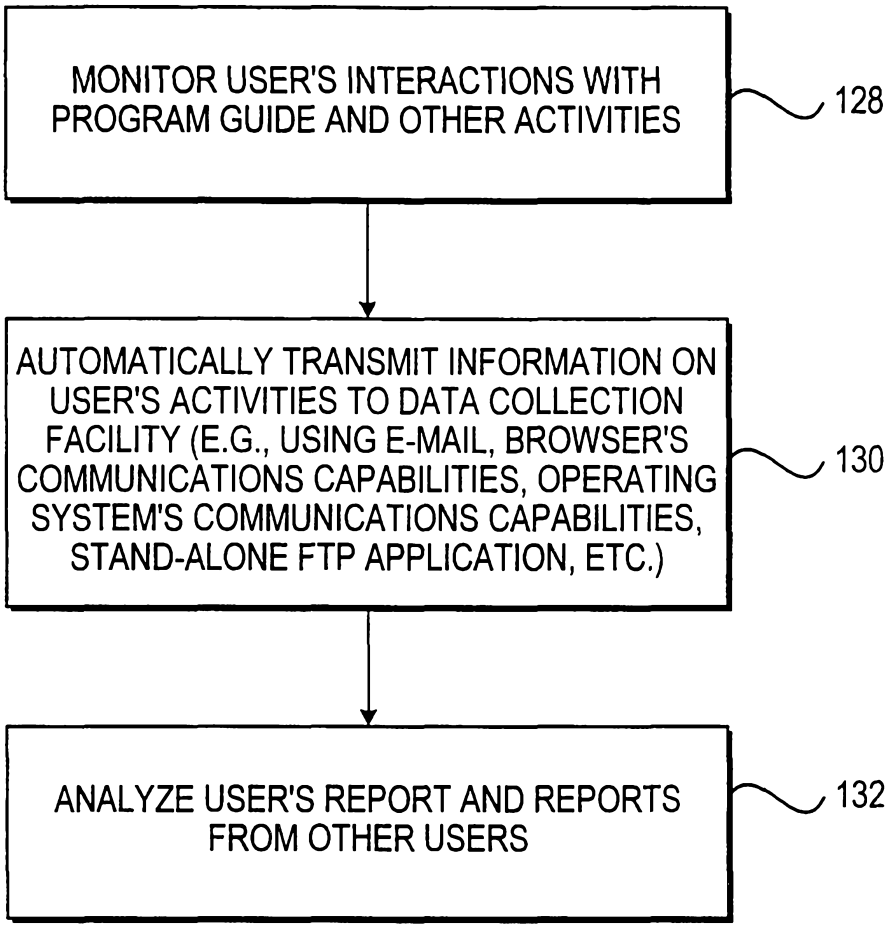

MONITOR USER'S INTERACTIONS WITH PROGRAM GUIDE AND OTHER ACTIVITIES
128
AUTOMATICALLY TRANSMIT INFORMATION ON USER'S ACTIVITIES TO DATA COLLECTION FACILITY (E.G., USING E-MAIL, BROWSER'S COMMUNICATIONS CAPABILITIES, OPERATING SYSTEM'S COMMUNICATIONS CAPABILITIES, STAND-ALONE FTP APPLICATION, ETC.)
130
ANALYZE USER'S REPORT AND REPORTS FROM OTHER USERS
132

*FIG. 9*

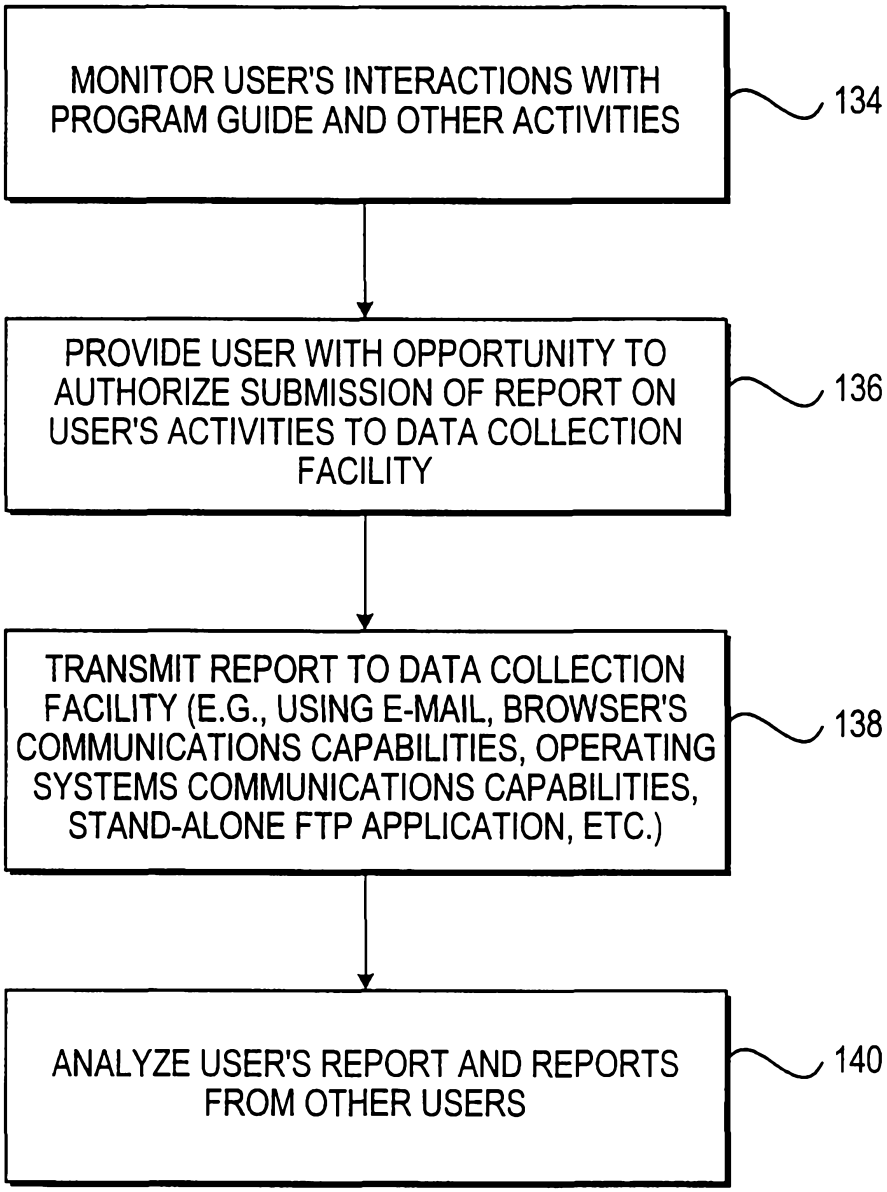

MONITOR USER'S INTERACTIONS WITH PROGRAM GUIDE AND OTHER ACTIVITIES
134
PROVIDE USER WITH OPPORTUNITY TO AUTHORIZE SUBMISSION OF REPORT ON USER'S ACTIVITIES TO DATA COLLECTION FACILITY
136
TRANSMIT REPORT TO DATA COLLECTION FACILITY (E.G., USING E-MAIL, BROWSER'S COMMUNICATIONS CAPABILITIES, OPERATING SYSTEMS COMMUNICATIONS CAPABILITIES, STAND-ALONE FTP APPLICATION, ETC.)
138
ANALYZE USER'S REPORT AND REPORTS FROM OTHER USERS
140

*FIG. 10*

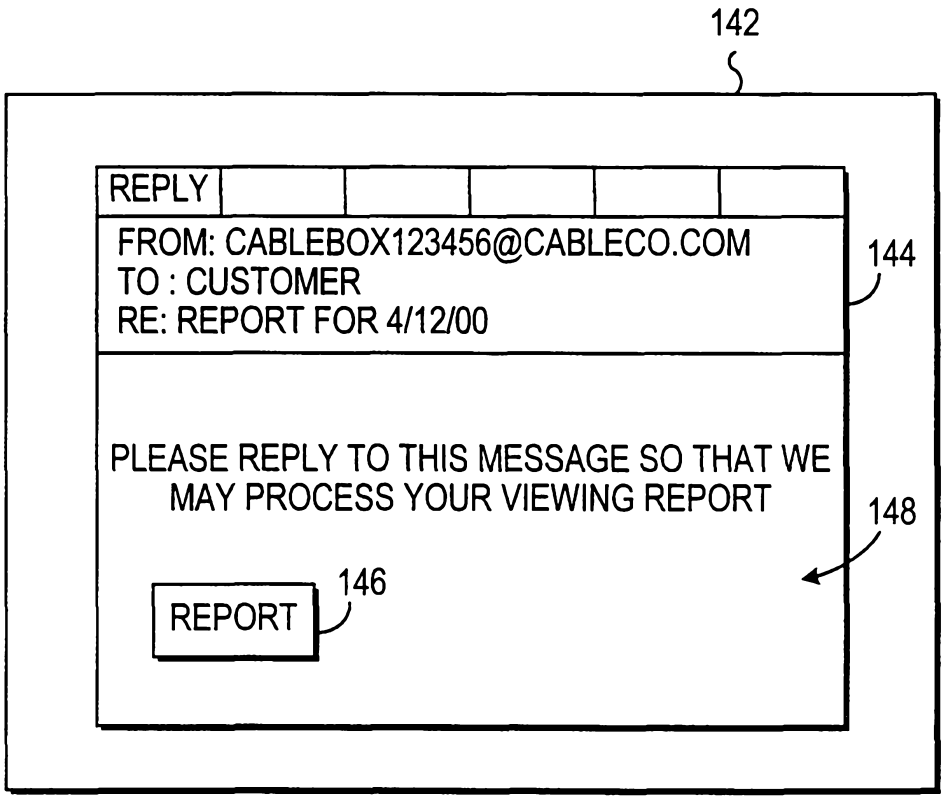

142
REPLY
FROM: CABLEBOX123456@CABLECO.COM
TO : CUSTOMER
RE: REPORT FOR 4/12/00
144
PLEASE REPLY TO THIS MESSAGE SO THAT WE MAY PROCESS YOUR VIEWING REPORT
148
146
REPORT

FIG. 11

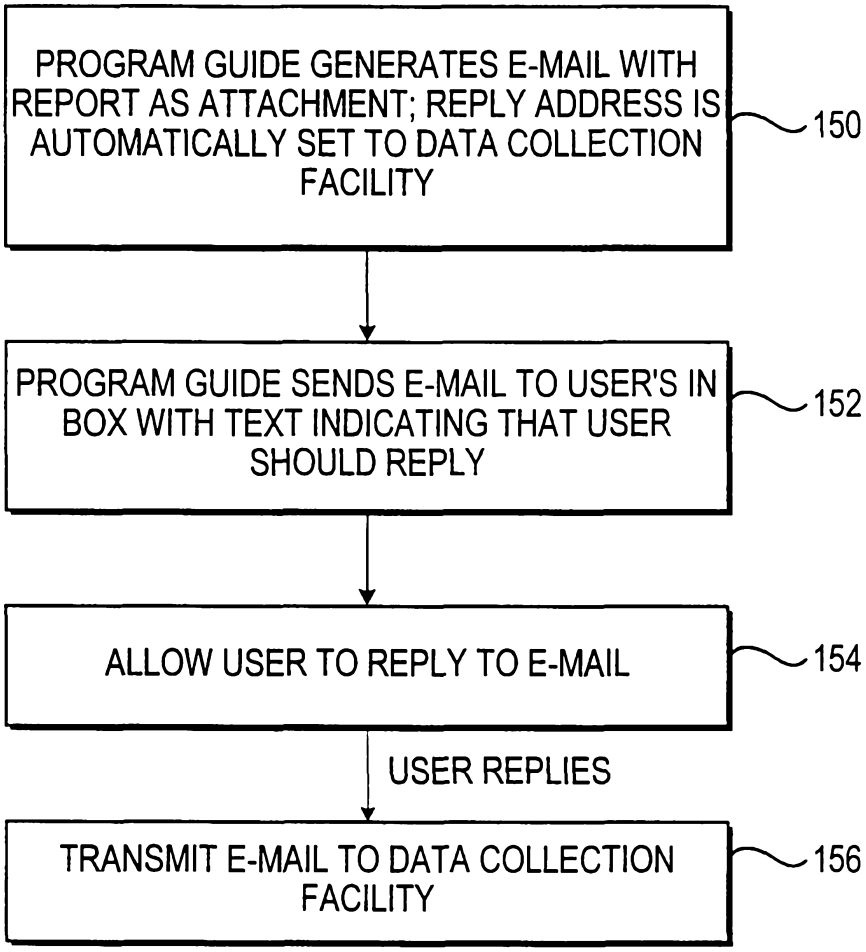

PROGRAM GUIDE GENERATES E-MAIL WITH REPORT AS ATTACHMENT; REPLY ADDRESS IS AUTOMATICALLY SET TO DATA COLLECTION FACILITY
150
PROGRAM GUIDE SENDS E-MAIL TO USER'S IN BOX WITH TEXT INDICATING THAT USER SHOULD REPLY
152
ALLOW USER TO REPLY TO E-MAIL
154
USER REPLIES
TRANSMIT E-MAIL TO DATA COLLECTION FACILITY
156

*FIG. 12*

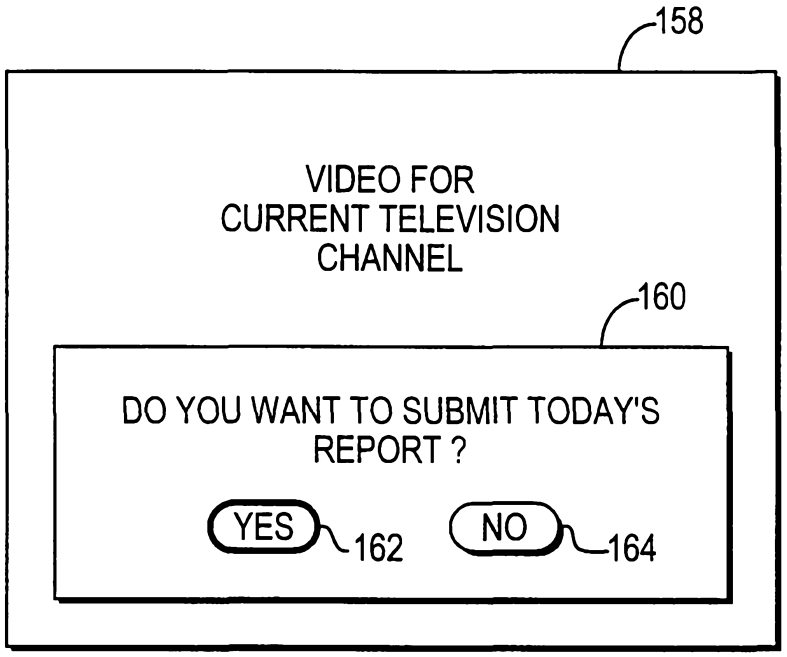

158
VIDEO FOR
CURRENT TELEVISION
CHANNEL
160
DO YOU WANT TO SUBMIT TODAY'S
REPORT ?
YES
162
NO
164

FIG. 13

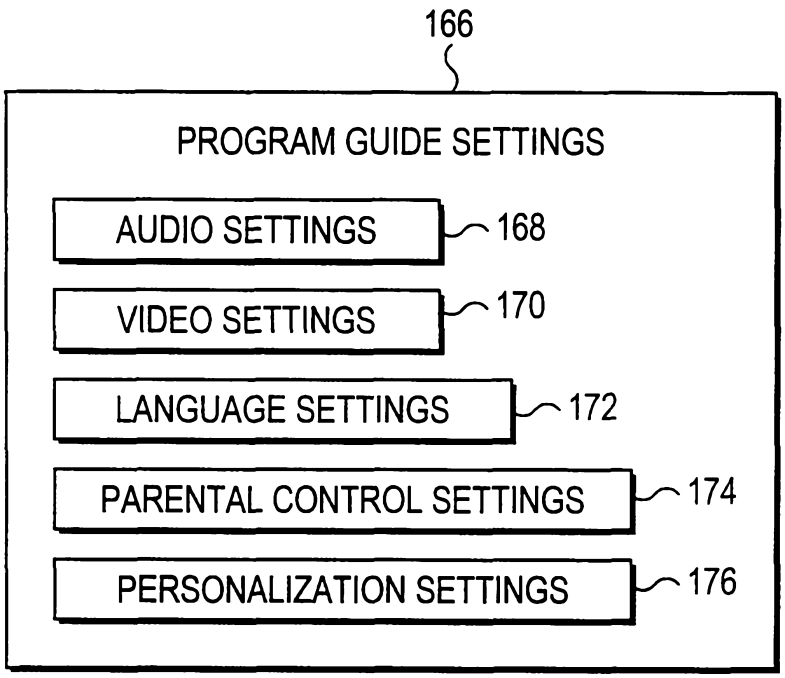

166
PROGRAM GUIDE SETTINGS
AUDIO SETTINGS
168
VIDEO SETTINGS
170
LANGUAGE SETTINGS
172
PARENTAL CONTROL SETTINGS
174
PERSONALIZATION SETTINGS
176

FIG. 14

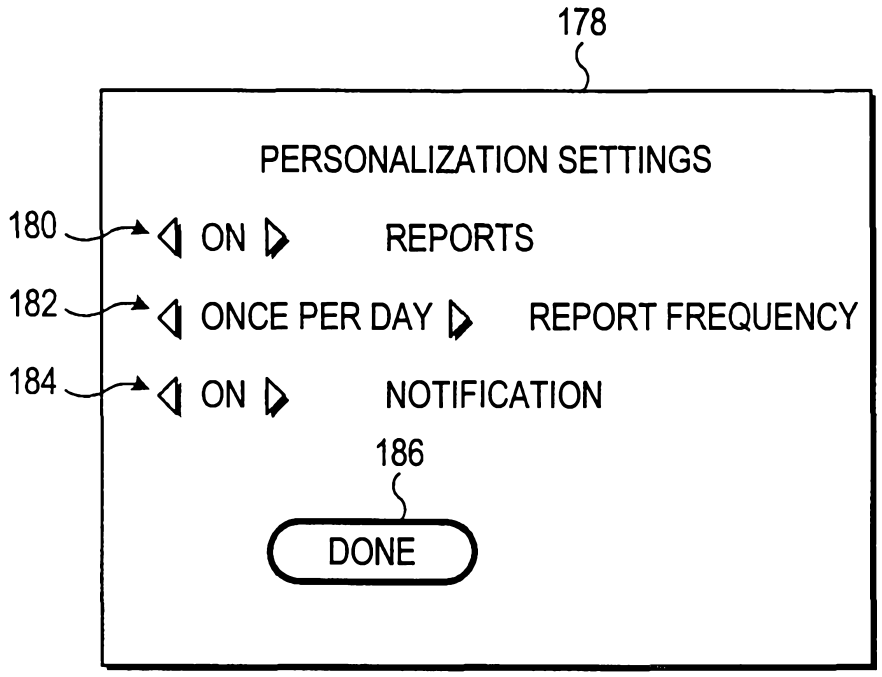

178
PERSONALIZATION SETTINGS
180
ON
REPORTS
182
ONCE PER DAY
REPORT FREQUENCY
184
ON
NOTIFICATION
186
DONE

FIG. 15