

Description

[0001] The present invention relates to a video-on-demand system and methods relating to it.

[0002] For some time, there has been a recognition of the desire to be able to provide to a large number of remote users the choice of receiving any of a large number of video programmes as and when desired. With improvements in compression and increased availability of large-bandwidth communications networks, such systems have become more practical.

[0003] Near video-on-demand systems have been available in which each video programme is repeatedly broadcast throughout the day at a number of closely spaced times, thereby allowing users to watch those programmes at almost any time. It is also known to make available over the internet video programmes for streaming or download to personal computers connected to the internet. Generally, these systems can be cumbersome to operate and can have limited functionality. The steps required for a user to make a connection or to arrange a subscription with a service provider may be inconvenient.

[0004] It is an object of the present invention to provide improved features for a video-on-demand system

[0005] The present application also recognises for the first time the possibility and advantages of using a simple optical disk player as a means for accessing a video-on-demand system without the need of a hard-drive memory. It also recognises for the first time the possibility of providing personal recommendations of video-on-demand programmes based on profiles stored centrally and remotely from user terminals. Furthermore, it recognises for the first time the possibility of providing video-on-demand in pages having a layered structure and allowing functional and advertising overlays to be provided in layers other than that in which the video streaming occurs.

[0006] According to the present invention there is provided a method of operating an optical disk player as a video-on-demand player without the need of a hard-drive memory, the optical disk player having an optical disk reader, a processor, a RAM and a port allowing connection to the internet, the method including:

providing a unique identifier on an optical disk;
providing code components on the optical disk which can be run directly from the optical disk on only the processor and RAM of the optical disk player so as to cause the optical disk player to send the unique identifier over the internet to a video streaming service, to operate as a web browser for accessing pages of the video streaming service over the internet and to operate as a video decoder for decoding streamed video data received from pages of the video streaming service wherein the video streaming service can monitor use by a user with reference to the unique identifier.

[0007] According to the present invention, there is also

provided an optical disk for operating an optical disk player as a video-on-demand player without the need of a hard-drive memory, the optical disk player having an optical disk reader, a processor, a RAM and a port allowing connection to the internet, the optical disk having recorded thereon:

a unique identifier; and
code components which can be run directly from the optical disk on only the processor and RAM of the optical disk player so as to cause the optical disk player to send the unique identifier over the internet to a video streaming service, to operate as a web browser for accessing pages of the video streaming service over the internet and to operate as a video decoder for decoding streamed video data received from pages of the video streaming service wherein the unique identifier allows the video streaming service to monitor use by a user with reference to the unique identifier.

[0008] In this way, there may be provided a video-on-demand system including such an optical disk and also at least one optical disk player for use in combination with the optical disk as a video-on-demand player, the optical disk player including an optical disk reader, a processor, a RAM and a port allowing connection to the internet; and

a video streaming service remote from the optical disk player including at least one server for providing, as pages available over the internet, streams of video data.

[0009] In this way, it is not necessary for terminal devices to have hard-drive memories in order to access the video-on-demand service. Flexibility is allowed for a user in choosing which devices are used to connect to a video-on-demand service. Devices without hard disks can be produced more cheaply. Also, there is a general reluctance by consumers to have PC-based systems placed in proximity to large display screens in living rooms due to the sometimes intrusive sound made by fans to cool the circuitry of the PC.

[0010] Optical disks can be sold including the browser and video decoder required for the terminal, in the form of an optical disk player, to have access to the video-on-demand service. Furthermore, by providing the unique identifier, the video streaming service is able to identify and/or authenticate the disk so as to establish that it corresponds to a genuine user. It is only necessary for a user to purchase an appropriate disk for that user to be given easy and immediate access to the video streaming service. Furthermore, by way of the unique identifier, the video streaming service can maintain a profile history related to that unique identifier and provide personal recommendations to a user of that unique identifier. Furthermore, it is possible to maintain anonymity of the user with regard to the profile history, since it need only be kept in conjunction with the unique identifier itself.

[0011] Preferably, the video streaming service in-

cludes a controller responsive to a request from the optical disk player to provide selective access to a plurality of video-on-demand programmes and stream a selected one of the plurality of video-on-demand programmes through an internet page.

[0012] Hence, receipt of a streamed video-on-demand programmes is possible merely using the browser and video decoder of the disk in the optical disk player.

[0013] Preferably, the controller is arranged to provide through an internet page a menu of available video-on-demand programmes.

[0014] Thus, again, a user is able to view and select from a plurality of video-on-demand programmes by means only of the code components provided on the optical disk and any menu information provided over the internet.

[0015] Preferably, the video-on-demand system further includes a profile memory remote from the optical disk player in which records of the video-on-demand programmes selected by the user of the optical disk player are stored; and

a matcher remote from the optical disk player for comparing the contents of video-on-demand programmes recorded in the profile memory with the contents of video-on-demand programmes available for streaming by the video streaming service and for outputting recommendations of video-on-demand programmes having contents similar to the video-on-demand programmes recorded in the profile memory.

[0016] In this way, profile histories for a plurality of different users having respective unique identifiers can be stored centrally and remote from the respective optical disk players. A separate matcher can be provided for analysing the content of the video-on-demand programmes noted in the profile for a particular unique identifier and for comparing this with the contents of the video-on-demand programmes available for streaming. By providing the profile memories remote from the optical disk players and available to the matcher, the matcher having access to the video-on-demand programmes available for streaming, detailed and accurate comparison can be conducted so as to provide good and useful recommendations to the users having respective unique identifiers.

[0017] Preferably, the controller is arranged to display on said menu details of video-on-demand programmes recommended by said recommender.

[0018] In this way, a user can effectively be provided with an indication of video-on-demand programmes that are likely to be of interest to him or her. Since this recommendation need not be based on any current choice of video-on-demand programme and is a personal recommendation rather than a contextual recommendation, the recommendation can be displayed even when the user is only viewing the general menu with the full choice of available video-on-demand programmes.

[0019] Preferably, the records of the video-on-demand programmes selected by the user are stored in conjunction with the unique identifier of the disk used by the user.

[0020] In this way, as discussed above, individual profile histories can be matched to users by means of the unique identifiers.

[0021] Preferably, the video-on-demand system further includes an account memory remote from the optical disk player for recording account information in conjunction with the unique identifier of the disk used by the user.

[0022] This allows the video-on-demand system to keep a record of the financial relationship with individual respective users, for instance by means of notional tokens, which can be assigned in varying amounts to the streaming of various video-on-demand programmes.

[0023] According to the present invention, there is also provided a method of providing a user with selective access to a plurality of video-on-demand programmes having respective contents, the method including:

according to selection by the user, streaming one of the plurality of video-on-demand programmes through an internet page including a first layer and a second layer;

providing the video-on-demand stream in the first layer;

providing an overlay image in the second layer which can be selectively combined with the video-on-demand of the first layer;

providing a link in association with the overlay image, selection of the link causing advertising content to be provided to the user;

monitoring selection by the user with regard to content of selected video-on-demand programmes;

judging content of video-on-demand programmes selected by the user; and

choosing one of a plurality of overlay images and associated links for provision in the second layer according to the step of judging.

[0024] According to the present invention, there is also provided a video-on-demand system accessible over the internet, the system including:

a video server storing a plurality of video-on-demand programmes having respective contents;

a controller responsive to a request from a user to provide selective access to the plurality of video-on-demand programmes and to stream a selected one of the plurality of video-on-demand programmes through an internet page including a first layer and a second layer wherein the controller is arranged:

to stream the selected video-on-demand programmes in the first layer;

to provide, in the second layer, an overlay image which can be selectively combined with the video-on-demand of the first layer;

to provide a link in association with the overlay image, selection of the link causing advertising content to be provided to the user;

to monitor selection by the user with regard to content of selected video-on-demand programmes; and
to judge the content of video-on-demand programmes selected by the user; wherein the system further comprises a memory storing a plurality of overlay images, together with respective links and advertising content; and the controller is arranged to select one of the plurality of overlay images and associated links for provision in the second layer according to the judgement of the content of video-on-demand programme selected by the user.

[0025] In this way, advertising content can be provided to a user in a way that is tailored to an individual respective user. According to judgement of the video-on-demand programmes watched by a user, the controller can judge appropriate advertising content. This can be made available to the user merely by providing the associated overlay images and links in the second layer of the page being accessed by the user. There is no need at the video server and controller end to adapt the stream of video data provided in the first layer, since the personalised advertising content is made accessible to the user by a second layer, even though this is within the same page.

[0026] The controller can be arranged to select said one of the overlay images for the second layer based at least partly on the content of the video-on-demand being at that time streamed to the first layer.

[0027] In this way, advertising content can be chosen for a user on the basis of a contextual recommendation. In other words, the system will recommend and provide advertising content that relates to the video-on-demand programme being streamed at the same time as the overlay images for the advertising content are to be displayed.

[0028] It is also possible to provide overlay images that are based on personal recommendation. In this respect, the video-on-demand system can further include a profile memory in which records of the video-on-demand programmes selected by the user are stored; a matcher for comparing the contents of video-on-demand programmes recorded in the profile memory with the advertising contents associated with respective overlay images and outputting a recommendation of an overlay image for display; wherein, the controller is arranged to select said one of the overlay images for the second layer based at least partly on the recommendation from the matcher.

[0029] Thus, irrespective of the video-on-demand programme being watched at the time, the system is able to choose advertising content that is likely to be of interest to the user based on the history profile for that user.

[0030] The link provided by the video-on-demand system can be the address of a different internet page, the controller providing the advertising content in that different internet page.

[0031] Alternatively, selection of the link can cause the

controller to provide the advertising content in the second layer. In this case, it is possible for the video-on-demand programme to be continued to be streamed. Of course, where the system takes a user to advertising content of a different internet page, it is also possible for the system to remember, for instance by means of a timestamp, the position to which the user had progressed in the video-on-demand programme and, hence, after viewing the advertising content, return to the video-on-demand programme at the right place.

[0032] Preferably, the controller is responsive to selection by the user to cause display of only the first layer or the first layer in combination with the second layer.

[0033] In this way, the user is able to view a streamed video-on-demand programme with or without the overlay images of possible advertising content. In one embodiment, it is possible to provide the user with the option of being charged less, for instance in notional tokens, for watching a video-on-demand programme with the overlay images of the second layer on display.

[0034] According to the present invention, there is also provided a method of transmitting video-on-demand including:

streaming, from a server on the internet, video-on-demand through an internet page including a first layer and a second layer;

providing the video-on-demand stream in the first layer;

providing, in the second layer, for selective combination with the video-on-demand of the first layer, a plurality of overlay images corresponding to respective control functions of the video-on-demand stream;

enabling a user at a remote location on the internet to select respective overlay images when the plurality of overlay images are displayed in combination with the video-on-demand at the remote location; and

responding at the server to selection of an overlay image at the remote location so as to change the video-on-demand stream in accordance with the corresponding respective control function.

[0035] According to the present invention, there is also provided a video-on-demand system accessible over the internet, the system including:

a video server storing video-on-demand content and for streaming video-on-demand through a first layer of an internet page having a first layer and a second layer; and

a controller for causing there to be formed in the second layer a plurality of selectable overlay images such that a user at a location on the internet remote from the video server and the controller can display streamed video-on-demand of the first layer in combination with the overlay images of the second layer

and can select one of the overlay images; wherein the overlay images correspond to respective control functions for the video-on-demand stream; and the controller is responsive to selection of an overlay image to change the video-on-demand stream in accordance with the corresponding respective control function.

[0036] This provides an effective way of allowing control functions for the video-on-demand stream to be made available to the user without the user needing a hard-drive memory or any sophisticated processing. The user always receives nothing more than appropriately streamed video data even though the system gives the appearance and feel that functions are occurring at the user end. When a particular overlay image and function is selected at the user end, it is the controller at the video-server end that responds by changing the streamed video data accordingly. With the overlay images already present, but in the second layer of the page, the user terminal need only switch between displaying and not displaying the second layer so as to give the user the feel of enabling or disabling the respective functions. Furthermore, changing the display in this way need not change how the controller streams the video-on-demand.

[0037] It is possible that the controller is arranged to provide the overlay images in the internet page in a form for storage by the user in a cache and to control display of the overlay images in combination with the video-on-demand stream.

[0038] This allows greater efficiency in use of bandwidth.

[0039] Preferably, the controller is arranged to provide alternative overlay images for storage simultaneously in the cache with the overlay images such that, when an overlay image is selected, the controller causes display of the selected overlay image to be replaced by display of the corresponding alternative overlay image.

[0040] In this way, the alternative overlay images can be used as feedback to the user and to provide highlighting of overlay images to enable the user to understand which corresponding function is to be selected. With the overlay images and alternative overlay images being stored in cache locally at the user end, scrolling through the various overlay images can be achieved without communication with the controller and with the resulting benefits of avoiding unnecessary use of bandwidth.

[0041] It will be appreciated that a similar arrangement is possible with the overlay images discussed above for advertising content.

[0042] Preferably, the controller is responsive to selection by the user to cause display of only the first layer or the first layer in combination with the second layer.

[0043] In this way, a user is able to view only the video-on-demand programmes by means of the first layer and, when desired, can cause the second layer to be displayed in combination with the first layer, thereby allowing ac-

cess to the various control functions.

[0044] Preferably, the controller is arranged to cause the plurality of overlay images to be displayed together as a function bar. The plurality of overlay images can include one or more respective overlay images corresponding to functions of stopping, playing, pausing, rewinding and fast forwarding the video-on-demand stream appearing in the first layer.

[0045] Preferably, the video server stores a plurality of video-on-demand programmes having respective contents;

the controller is responsive to a request from the user to provide selective access to the plurality of video-on-demand programmes;

the controller is arranged to judge the content of the video-on-demand programme selected by the user;

for at least one control function, there are a plurality of different overlay images relating to different types of video-on-demand content; and

the controller is arranged to select an appropriate one of the plurality of different overlay images for provision in the second layer according to the judgement of the content of the video-on-demand programme selected by the user.

[0046] In this way, it is possible to provide overlay images that have an appearance relevant to the content of the video-on-demand programme being streamed in the first layer.

[0047] The invention will be more clearly understood from the following description, given by way of example only, with reference to the accompanying drawings in which:

Figure 1 illustrates schematically an overall system embodying the present invention;

Figure 2 illustrates one of the terminals of Figure 1 embodying the present invention;

Figure 3 illustrates schematically a disk for use in the present invention;

Figure 4 illustrates schematically a main menu to be presented to the user in an embodiment of the present invention;

Figure 5 illustrates a video-on-demand programme menu for presentation to a user according to an embodiment of the present invention;

Figure 6 illustrates schematically a page of video streaming provided according to the present invention;

Figure 7 illustrates schematically functional overlay images for use with the present invention;

Figure 8 illustrates schematically advertising-con-

tent overlay images for use with the present invention; and

Figure 9 illustrates schematically a video streaming server for use with the present invention.

[0048] The present application relates to video streaming over a network such as is illustrated in Figure 1.

[0049] A video streaming service 2 is configured for connection to the internet 4. A plurality of users are provided with respective terminals 6, each of which is also configured for connection to the internet 4. It will be appreciated that, while the video streaming service 2 and terminals 6 are configured for connection to the internet 4, it is also possible for them to be connected to other networks allowing video data to be streamed from the video streaming service 2 over the network to individual terminals 6.

[0050] According to one important aspect of the present invention, in order to enable a terminal 6 to be used as a video-on-demand player, each respective user is provided with a disk 8 which, when loaded in the terminal 6, allows that terminal to operate as a video-on-demand player. It will be appreciated that the terminals 6 are also provided with display monitors of any form suitable for displaying received video-on-demand programmes.

[0051] Figure 2 illustrates schematically a typical terminal 6 suitable for use in the arrangement of Figure 1.

[0052] An optical disk player is provided with an optical disk drive or optical disk receiver 12. The optical disk player includes a processor 14 which is capable of reading information from the optical disk receiver 12, carrying out various functions on the basis of data from the optical disk receiver 12 and displaying any images on a monitor 16. A user interface 18 may be connected to the optical disk player 10 in order to allow a user to control the optical disk player 10.

[0053] As illustrated, the optical disk player 10 may also be provided with a Random Access Memory (RAM) 20. This is merely for use in a well-known manner for enabling the processor to conduct any processes as required for correct functioning of the optical disk player 10. Importantly, in consideration of the present invention, it is not necessary for the optical disk player 10 to have any hard-drive memory. An optical disk 30 is inserted into the optical reader 12 of the optical disk player 10 by a user and the processor 14 is able to carry out any required processes, for instance as instructed by the user interface 18, directly from data recorded on the optical disk 30 without the need first to transfer large sections of data or indeed complete executable programs to a hard-drive memory.

[0054] A typical optical disk player suited for the functioning of the optical disk player 10 would be a gaming console, for instance consoles from Sony's PlayStation (trade mark) series. Consoles or other devices having in-built or interconnected hard disk devices or other mass

storage memory devices (such as semi-conductor memory) are not precluded from use within the system of the present invention.

[0055] As illustrated, the optical disk player 10 is also provided with a port 22 allowing connection to the internet. In some embodiments, the port itself may include the necessary interfaces for connection directly to a telecommunications line providing internet access. However, in the illustrated embodiment, the port 22 connects to an internet adaptor 24. The internet adaptor 24 contains all necessary interfaces and can be connected to a telecommunications line providing internet connectivity.

[0056] Figure 3 illustrates schematically an optical disk for use with the optical disk player of Figure 2.

[0057] The optical disk 30 includes, as part of its structure, code components constituting a video decoder 32 and also code components constituting a web browser 34. Importantly, both the video decoder and the browser are executable directly from the disk 30 and, unlike prior-art disks, do not come with installation routines for causing their installation onto the hard-drive memory of the machine in which they are loaded. The video decoder 32 is of any suitable form for decoding streamed video data as received from the video streaming service 2. This includes MPEG2 or MPEG4 decoders or decoders of any other suitable standard whether proprietary or not. The web browser 34 can be a generally conventional web browser, but is stored in conjunction with the address or URL of the main portal (like a home page) of the video streaming service 2. More preferably, the browser is accompanied by or includes some custom features which, as will be described below, allow identification and/or authentication of the optical disk 30 and its user.

[0058] In practice, a user purchases an optical disk 30 for use with his or her optical disk player 10. Where the optical disk player 10 is a games console, the optical disk 30 can be sold alongside other optical disks which enable the optical disk player 10 to function as respective video games, the games enabling user control from the user interface 18 and display of images on the monitor 16.

[0059] Leaving aside the authentication steps to be discussed below, with the optical disk 30 loaded in the optical reader 12 of the optical disk player 10, the processor 14 causes the browser 34 of the optical disk 30 to run and operate. As mentioned above, the optical disk 30 includes the address or URL of the main portal or homepage on the internet to the video streaming service 2. Hence, the browser 34 immediately and automatically causes the optical disk player 10 to access the main portal of the video streaming service 2. From this point onwards, the optical disk player 10 works as an internet browser, receiving image data from the video streaming service 2, for instance in the form of HTML pages, with appropriate selection being made by the user using the user interface 18. Selection and interaction with the video streaming service 2 may take the form of selection of various regions of a displayed page and, for instance using HTML, transfer of the browser to a different URL

on the basis of a link provided in conjunction with that region of the image.

[0060] Where the optical disk player 10 takes the form of a games console, the user interface 18 can be the associated games handset, possibly of conventional form. In addition to up, down, left, right, enter/OK, functions may be assigned to other keys such as those represented by "X", "O", triangle or square on a PlayStation (TM) controller.

[0061] Using the user interface 18 and browser 34, a user can navigate to a part of the video streaming service 2 that streams a video-on-demand programme according to the choice of that user. The streamed video data will be received by the optical disk player 10 as part of an internet page. In a well-known manner, the browser 34 can then make use of the video decoder 32 to decode that video data stream and provide appropriate video images for output to the monitor 16. However, unlike prior-art arrangements, the video decoder 32 is executed directly from the optical disk 30 and not from any hard-disk memory forming part of the optical disk player 10.

[0062] As mentioned above, the system can include an identification/authentication process for the optical disk 30. In its most basic form, this process can merely identify the optical disk 30 and allow the video streaming service 2 to keep a record of video-on-demand programmes accessed by a user with the use of that particular optical disk 30. However, in conjunction with that operation, the video streaming service 2 can actually perform some form of check or authentication to ensure that the optical disk 30 is a valid optical disk as endorsed by the video streaming service 2.

[0063] In one embodiment, when the optical disk 30 is loaded in the optical disk reader 12 of the optical disk player 10, the browser 34 takes the optical disk player 10 to a page at which the video streaming service 2 sends the optical disk player 10 data causing the optical disk player 10 to display on the monitor 16 a request for entry of a unique identifier, for instance of the form of an alphanumeric sequence. Perhaps when purchasing the optical disk 30 or by contacting the video streaming service 2, the user of the optical disk 30 has been provided with the unique identifier. By entering that unique identifier, such that it is transmitted to the video streaming service 2, the video streaming service 2 can recognise the user and permit the browser 34 of the optical disk player 10 to access other pages available from the video streaming service 2.

[0064] In an alternative embodiment, as illustrated schematically in Figure 3, the unique identifier 36 is provided as data on the optical disk 30 itself. In this case, the browser 34 includes or is accompanied by some custom code or routine such that, when it first connects with the main portal or opening page provided by the video streaming service 2 and the video streaming service 2 requests notification of the unique identifier, the custom code or routine automatically retrieves the unique identifier 36 present on the optical disk 30 and provides this

to the video streaming service 2. In this way, no user intervention is required and loading of the optical disk 30 in the optical disk player 10 is sufficient for the user to gain access to the video streaming service 2.

[0065] In some embodiments, different unique identifiers can be associated with different levels of service to be provided by the video streaming service 2. In other words, certain unique identifiers will allow access to pages within the video streaming service 2 which other unique identifiers will not.

[0066] In some embodiments, the video streaming service 2 may require the user to be using an authorised optical disk player 10. In this case, the initial authentication process may additionally require the video streaming service 2 to be provided with a unique device identifier of the optical disk player 10 itself. This could be entered manually by the user using the user interface 18 or, again, the browser 34 may be accompanied by a special custom code or routine which causes that device identifier to be returned to the video streaming service 2 automatically upon request.

[0067] At this point, it is worth noting that a similar authentication process could be used even to allow the optical disk 30 and optical disk player 10 to be used with internet connectivity and before the browser 34 of the optical disk player 10 even connects with the main portal of the video streaming service 2.

[0068] Figure 4 illustrates schematically a possible main menu to be provided by the video streaming service 2 to the optical disk player 10 for display on the monitor 16.

[0069] On the right of the page 40, there is displayed a list of possible options. A user, using the user interface 18, is able to scroll through and select these various options.

[0070] As illustrated, there is a linear live TV stream 42 available and also an electronic programme guide 44. In this regard, it is considered most likely that only a limited amount of linear live TV would be available and the electronic programme guide would merely provide guidance to the user as to what is available as linear live TV, for instance using some other TV receiver. However, as will be discussed further below, the video streaming service 2 is preferably able to analyse content of programmes. In this regard, the electronic programme guide 44, if selected, could provide contextual recommendations to the user of similar programmes available as video-on-demand programmes or indeed indicate where that same programme is already available as a video-on-demand programme.

[0071] The page 40 also lists a series of categories of video-on-demand programmes 46 to be discussed below.

[0072] By way of example, the page 40 illustrates a selectable option which takes the user to a section allowing the purchasing of goods, for instance downloadable games in the case illustrated.

[0073] Finally, the service option 50 may be a customer

service page enabling a user to get "Help", find "FAQs", contact Customer Support or purchase tokens.

[0074] On the left of the displayed page 40, in this preferred embodiment, personalised recommendations 52 of other video-on-demand programmes are shown. This will be discussed further below.

[0075] Figure 5 illustrates, again schematically and by way of example, a page where a user has selected a particular category of video-on-demand 46 as illustrated in the display page 40. This display page 60 includes on the right a list of video-on-demand programmes 62 through which a user may scroll using the user interface 18. Each item of the list 62 could include a very brief summary, perhaps only the title, together with a representative image. It might also include, as a contextual recommendation, details or a link to another video-on-demand programme of similar or related content.

[0076] On the left of the display page 60, there is displayed a control bar 64, which is active for the currently selected video-on-demand programme of the list 62. The control bar 64 includes a plurality of selectable functions through which the user may scroll using the user interface 18. Where there are too many functions to be displayed conveniently, the page can be arranged to scroll through all of the available functions and display only a limited number at any one time. The video-on-demand programmes listed as items of the list 62 can similarly be scrolled through with only a limited number being displayed at any one time.

[0077] As illustrated, the control bar 64 includes a symbol 66 for play of a selected video-on-demand programme and a symbol 68 linking the browser 34 of the optical disk player 10 to another page providing additional information about the selected video-on-demand programme. The control bar 64 may also include information 70 relating to the cost to the user of receiving the currently highlighted video-on-demand programme. This will be discussed further below, but as illustrated is represented as a cost in notional tokens.

[0078] A similar display could be used as a page for providing shopping where the control bar includes a selectable function of purchasing a selected item in a list.

[0079] Moving from the display page 60 of Figure 5, if a user selects the play function 66 for a video-on-demand programme, the browser 34 of the optical disk player 10 is redirected to a page 80 as illustrated schematically in Figure 6 within which the video data of the selected video-on-demand programme is streamed. As mentioned above, the browser 34 of the optical disk player 10 makes use of the decoder 32 and, hence, the requested video-on-demand programme is displayed on the monitor 16.

[0080] The internet page 80 may not be provided as only one layer, but can be provided as two or more layers which are all received as part of the page 80 by the optical disk player 10, but are displayed selectively according to a request from the user. For instance, a predetermined button on the user interface 18 may be pre-assigned to make this selection.

[0081] Figure 7 illustrates an example where a second layer containing a plurality of overlay images 82 arranged as a function bar 84 are displayed in conjunction with the first layer carrying the video-on-demand programme. As illustrated, respective overlay images 82 are provided for rewind, fast-forward, play, pause and stop functions. Using the user interface 18, a user may scroll through the various overlay images and select one of the images and its corresponding function. The video streaming service 2 is responsive to this selection in the second layer of the page 80 to carry out the required function. In other words, the video data being streamed in the first layer of the page 80 gives the appearance of the video-on-demand programme being fast rewound, fast-forwarded, played, paused or stopped. It will be appreciated that, although the user has the feeling that the functions are being carried out locally, it is in fact the video streaming server 2 that is providing a different stream of video data.

[0082] The actual overlay images themselves can be transferred from the video streaming service 2 for storage locally in cache at the optical disk player 10. For instance the RAM 20 can be used.

[0083] For each function, alternative overlay images can be held in cache. In particular, in some embodiments, each function can have an overlay image having a normal appearance and an overlay image having a highlighted appearance such that when a user scrolls through the various overlay images, the position to which the user has scrolled is indicated by an overlay image having a highlighted appearance. It is possible also for a third alternative appearance to be stored and then displayed when a user actually selects the function corresponding to that image.

[0084] It is also possible for the video streaming service 2 to provide a plurality of different versions of overlay image for each corresponding function. Indeed, a plurality of different sets of overlay images can be provided for different versions of function bar 84. The video streaming service 2 is then arranged to provide in the second layer a set of overlay images 82 appropriate to the content of the video-on-demand programme being streamed in the first layer of that page. Thus, in contrast to the example illustrated in Figure 7, if the video-on-demand programme being streamed in the first layer of the page is a football match, then the overlay images could have a football theme, for instance a player running forwards to signify fast forwards and a goalkeeper catching a football to signify stop. In other words, the appearance of the overlay images provided in the second layer of a page are matched contextually to the content of the video stream in the first layer of that page.

[0085] In one preferred embodiment, as illustrated in Figure 7, an overlay image 86 may be provided corresponding to a minimising function for reducing the size of the streamed video-on-demand programme. In particular, upon selecting the function of this overlay image, the first layer can be replaced by a relatively small window in which the video-on-demand programme continues to

be streamed, leaving the remainder of the area of the display to show other information, for instance information regarding the video-on-demand programme.

[0086] As illustrated in Figure 8, it is possible to provide other overlay images 90. These may be provided in the second layer of the page 80 or, indeed, in other layers of the page 80. It is proposed that each of these overlay images 90 relates to respective advertising content available to the user. Using the user interface 18, a user may select a particular overlay image 90. Each overlay image 90 has associated with it a link to associated advertising content. For instance, the link could take the form of a URL address redirecting the browser 34 of the optical disk player 10 to a different page showing the associated advertising content. That advertising content could be text, images or streamed video in the same manner as discussed above. Advertising content may for example be related to products or services or other video material available over the video-on-demand service. Alternatively, the link could change the content of a layer of the page or bring an additional layer into view. In one embodiment, the video-on-demand programme currently being streamed could be moved to a small window as described above with the advertising content being displayed in other parts of the full display.

[0087] Turning now to Figure 9, there is illustrated a schematic representation of the video streaming service 2.

[0088] A connection 100 provides connectivity to the internet and allows terminals 6, including optical disk players 10, to access the portal and pages of the video streaming service 2.

[0089] As illustrated, a controller 102 has access to and control of a video streamer 104 and a database 106. By means of previously stored data and information received from external sources, the controller 102 is able to provide the pages and layers discussed above. In conjunction with this, the video streamer can provide streams of video data corresponding to video-on-demand programmes selected by users at terminals 6.

[0090] Figure 9 illustrates schematically the fact that the video streaming service 2 includes an account memory 110. In particular, it is proposed that each user identified by the unique identifier 36 discussed above is assigned an account, which is debited according to use of the service. It is proposed that each video-on-demand programme is assigned a notional value, for instance recorded in notional tokens. Whenever a user requests access to a video-on-demand programme, the corresponding number of tokens are debited from the account stored for the corresponding unique identifier in the account memory 110. In one embodiment, the optical disk 30 bought originally by the user is assigned a particular value in terms of tokens. When the user first uses the optical disk 30 and the video streaming service 2 authenticates the optical disk 30 as discussed above, the user is credited that amount to the corresponding account memory. Various systems can be considered for crediting the ac-

count memory 110 with more tokens, for instance with credit card transactions over the internet.

[0091] As illustrated, the video streaming service 2 is also provided with a recommender 112 comprising a profile memory 114 and separate matcher 116.

[0092] The profile memory 114 is arranged to store, in conjunction with the unique identifier, a record of the video-on-demand programmes selected by the user of that unique identifier. In this way, the video streaming service 2 can look at the history of video-on-demand programmes accessed by a particular user and recommend other video-on-demand programmes that the user might enjoy. To do this, the recommender 112 includes a matcher 116, which compares the content of video-on-demand programmes recorded in the profile memory 114 for a particular unique identifier with video-on-demand programmes available from the video streamer 104. As a result of this comparison, the recommender 112 is able to provide the controller 102 with a list of personalised video-on-demand recommendations. Returning to Figure 4, these can be provided as recommendations 52 on page 40. By storing profiles in the profile memory 114 remote from the terminals 6, it is possible for the matcher 116 to carry out relatively sophisticated comparison of the video-on-demand programmes previously watched by a user and those available. Hence, relatively accurate recommendations may be made to a particular user. Where the recommender 112 is able to provide a very large number of recommendations, in the preferred embodiment, the controller 102 is arranged to display only the most relevant recommendations.

[0093] By making use of the unique identifier, it will be appreciated that an individual's personal profile can be kept anonymous. The system need only relate a profile to a unique identifier 36 and it is not necessary that that unique identifier be related to a particular individual.

[0094] The recommender 112 can also be used in conjunction with the overlays 90 and advertising content described with reference to Figure 8.

[0095] In the same way as discussed above, the matcher 116 can compare the personal profile associated with a particular unique identifier with advertising content stored either in the database 106 or video streamer 104. As a result, the recommender 112 can recommend to the controller 102 advertising content appropriate to a user having a particular unique identifier. On the basis of this recommendation, the controller 102 can thus cause to be displayed, in a layer of page 80, overlay images 90 with links to advertising content of potential interest to the user. Of course, the controller 102 could also cause to be displayed overlay images 90 with links to advertising content having contextual relevance to the particular video-on-demand programme being streamed at that time. Indeed both the contextual recommendation and the personal recommendation could be taken into account when deciding which overlay images 90 and links to provide in a layer in association with transmission of a video-on-demand programme in a first layer.

[0096] Considering again the account memory 110, it is proposed that, in one embodiment, selection by a user of an overlay 90 and the corresponding link to its advertising content could be arranged to result in a credit of some tokens to the user's account. Alternatively, in a menu list such as illustrated in Figure 5, a user could be given the option of receiving a video-on-demand programme with or without advertising content. In that case, the user would be able to obtain the video-on-demand programme together with advertising content at a lower rate of tokens than without the advertising content.

Claims

1. A video-on-demand system accessible over the internet, the system including:

a video server (2) storing video-on-demand content and for streaming video-on-demand through a first layer of an internet page (80) having a first layer and a second layer; and a controller (102) for causing there to be formed in the second layer a plurality of selectable overlay images (82) such that a user (10) at a location in communication with the internet (4) remote from the video server (2) and the controller (102) can display streamed video-on-demand of the first layer in combination with the overlay images of the second layer and can select one of the overlay images; wherein the overlay images (82) correspond to respective control functions for the video-on-demand stream; and the controller (102) is responsive to selection of an overlay image (82) to change the video-on-demand stream in accordance with the corresponding respective control function.

2. A video-on-demand system according to claim 1 wherein the controller is arranged to provide the overlay images (82) in the internet page (80) in a form for storage by the user in a cache and to control display of the overlay images (82) in combination with the video-on-demand stream.

3. A video-on-demand system according to claim 2 wherein the controller (102) is arranged to provide alternative overlay images (82) for storage simultaneously in the cache with the overlay images (82) such that, when an overlay image (82) is selected, the controller (102) causes display of the selected overlay image (82) to be replaced by display of the corresponding alternative overlay image.

4. A video-on-demand system according to claim 1, 2 or 3 wherein the controller (102) is responsive to selection by the user to cause display of only the first

layer or the first layer in combination with the second layer.

5. A video-on-demand system according to any preceding claim wherein the controller (102) is arranged to cause the plurality of overlay images (82) to be displayed together as a function bar (84).

6. A video-on-demand system according to any preceding claim wherein the plurality of overlay images (82) include one or more respective overlay images (82) corresponding to functions of stopping, playing, pausing, rewinding and fast forwarding the video-on-demand stream.

7. A video-on-demand system according to any preceding claim wherein:

the video server (2) stores a plurality of video-on-demand programmes having respective contents; the controller (102) is responsive to a request from the user (10) to provide selective access to the plurality of video-on-demand programmes; the controller (102) is arranged to judge the content of the video-on-demand programme selected by the user; for at least one control function, there are a plurality of different overlay images (82) relating to different types of video-on-demand content; and the controller (102) is arranged to select an appropriate one of the plurality of different overlay images (82) for provision in the second layer according to the judgement of the content of the video-on-demand programme selected by the user (10).

8. A method of transmitting video-on-demand including:

streaming, from a server (2) on the internet (4), video-on-demand through an internet page (80) including a first layer and a second layer; providing the video-on-demand stream in the first layer; providing, in the second layer, for selective combination with the video-on-demand of the first layer, a plurality of overlay images (82) corresponding to respective control functions of the video-on-demand stream; enabling a user (10) at a remote location on the internet (4) to select respective overlay images (82) when the plurality of overlay images (82) are displayed in combination with the video-on-demand at the remote location; and responding at the server (2) to selection of an overlay image (82) at the remote location so as

to change the video-on-demand stream in accordance with the corresponding respective control function.

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Fig.1.

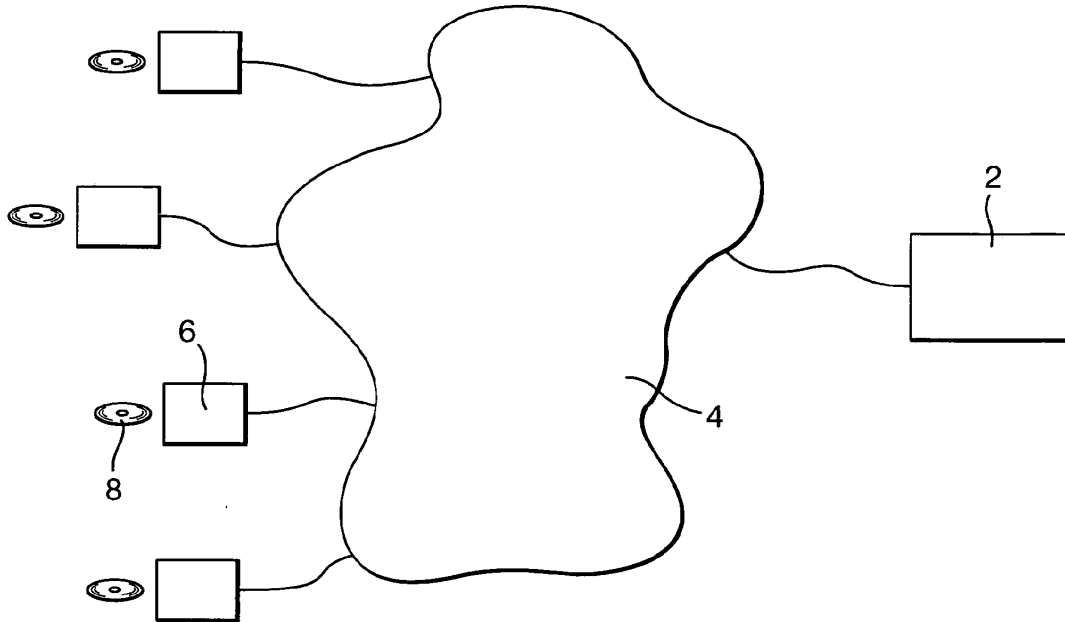


Fig.3.

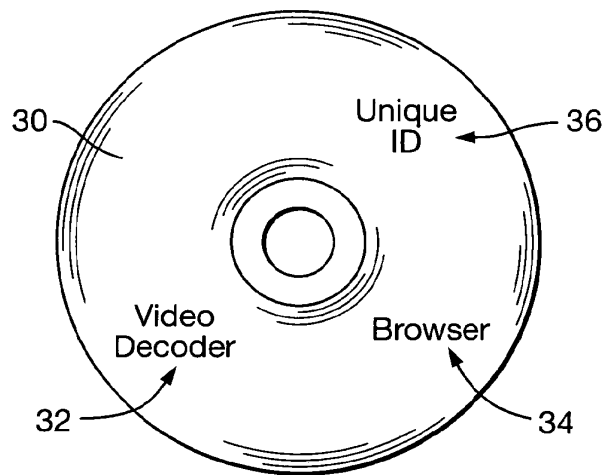


Fig.2.

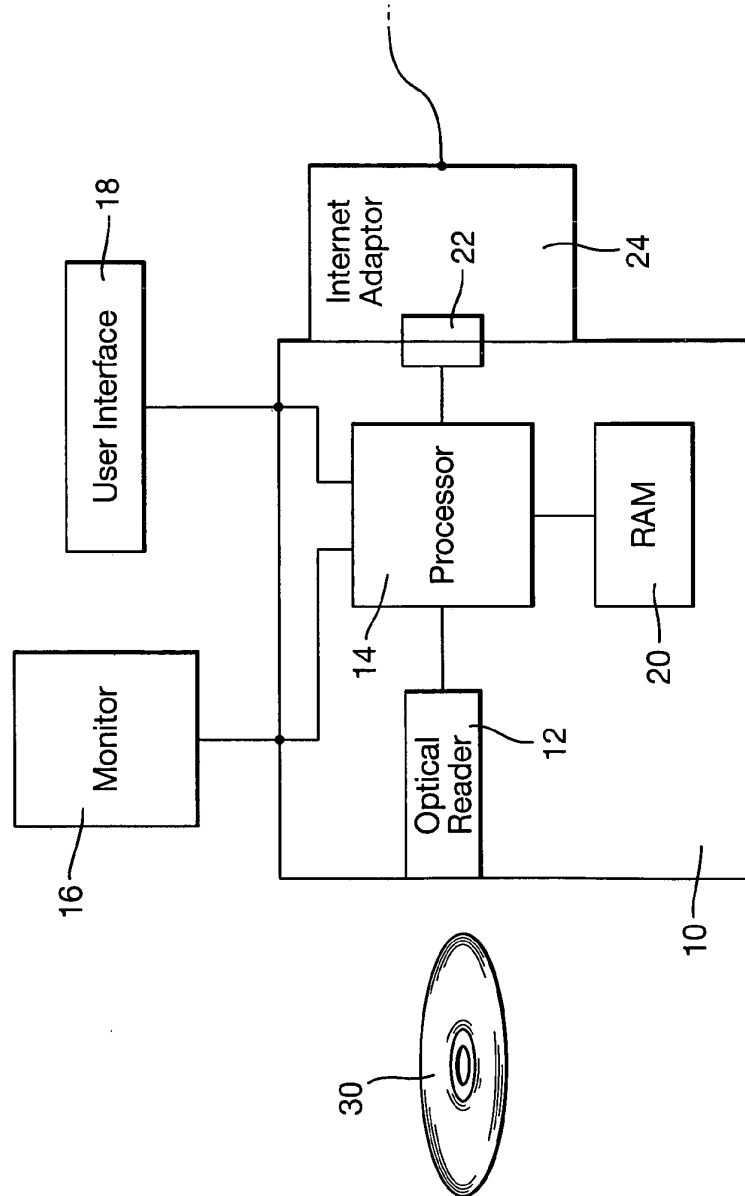


Fig.4.

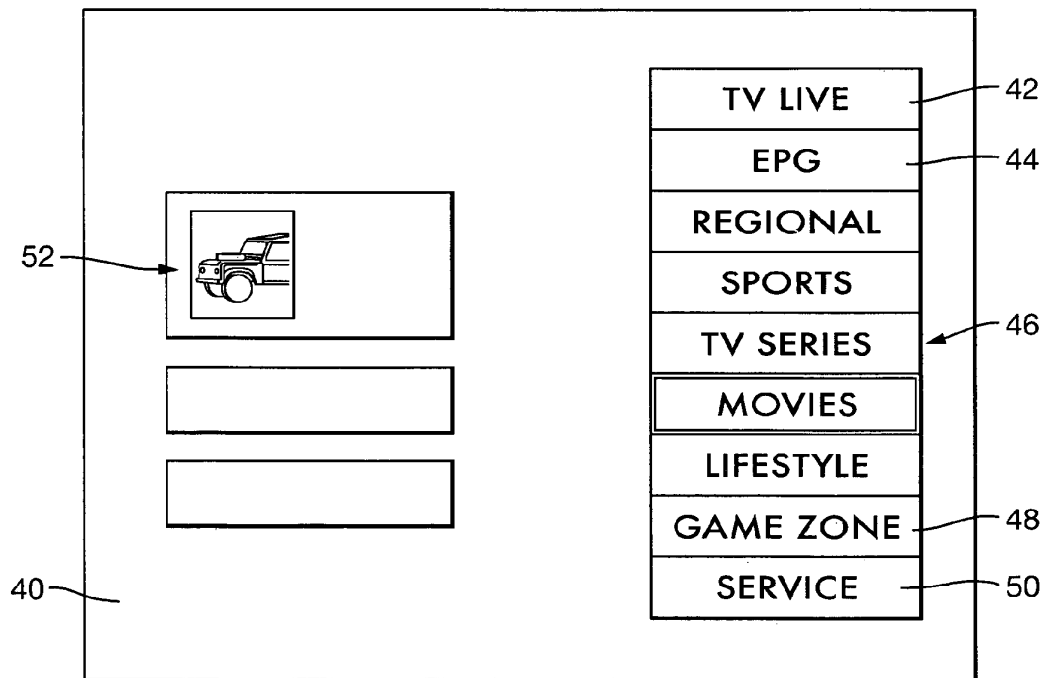


Fig.5.

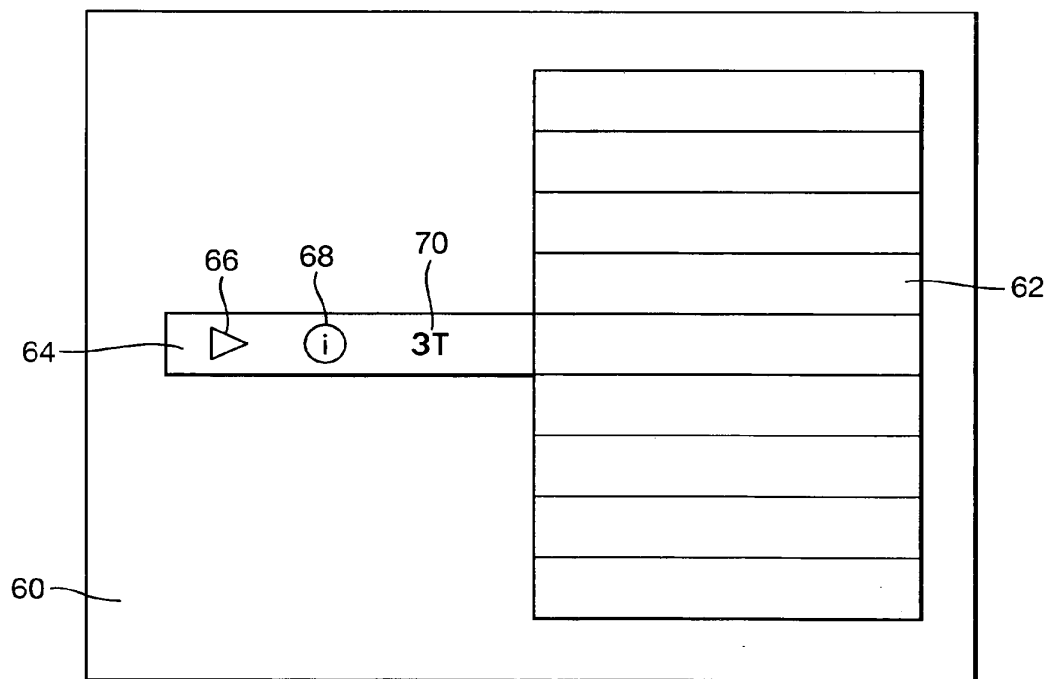


Fig.6.

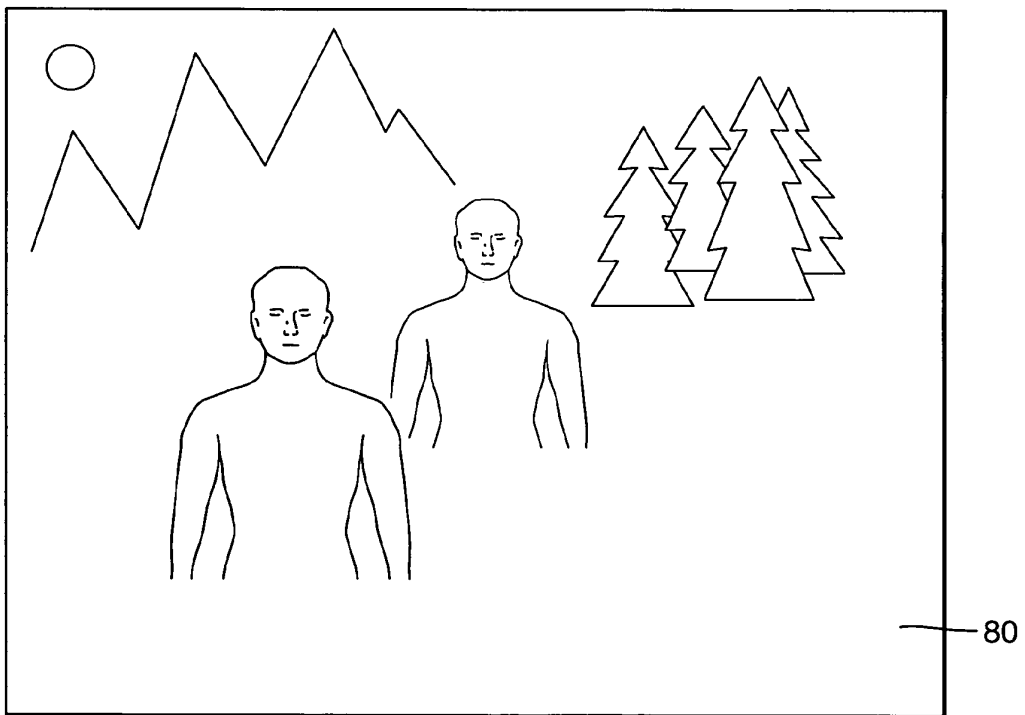


Fig.7.

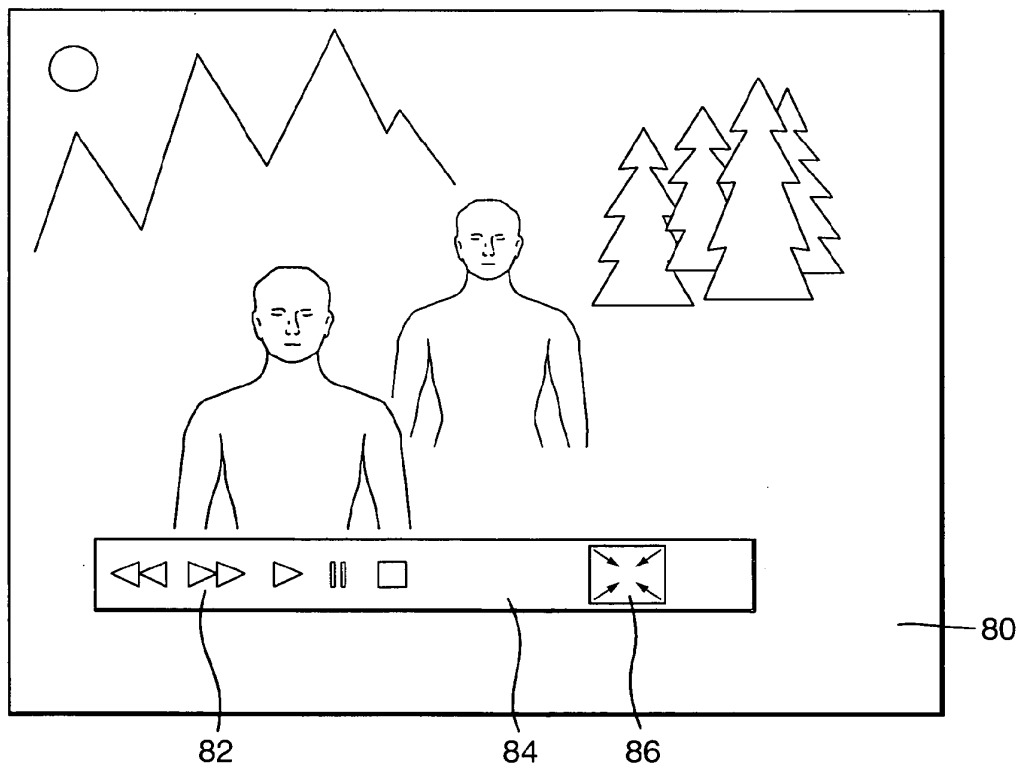


Fig.8.

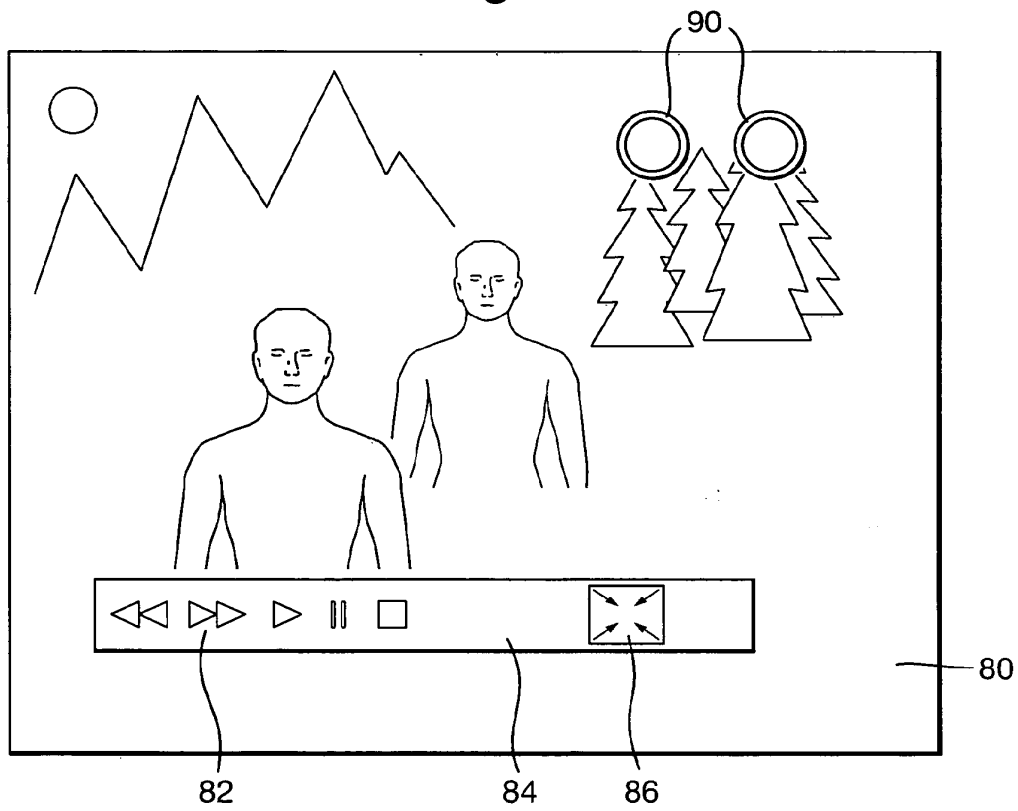
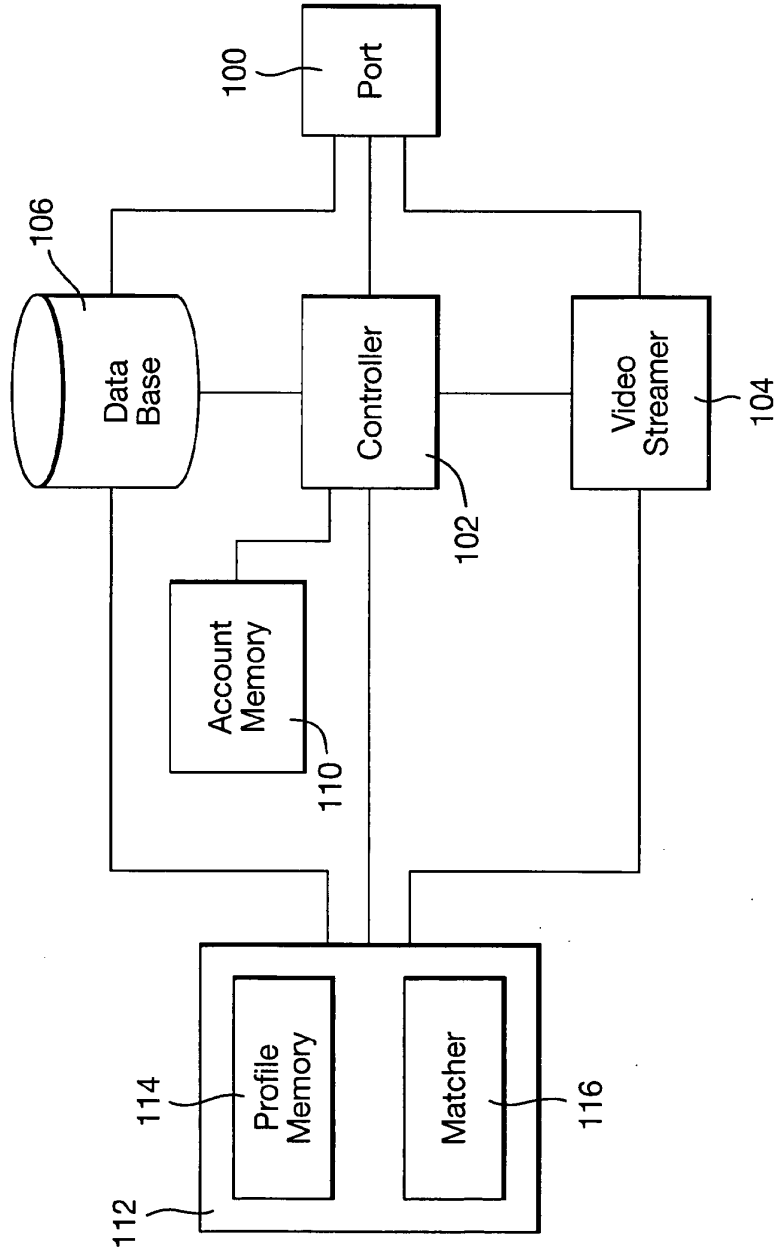


Fig.9.





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 25 2937

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2004/136698 A1 (MOCK WAYNE E [US]) 15 July 2004 (2004-07-15)	1-6,8	INV. H04N7/173 H04N5/445
Y	* paragraphs [0091] - [0093] * * paragraphs [0159] - [0161] *	7	
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Y	US 2002/060750 A1 (ISTVAN ANTHONY F [US] ET AL) 23 May 2002 (2002-05-23)	7	
A	* paragraph [0092] * * paragraphs [0131] - [0135]; figure 20 *	1-6,8	
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Place of search Berlin		Date of completion of the search 17 November 2006	Examiner Bertrand, Frédéric
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ON EUROPEAN PATENT APPLICATION NO.**

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17-11-2006

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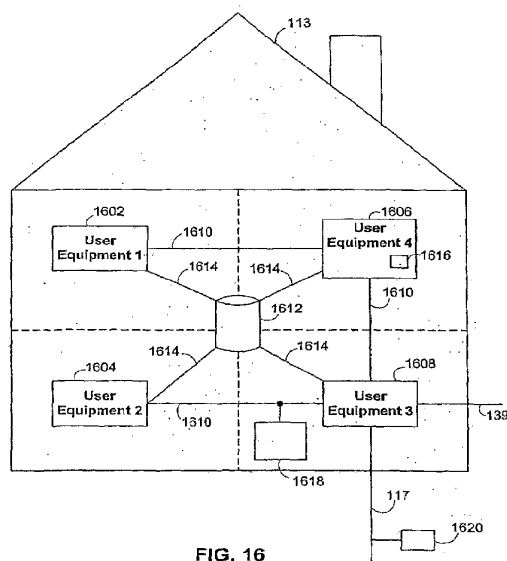
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(54) **Systems and Methods for Managing Content**

(57) A "New to Me" feature is provided for an interactive media guidance system implemented as a home network having multiple user equipment devices. Functionally speaking, the "New to Me" feature of the interactive media guidance system identifies programs or advertisements that have been previously viewed by an individual user or a user equipment device within the home network, or even by a household. The interactive media guidance system may use the information gathered regarding the programs and/or advertisements that have already been seen by a user, device or household to, for example, remove the programs or advertisements from future displays of recommendations, search results or listings of available programming.



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Description

Background of the Invention

[0001] The present invention relates to systems and methods for managing content. More particularly, the present invention relates to generating interactive content presented to users based on programming viewed or played on user equipment devices that are networked together.

[0002] User equipment devices today may have the ability to, for example, take into account the content that a user has seen before when presenting interactive information to the user, or when performing an operation such as recording television programming at the user's direction. Such user equipment devices are aimed at being customizable to a particular user. However, with the advent of localized networks of user equipment devices, such as a home network of interconnected user equipment devices, users have a tendency to view media on many if not all of the user equipment devices in a given network on a regular basis. Beyond that, as user equipment devices become increasingly prevalent, users have a greater tendency to view media on user equipment devices that are outside of a home network, and yet that still may be connected to the overarching network to which user equipment devices in the home network are connected. It would therefore be desirable to provide a system for allowing network-connected user equipment devices to be customized to users based on users' viewing histories.

[0003] Furthermore, the ability of known systems to identify previously viewed content, and then make use of such information, is limited both in terms of breadth of functionality with which this information is utilized, and the depth of information concerning previously viewed content that is generated. For example, current television program guides provide features that include, among others, "Repeats", "First Run" and "Season Pass". The "Repeats" feature identifies a particular program that has been previously broadcast, regardless of whether or not that program has actually been watched by a specific viewer. The "First Run" feature identifies programming that is being broadcast or run for the very first time. The "Season Pass" feature, meanwhile, allows users to purchase an entire upcoming season of a program. Other features of such guides include recommendations, searches, and other interactive displays of content including programming, advertisements or other media. All of these features, however, currently do not enable users to view in a detailed manner, if at all, the extent to which the identified programs have been previously viewed. It would be desirable to provide users with such information in order to better help users identify the programming in which they have the most interest. Also, even those program guides that are presently capable of identifying previously viewed content provide little detail about the viewing history of such content, in addition to lacking sophis-

ticated ways of representing such content. It would be desirable, therefore, to provide a system that is capable of providing a greater level of sophistication in connection with the viewing history and displays of previously viewed content.

Summary of the Invention

[0004] The present invention addresses the above and other problems by providing systems and methods for managing the display of interactive content based on a viewing history for an individual, a device, or a home network. By managing content based on a viewing history for an individual, a device, or a home network, the present invention may efficiently accommodate the viewing habits of one or more users interacting with one or more user devices that are communicatively coupled to a home network, or are interacting with two or more home networks that are communicatively coupled to each other.

[0005] The viewing history may include compilation of content that has been displayed, viewed, or played on at least one user device that is communicatively coupled to a home network. In addition, a viewing history may be created, modified, and updated for a particular user, a particular user device, or a home network. The viewing history may provide a framework or guideline for enabling an interactive media guidance application to generate interactive content. Interactive content may be content that is displayed by a interactive media guidance application such as, for example, listings of programming, advertisements, and information screens.

[0006] An advantage of the present invention is that the interactive content may be customized based on the viewing history. For example, the interactive media guidance system may display a list of programming that has not been viewed according to the viewing history. As another example, the interactive media guidance application may display advertisements that have not been viewed according to the viewing history.

[0007] Content management at an individual level within a home network may enable a media guidance application to provide interactive content that is specific to each user regardless of which user device the user uses. For example, when a first user views a particular program (e.g., a television show) in the living room, the viewing history for the first user may be updated to reflect the fact that the first user has viewed that particular program. Thereafter, when the first user retires to the bedroom (or any other room having a user device communicatively coupled to the home network), and decides to watch another program, the system may omit the listing of the particular program that the first user viewed in the living room from a listing of programs that may be displayed on a user device in the bedroom. In contrast, if a second user accesses the user device in either the living room or the bedroom and has not viewed the particular program viewed by the first user, the system may display the particular program in a listing for the second user.

[0008] Content management at a user device level within a home network may enable a media guidance application to provide interactive content that is based on the content viewed at a selected user device. For example, a selected user device may be treated as the master and the other user devices may be treated as slaves. In a master/slave arrangement, the viewing history may be created, modified, or updated based on the content viewed at the master user device. Thus, the interactive content generated for display on both the master and slave devices is based on the viewing history of the master user device.

[0009] Content management at a home network level may enable a media guidance application to provide interactive content that is based on the content viewed at any one of several user devices communicatively coupled to a home network. In this arrangement, whenever an item of programming is viewed on a user device that is communicatively coupled to the home network, that program may not be presented in a listing of programming on that particular user device, nor any other user device that is communicatively coupled to the home network. For example, assume that a home network is communicatively coupled to three different user devices. If "Superman" is viewed on a first user device, a viewing history for the home network may be updated to reflect this viewing event. Thus, none of the user devices may display "Superman" in a listing of programming. If "Wonderwoman" is viewed on a second user device, the viewing history for the home network may be updated to reflect this viewing event. Again, none of the user devices may display "Wonderwoman" in a listing of programming.

[0010] Managing content across two or more home networks may enable the media guidance application to provide interactive content that is based on the content viewed at a selected home network. For example, a user may have a first home network (e.g., located at his or her house) and a second home network (e.g., located at his or her vacation house). In one embodiment, which assumes that the first home network is the selected home network, any item of programming that is viewed at the first home network may not be presented in a listing of programming at the second network.

Brief Description of the Drawing

[0011] FIG. 1 is a diagram of an illustrative interactive television system in accordance with the present invention.

[0012] FIG. 2 is a diagram of illustrative user television equipment in accordance with the present invention.

[0013] FIG. 3 is a diagram of additional illustrative user television equipment in accordance with the present invention.

[0014] FIG. 4 is a diagram of an illustrative remote control in accordance with the present invention.

[0015] FIG. 5 is a diagram of illustrative user computer equipment in accordance with the present invention.

[0016] FIG. 6 is a generalized diagram of illustrative user equipment in accordance with the present invention.

[0017] FIG. 7 is a diagram of an illustrative home network in which a plurality of user equipment is implemented in a star configuration in accordance with the present invention.

[0018] FIG. 8a is a diagram of an illustrative home network in which a plurality of user equipment is implemented in a tree configuration in accordance with the present invention.

[0019] FIG. 8b is a diagram of an illustrative home network in which a plurality of user equipment is implemented in a ring configuration in accordance with the present invention.

[0020] FIG. 8c is a diagram of an illustrative home network in which a plurality of user equipment is implemented in a bus configuration in accordance with the present invention.

[0021] FIG. 9 is a diagram of an illustrative home network in which a plurality of user equipment and a server are implemented in a client-server configuration in accordance with the present invention.

[0022] FIG. 10 is a diagram of an illustrative home network in a client-server configuration and in which the set-top-box acts as the server in accordance with the present invention.

[0023] FIG. 11a is a diagram of a plurality of home networks implemented in an illustrative neighborhood node configuration in accordance with the present invention.

[0024] FIG. 11b is a diagram of an illustrative system in which servers are located at network nodes in accordance with the present invention.

[0025] FIG. 11c is a diagram of two illustrative home networks that have been interconnected in accordance with the present invention.

[0026] FIG. 11d is a diagram of two illustrative home networks that have been interconnected via a server in accordance with the present invention.

[0027] FIG. 12 shows several different types of content that may be monitored for creating, modifying, or updating a viewing history in accordance with the present invention.

[0028] FIG. 13 shows several monitors that may be used to track various aspects of the viewed or played content in accordance with the present invention.

[0029] FIG. 14 shows an illustrative display screen for allowing a user to manually enter previously viewed content in accordance with the present invention.

[0030] FIG. 15 shows an illustrative flow diagram in connection with allowing a user to manually enter previously viewed content in accordance with the present invention.

[0031] FIG. 16 is a diagram of an illustrative home network in which a plurality of user equipment devices are coupled to a local database server in accordance with the present invention.

[0032] FIG. 17 shows several different types of inter-

active content that may be generated and displayed by an interactive media guidance application in accordance with the present invention.

[0033] FIG. 18a shows an illustrative flow diagram for displaying media content based on the viewing history of a user in a home network in accordance with the present invention.

[0034] FIG. 18b shows an illustrative flow diagram for updating a viewing history for several identified users in accordance with the present invention.

[0035] FIG. 18c shows an illustrative flow diagram for generating interactive content based on a viewing history of a selected user devices in accordance with the present invention.

[0036] FIG. 18d shows an illustrative flow diagram for generating interactive content based on a viewing history of a home network in accordance with the present invention.

[0037] FIG. 18e shows an illustrative flow diagram for generating interactive content based on a selected one of at least two home networks in accordance with the present invention.

[0038] FIG. 19 shows an illustrative display screen for selecting a user profile at a user equipment device in a home network in accordance with the present invention.

[0039] FIG. 20 shows an illustrative flow diagram for displaying interactive content or media content based on a ranking process that is applied to previously viewed media content in accordance with the present invention.

[0040] FIG. 21a shows an illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0041] FIG. 21b shows another illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0042] FIG. 21c shows yet another illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0043] FIG. 21d shows yet another illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0044] FIG. 21e shows yet another illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0045] FIG. 21f shows yet another illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0046] FIG. 21g shows yet another illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0047] FIG. 21h shows yet another illustrative display screen for displaying previously viewed content in accordance with the present invention.

[0048] FIG. 22 shows an illustrative display screen for allowing a user to enable, disable or modify settings relating to the feature of tracking previously viewed content in accordance with the present invention.

Detailed Description of the Preferred Embodiments

[0049] The amount of media available to users in any given media delivery system can be substantial. Consequently, many users desire a form of media guidance, an interface that allows users to efficiently navigate media selections and easily identify media that they may desire. An application which provides such guidance is referred to herein as an interactive media guidance application or, sometimes, a guidance application.

[0050] Interactive media guidance applications may take various forms depending on the media for which they provide guidance. One typical type of media guidance application is an interactive television program guide. Interactive television program guides are well-known guidance applications that, among other things, allow users to navigate among and locate television programming viewing choices and, in some systems, digital music choices. The television programming (and music programming) may be provided via traditional broadcast, cable, satellite, Internet, or any other means. The programming may be provided on a subscription basis (sometimes referred to as premium programming), as pay-per-view programs, or on-demand such as in video-on-demand (VOD) systems.

[0051] With the advent of the Internet, mobile computing, and high-speed wireless networks, users are able to access media on personal computers (PCs) and devices on which they traditionally could not. Non-television-centric platforms (i.e., platforms that distribute media with equipment not part of the user's broadcast, cable or satellite television-delivery network) allow users to navigate among and locate desirable video clips, full motion videos (which may include television programs), images, music files, and other suitable media. Consequently, media guidance is also necessary on modern non-television-centric platforms. For example, media guidance applications may be provided as on-line applications (i.e., provided on a web-site), or as stand-alone applications or clients on hand-held computers, personal digital assistants (PDAs) or cellular telephones. In some systems, users may control equipment remotely via a media guidance application. For example, users may access an on-line media guide and set recordings or other settings on their in home equipment. This may be accomplished by the on-line guide controlling the user's equipment directly or via another media guide that runs on the user's equipment. Remote access of interactive media guidance applications is discussed in greater detail in U.S. Patent Application No. 11/246,392, filed October 7, 2005, which is hereby incorporated by reference herein in its entirety.

[0052] An illustrative interactive media guidance system 100 in accordance with the present invention is shown in FIG. 1. System 100 is intended to illustrate a number of approaches by which media of various types, and guidance for such media, may be provided to (and accessed by) end-users. The present invention, however, may be applied in systems employing any one or a

subset of these approaches, or in systems employing other approaches for delivering media and providing media guidance.

[0053] The first approach represents a typical television-centric system in which users may access television (and in some systems music) programming. This includes programming sources 102 and distribution facility 104. Media such as television programming and digital music is provided from programming sources 102 to distribution facility 104, using communications path 106. Communications path 106 may be a satellite path, a fiber-optic path, a cable path, or any other suitable wired or wireless communications path or combination of such paths.

[0054] Programming sources 102 may be any suitable sources of television and music programming, such as television broadcasters (e.g., NBC, ABC, and HBO) or other television or music production studios. Programming sources 102 may provide television programming in a variety of formats in high definition and standard definition, such as, for example, 1080p, 1080i, 720p, 480p, 480i, and any other suitable format.

[0055] Distribution facility 104 may be a cable system headend, a satellite television distribution facility, a television broadcaster, or any other suitable facility for distributing video media (e.g., television programs, video-on-demand programs, pay-per-view programs) and audio media (e.g., music programming and music clips) to the equipment of subscribers of the corresponding cable, satellite, or IPTV system. In some approaches, distribution facility 104 may also distribute other media to users, such as video and audio clips, web pages, and interactive applications, that may be offered to subscribers of a given cable, satellite, or IPTV system. There are typically numerous distribution facilities 104 in system 100, but only one is shown in FIG. 1 to avoid overcomplicating the drawing.

[0056] Distribution facility 104 may be connected to various user equipment devices 108, 110, and 112. Such user equipment devices may be located, for example, in the homes of users. User equipment devices may include user television equipment 110, user computer equipment 112, or any other type of user equipment suitable for accessing media. User equipment 108 may be any type of user equipment (e.g., user television equipment, user computer equipment, cellular phones, handheld video players, gaming platforms, etc.) and, for simplicity, user equipment devices may be referred to generally as user equipment 108.

[0057] User equipment devices 108, 110, and 112 may receive media (such as television, music, web pages, etc.) and other data from distribution facility 104 over communications paths, such as communications paths 114, 116, and 118, respectively. User equipment devices 108, 110, 112 may also transmit signals to distribution facility 104 over paths 114, 116, and 118, respectively. Paths 114, 116, and 118 may be cables or other wired connections, free-space connections (e.g., for broadcast

or other wireless signals), satellite links, or any other suitable link or combination of links.

[0058] A second approach illustrated in FIG. 1 by which media and media guidance are provided to end users is a non-television-centric approach. In this approach media such as video (which may include television programming), audio, images, web pages, or a suitable combination thereof, are provided to equipment of a plurality of users (e.g., user equipment 108, user television equipment 110, and user computer equipment 112) by server 130 via communications network 126. This approach is non-television-centric because media (e.g., television programming) is provided by and delivered at least partially, and sometimes exclusively, via equipment that have not traditionally been primarily focused on the television viewing experience. Non-television-centric equipment is playing a larger role in the television viewing experience.

[0059] In some embodiments for this approach, communications network 126 is the Internet. Server 130 may provide for example, a web site that is accessible to the user's equipment and provides an on-line guidance application for the user. In such approaches, the user's equipment may be, for example, a PC or a hand-held device such as a PDA or web-enabled cellular telephone that incorporates a web browser. In other embodiments, server 130 uses the Internet as a transmission medium but does not use the Web. In such approaches, the user's equipment may run a client application that enables the user to access media. In still other approaches, communications network 126 is a private communications network, such as a cellular phone network, that does not include the Internet.

[0060] In yet other approaches, communications network 126 includes a private communications network and the Internet. For example, a cellular telephone or other mobile-device service provider may provide Internet access to its subscribers via a private communications network, or may provide media such as video clips or television programs to its subscribers via the Internet and its own network.

[0061] The aforementioned approaches for providing media may, in some embodiments, be combined. For example, a distribution facility 104 may provide a television-centric media delivery system, while also providing users' equipment (e.g., 108, 110 and 112) with access to other non-television-centric delivery systems provided by server 130. For example, a user's equipment may include a web-enabled set-top box or a television enabled PC. Distribution facility 104 may, in addition to television and music programming, provide the user with Internet access whereby the user may access server 130 via communications network 126. Distribution facility 104 may communicate with communications network 126 over any suitable path 134, such as a wired path, a cable path, fiber-optic path, satellite path, or combination of such paths.

[0062] Media guidance applications may be provided

using any approach suitable for the type of media and distribution system for which the applications are used. Media guidance applications may be, for example, stand alone applications implemented on users' equipment. In other embodiments, media guidance applications may be client-server applications where only the client resides on the users' equipment. In still other embodiments, guidance applications may be provided as web sites accessed by a browser implemented on the users' equipment. Whatever the chosen implementation, the guidance application will require information about the media for which it is providing guidance. For example, titles or names of media, brief descriptions, or other information may be necessary to allow users to navigate among and find desired media selections.

[0063] In some television-centric embodiments, for example, the guidance application may be a stand-alone interactive television program guide that receives program guide data via a data feed (e.g., a continuous feed, trickle feed, or data in the vertical blanking interval of a channel). Data source 120 in system 100 may include a program listings database that is used to provide the user with television program-related 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.), program format (e.g., standard definition, high definition) and information on actors and actresses. Data source 120 may also be used to provide advertisements (e.g., program guide advertisements and advertisements for other interactive television applications), real-time data such as sports scores, stock quotes, news data, and weather data, application data for one or more media guidance applications or other interactive applications, and any other suitable data for use by system 100. As another example, data source 120 may provide data indicating the types of information that may be included in interactive media guidance overlays (e.g., at the request of the user, absent user modification, etc.).

[0064] Program guide data may be provided to user equipment, including user equipment located on home network 113, using any suitable approach. For example, program schedule data and other data may be provided to the user equipment on a television channel sideband, in the vertical blanking interval of a television channel, using an in-band digital signal, using an out-of-band digital signal, or by any other suitable data transmission technique. Program schedule data and other data may be provided to user equipment on multiple analog or digital television channels. Program schedule data and other data may be provided to the user equipment with any suitable frequency (e.g., continuously, daily, in response to a request from user equipment, etc.).

[0065] In some television-centric embodiments, guidance data from data source 120 may be provided to users' equipment using a client-server approach. For example, a guidance application client residing on the us-

er's equipment may initiate sessions with server 140 to obtain guidance data when needed. In some embodiments, the guidance application may initiate sessions with server 140 via a home network server (e.g., a server located in home network 113 that supports the user equipment devices located in home network 113).

[0066] There may be multiple data sources (such as data source 120) in system 100, although only one data source is shown in FIG. 1 to avoid overcomplicating the drawing. For example, a separate data source may be associated with each of a plurality of television broadcasters and may provide data that is specific to those broadcasters (e.g., advertisements for future programming of the broadcasters, logo data for displaying broadcasters' logos in program guide display screens, etc.). Data source 120 and any other system components of FIG. 1 may be provided using equipment at one or more locations. Systems components are drawn as single boxes in FIG. 1 to avoid overcomplicating the drawings.

[0067] Data source 120 may provide data to distribution facility 104 over communications path 122 for distribution to the associated user equipment and home network 113 (discussed below) over paths 114, 116, 118, and 119 (e.g., when data source 120 is located at a main facility). Communications path 122 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 path that supports Internet communications, or other suitable path or combination of such paths.

[0068] In some television-centric and non-television centric approaches, data source 120 may provide guidance data directly to user equipment 108 over path 124, communications network 126, and path 128 (e.g., when data source 120 is located at a facility such as one of programming sources 102). In some embodiments of the present invention, data source 120 may provide guidance data directly to user equipment located on home network 113 (discussed below) over path 124, communications network 126, and path 139 (e.g., when data source 120 is located at a facility such as one of programming sources 102). Paths 124, 128, and 139 may be wired paths such as telephone lines, cable paths, fiber-optic paths, satellite paths, wireless paths, any other suitable paths or a combination of such paths. Communications network 126 may be any suitable communications network, such as the Internet, the public switched telephone network, or a packet-based network.

[0069] User equipment devices, including user equipment devices located on home network 113 (discussed below), such as user television equipment and personal computers, may use the program schedule data and other interactive media guidance application data to display program listings and other information (e.g., information on digital music) for the user. An interactive television program guide application or other suitable interactive media guidance application may be used to display the information on the user's display (e.g., in one or more

overlays that are displayed on top of video for a given television channel). Interactive displays may be generated and displayed for the user using any suitable approach. In one suitable approach, distribution facility 104, server 130, or another facility, may generate application display screens and may transmit the display screens to user equipment for display. In another suitable approach, user equipment may store data for use in one or more interactive displays (e.g., program schedule data, advertisements, logos, etc.), and an interactive media guidance application implemented at least partially on the user equipment may generate the interactive displays based on instructions received from distribution facility 104, server 130 or another facility. In some embodiments of the present invention, user equipment may store only the data that is used to generate the interactive television displays (e.g., storing logo data for a particular television broadcaster only if the logo is to be included in one or more interactive television displays). In some embodiments of the present invention, user equipment may store data that is not necessarily used to generate the interactive television displays (e.g., storing advertisements associated with a particular television broadcaster that may or may not be displayed depending on, for example, the outcome of negotiations with the television broadcaster). Any other suitable approach or combination of approaches may be used to generate and display interactive overlays for the user.

[0070] In still other embodiments, interactive media guidance applications (television-centric and non-television centric) may be provided online as, for example, websites. For example, server 130 may provide an online interactive television program guide. As another example, user equipment 108 may be a mobile device, such as a cellular telephone or personal digital assistant (PDA). The mobile device may be web-enabled to allow the user to access an on-line guidance application (which may be modified from its original version to make it appropriate for a cellular phone). Alternatively, the mobile device may have an applet that communicates with server 130 to obtain guidance data via the Internet.

[0071] Server 130 may receive program schedule data and other data from data source 120 via communications path 124, communications network 126, and communications path 132 or via another suitable path or combination of paths. Path 132 may be a satellite path, fiber-optic path, wired path, or any other path or combination of paths. User equipment 108 may access the on-line interactive media guidance application and other sources from server 130 via communications path 128. User equipment 108 may also access the application and other services on server 130 via communications path 114, distribution facility 104, and communications path 134. For example, a cable modem or other suitable equipment may be used by user equipment 108 to communicate with distribution facility 104.

[0072] User equipment such as user television equipment 110, user computer equipment 112, and user equip-

ment located on home network 113 may access the on-line interactive media guidance application and server 130 using similar arrangements. User television equipment 110 may access the on-line interactive media guidance application and server 130 using communications path 136 or using path 116, distribution facility 104, and path 134. User computer equipment 112 may access the on-line interactive media guidance application, and server 130 using communications path 138 or using path 118, distribution facility 104, and path 134. User equipment located on home network 113 may access the on-line media guidance application and server 130 using communications path 139 or using path 119, distribution facility 104, and path 134. Paths 136, 138, and 139 may be any suitable paths such as wired paths, cable paths, fiber-optic paths, wireless paths, satellite paths, or a combination of such paths.

[0073] In some embodiments, system 100 may support other interactive applications in addition to the interactive media guidance applications. Such applications may be implemented using any suitable approach. For example, the interactive applications may be implemented locally on the user equipment or in a distributed fashion (e.g., using a client-server architecture in which the user equipment serves at least partly, and for at least some of the time, as the client and a server, such as server 140 at distribution facility 104, server 130, or other suitable equipment acts as the server). Other distributed architectures may also be used if desired. Moreover, some or all of the features of the interactive applications of system 100 (including the media guidance application) may be provided using operating system software or middleware software. Such operating system software and middleware may be used instead of or in combination with application-level software. In yet other approaches, interactive applications may also be supported by servers or other suitable equipment at one or more service providers such as service provider 142. Regardless of the particular arrangement used, the software that supports these features may be referred to as an application or applications.

[0074] For example, an interactive application such as a home shopping service may be supported by a service provider such as service provider 142 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 such features to the user. The user equipment may access service provider 142 via distribution facility 104 and communications path 144 or via communications network 126 and communications path 146. Communications paths such as paths 144 and 146 may be any suitable paths such as wired paths, cable paths, fiber-optic paths, satellite paths, or a combination of such paths.

[0075] Another example of an interactive application is a home banking application. A home banking service

may be supported using personnel at facilities such as service provider 142. An interactive home banking application that is implemented using the user equipment may access the home banking service via distribution facility 104 and communications path 144 or via communications network 126 and communications path 146.

[0076] If desired, an interactive media guidance application such as a network-based video recorder or a video-on-demand application may be supported using server 140, server 130, a home network server, or equipment at service provider 142. Video-on-demand content and video recorded using a network-based video recorder arrangement may be stored on server 140 or server 130 or a home network server or at service provider 142 and may be provided to the user equipment when requested by users. An interactive television program guide, for example, may be used to support the functions of a personal video recorder (sometimes called a digital video recorder) that is implemented using user equipment 108. Illustrative equipment that may be used to support personal video recorder functions include specialized personal video recorder devices, integrated receiver decoders (IRDs), set-top boxes with integrated or external hard drives, or personal computers with video recording capabilities.

[0077] Interactive applications such as media guidance applications (e.g., interactive television program guide applications and video-on-demand applications), home shopping applications, home banking applications, game applications, 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, games, video-on-demand services, home shopping services, network-based video recorder functions, personal video recorder functions, navigational functions, program guide functions, communications functions, and other suitable functions may be provided using one application or any other suitable number of applications. The one or more applications may display various overlays on user equipment including, for example, interactive television information on top of video for a given television channel.

[0078] Interactive television program guide applications, home banking applications, home shopping applications, network-based video recorder and personal video recorder applications, video-on-demand applications, gaming applications, communications applications, and navigational applications are only a few illustrative examples of the types of interactive media guidance and other applications that may be supported by system 100. Other suitable interactive applications that may be supported include news services, web browsing and other Internet services, and interactive wagering services (e.g., for wagering on horse races, sporting events, and the like). Interactive television overlays that are displayed by

these applications may also be customized in accordance with the present invention.

[0079] Users may have multiple types of user equipment by which they access media and obtain media guidance. For example, some users may have home networks that are accessed by in-home and mobile devices. As shown in FIG. 1, home network 113 communicates with distribution facility 104 and server 130 over paths 119 and 139 (and, in the case of server 130, communications network 126). Such home networks 113 may be located, for example, in homes of users or distributed, for example, among homes of users. Home networks 113 may each include a plurality of interconnected user equipment devices, such as, for example user equipment devices 108, 110 and 112. In some embodiments, users may control in-home devices via a media guidance application implemented on a remote device. For example, users may access an online media guidance application on a website via a personal computer at their office, or a mobile device such as a PDA or web-enabled cellular telephone. The user may set settings (e.g., recordings, reminders, or other settings) on the on-line guidance application to control the user's in-home equipment. The on-line guide may control the user's equipment directly, or by communicating with a media guidance application on the user's in-home equipment.

[0080] FIGS. 2-6 show illustrative arrangements for user equipment. An illustrative set-top box-based arrangement for user equipment 110 is shown in FIG. 2. User television equipment 110 may be stand-alone or a part of home network 113 (FIG. 1). Input/output 202 may be connected to communications paths such as paths 116 and 136 (FIG. 1). Input/output functions may be provided by one or more wires or communications paths, but are shown as a single path in FIG. 2 to avoid over-complicating the drawing. Television programming, program guide data, and any other suitable interactive media guidance application data or other data may be received using input/output 202. Commands and requests and other data generated as a result of user interactions with the interactive media guidance application may also be transmitted over input/output 202.

[0081] Set-top box 204 may be any suitable analog or digital set-top box (e.g., a cable set-top box). Set-top box 204 may contain an analog tuner for tuning to a desired analog television channel (e.g., a channel comprising television programming, interactive television data, or both). Set-top box 204 may also contain digital decoding circuitry for receiving digital television channels (e.g., channels comprising television or music programming, interactive television data, etc.). Set-top box 204 may also contain a high-definition television tuner for receiving and processing high-definition television channels. Analog, digital, and high-definition channels may be handled together if desired. Multiple tuners may be provided (e.g., to handle simultaneous watch and record functions or picture-in-picture (PIP) functions). Box 204 may be an integrated receiver decoder (IRD) that handles satellite

television. If desired, box 204 may have circuitry for handling cable, over-the-air broadcast, and satellite content.

[0082] Set-top box 204 may be configured to output media, such as television programs, in a preferred format. Because television programs may be received in a variety of formats, set-top box 204 may contain scaler circuitry for upconverting and downconverting television programs into the preferred output format used by set-top box 204. For example, set-top box 204 may be configured to output television programs in 720p. In this example, the scaler circuitry may upconvert standard-definition television programs having 480 lines of vertical resolution to 720p format and downconvert certain high-definition television programs having 1080 lines of vertical resolution to 720p format.

[0083] Box 204 may include a storage device (e.g., a digital storage device such as a hard disk drive) for providing recording capabilities. Box 204 may also be connected to a recording device 206 such as a video cassette recorder, personal video recorder, optical disc recorder, or other device or devices with storage capabilities. In some embodiments, box 204 may be configured to record either standard-definition television programs or high-definition television programs. In some embodiments, box 204 may be configured to record both standard-definition television programs and high-definition television programs.

[0084] Set-top box 204 contains a processor (e.g., a microcontroller or microprocessor or the like) that is used to execute software applications. Set-top box 204 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 in box 204 or in recording device 206 may be used to back up data and to otherwise support larger databases and storage requirements than may be supported using random-access memory approaches. Hard disk storage in box 204 or in recording device 206 may also be used to store and back up program guide settings or saved user preferences.

[0085] Set-top box 204 may have infrared (IR) or other communications circuitry for communicating with a remote control or wireless keyboard. Set-top box 204 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.

[0086] Set-top box 204 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, or a wireless modem for communications with other equipment. Such communications may involve the Internet or any other suitable communications networks or paths. If desired, the components of set-top box 204 may be integrated into other user equipment (e.g., a television or video recorder).

[0087] Recording device 206 may be used to record

videos provided by set-top box 204. For example, if set-top box 204 is tuned to a given television channel, the video signal for that television channel may be passed to recording device 206 for recording on a videocassette, compact disc, digital video disk, or internal hard drive or other storage device. In some embodiments, recording device 206 may be configured to record either standard-definition television programs or high-definition television programs. In some embodiments, recording device 206 may be configured to record both standard-definition television programs and high-definition television programs. Recording device 206 may have communications circuitry such as a cable modem, an ISDN modem, a DSL modem, or a telephone modem for communications with other equipment. Such communications may involve the Internet or any other suitable communications networks or paths. The components of recording device 206 may be integrated into other user equipment (e.g., a television, stereo equipment, etc.).

[0088] Recording device 206 may be controlled using a remote control or other suitable user interface. If desired, video recorder functions such as start, stop, record and other functions for device 206 may be controlled by set-top box 204. For example, set-top box 204 may control recording device 206 using infrared commands directed toward the remote control inputs of recording device 206 or set-top box 204 may control recording device 206 using other wired or wireless communications paths between box 204 and device 206.

[0089] The output of recording device 206 may be provided to television 208 for display to the user. In some embodiments, television 208 may be capable of displaying high-definition programming (i.e., HDTV-capable). If desired, multiple recording devices 206 or no recording device 206 may be used. If recording device 206 is not present or is not being actively used, the video signals from set-top box 204 may be provided directly to television 208. Any suitable television or monitor may be used to display the video. For example, if the video is in a high-definition format, an HDTV-capable television or monitor is required to display the video. In the equipment of FIG. 2 and the other equipment of system 100 (FIG. 1), the audio associated with various video items is typically distributed with those video items and is generally played back to the user as the videos are played. In some embodiments, the audio may be distributed to a receiver (not shown), which processes and outputs the audio via external speakers (not shown).

[0090] Another illustrative arrangement for user television equipment 110 (FIG. 1) is shown in FIG. 3. User television equipment 110 may be stand-alone or a part of home network 113 (FIG. 1). In the example of FIG. 3, user television equipment 110 includes a recording device 302 such as a digital video recorder (e.g., a personal video recorder (PVR)) that uses a hard disk or other storage for recording video. Recording device 302 may alternatively be a digital video disc recorder, compact disc recorder, videocassette recorder, or other suitable re-

cording device. Equipment 110 of FIG. 3 may also include a television 304. In some embodiments, television 304 may be HDTV-capable. Input/output 306 may be connected to communications paths such as paths 116 and 136 (FIG. 1). Television programming, program schedule data, and other data (e.g., advertisement data, data indicating one or more television channels for which the display of an overlay is to be customized, etc.) may be received using input/output 306. Commands and requests and other data from the user may be transmitted over input/output 306.

[0091] Recording device 302 may contain at least one analog tuner for tuning to a desired analog television channel (e.g., to display video for a given television channel to a user, to receive program guide data and other data) and multiple other tuners may also be provided. Recording device 302 may also contain digital decoding circuitry for receiving digital television programming, music programming, program guide data, and other data on one or more digital channels. Recording device 302 may also contain circuitry for receiving high-definition television channels. If desired, recording device 302 may contain circuitry for handling analog, digital, and high-definition channels. Recording device 302 also contains a processor (e.g., a microcontroller or microprocessor or the like) that is used to execute software applications. Recording device 302 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 recording device 302 may be used to support databases (e.g., program guide databases or other interactive television application databases). The hard disk or other storage in recording device 302 may also be used to record video such as television programs or video-on-demand content or other content provided to recording device 302 over input/output 306.

[0092] Recording device 302 may have IR communications circuitry or other suitable communications circuitry for communicating with a remote control. Recording device 302 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 recording device is tuned.

[0093] Recording device 302 may also have communications circuitry such as a cable modem, an ISDN modem, a DSL modem, a telephone modem, or a wireless modem for communications with other equipment. Such communications may involve the Internet or other suitable communications networks or paths.

[0094] If desired, recording device 302 may include a satellite receiver or other equipment that has wireless communications circuitry for receiving satellite signals.

[0095] Recording device 302 of FIG. 3 or recording device 206 of FIG. 2 may record new video while previously recorded video is being played back on television 304 or 208. 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 302. When the user presses play, the recorded video may be played back. This arrangement allows the user to seamlessly pause and resume television viewing. Recording devices 302 and 206 may also be used to allow a user to watch a previously-recorded program while simultaneously recording a new program.

[0096] The set-top box arrangement of FIG. 2 and the personal video recorder with a built-in 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 204, recording device 302, a WebTV box, or PC/TV or the like may be integrated into a television or personal computer or other suitable device.

[0097] An illustrative remote control 400 for operating user television equipment 110 (FIG. 1) or suitable user computer equipment 112 is shown in FIG. 4. Remote control 400 is only illustrative and any other suitable user input interface may be used to operate user equipment (e.g., a mouse, trackball, keypad, keyboard, touch screen, voice recognition system, etc.). Remote control 400 may have function keys 402 and other keys 404 such as keypad keys, power on/off keys, pause, stop, fast-forward and reverse keys. Volume up and down keys 406 may be used for adjusting the volume of the audio portion of a video. Channel up and down keys 408 may be used to change television channels and to access content on virtual channels. Cursor keys 410 may be used to navigate on-screen menus. For example, cursor keys 410 may be used to position an on-screen cursor, indicator, or highlight (sometimes all generically referred to herein as a highlight or highlight region) to indicate interest in a particular option or other item on a display screen that is displayed by the interactive television application.

[0098] OK key 412 (sometimes called a select or enter key) may be used to select on-screen options that the user has highlighted.

[0099] Keys 402 may include RECORD key 414 for initiating recordings. MENU button 416 may be used to direct an interactive media guidance application to display a menu on the user's display screen (e.g., on television 208 or 304 or on a suitable monitor or computer display). INFO button 418 may be used to direct an interactive media guidance application to display an information display screen. For example, when a user presses INFO key 418 while video for a given television channel is displayed for the user, an interactive television program guide may display a FLIP/BROWSE overlay including program schedule information for the current program on the given television channel on top of the video. As another example, when a particular program listing in an interactive television program listings display screen is

highlighted, the user pressing INFO button 418 may cause an interactive television program guide to provide additional program information associated with that program listing (e.g., a program description, actor information, schedule information, etc.).

[0100] LOCK button 420 may be used to modify access privileges. For example, a parent may use LOCK button 420 or on-screen options to establish parental control settings for the interactive media guidance application. The parental control settings may be time-based settings (e.g., to prevent a child from watching television during a particular time block, such as from 3:00 PM to 5:00 PM). The parental control settings may also be used to, for example, block programming based on rating, channel, and program title. A locked or blocked program (or other media) is typically not viewable until the interactive media guidance application is provided with a suitable personal identification number (PIN). Once this PIN has been entered, the interactive media guidance application will unlock the user's equipment and allow the locked content to be accessed.

[0101] EXIT button 422 may be used to exit the interactive media guidance application or to exit a portion of the interactive media guidance application (e.g., to cause an interactive television program guide to remove a FLIP, BROWSE, or other interactive television overlay from the display screen). GUIDE button 424 may be used to invoke an interactive television program guide (e.g., a program guide menu screen, program listings screen, or other program guide screen).

[0102] The keys shown in FIG. 4 are merely illustrative. Other keys or buttons may be provided if desired. For example, a music button may be used to access music with the interactive media guidance application. An edit button may be used to edit stored content (e.g., to remove commercials, remove portions of a video, etc.). Alpha-numeric buttons may be used to enter alphanumeric characters. A last or back button may be used to browse backward in the interactive media guidance application (e.g., to return to a previous channel, web page, or other display screen). Video recorder function buttons such as a play button, pause button, stop button, rewind button, fast-forward button, and record button, may be used to control video recorder functions (local or network-based) in system 100 (FIG. 1). A help key may be used to invoke help functions such as context-sensitive on-screen help functions.

[0103] Illustrative user computer equipment 112 (FIG. 1) is shown in FIG. 5. User computer equipment 112 may be stand-alone or a part of home network 113 (FIG. 1). In the arrangement of FIG. 5, personal computer unit 502 may be controlled by the user using keyboard 504 and/or other suitable user input device such as a trackball, mouse, touch pad, touch screen, voice recognition system, or a remote control, such as remote control 400 of FIG. 4. Video content, such as television programming or web pages having video elements, and interactive media guidance application display screens may be dis-

played on monitor 506. Television and music programming, media guidance application data (e.g., television program guide data), video-on-demand content, video recordings played back from a network-based video recorder, and other data may be received from paths 118 and 138 (FIG. 1) using input/output 508. User commands and other information generated as a result of user interactions with the interactive media guidance application and system 100 (FIG. 1) may also be transmitted over input/output 508.

[0104] Personal computer unit 502 may contain a television or video card, such as a television tuner card, for decoding analog, digital, and high-definition television channels and for handling streaming video content. Multiple video cards (e.g., tuner cards) may be provided if desired. An illustrative television tuner card that may be used may contain an analog television tuner for tuning to a given analog channel, digital decoding circuitry for filtering out a desired digital television or music channel from a packetized digital data stream, and a high-definition television tuner for tuning to a high-definition channel. Any suitable card or components in computer unit 502 may be used to handle video and other content delivered via input/output line 508 if desired.

[0105] Personal computer unit 502 may contain one or more processors (e.g., microprocessors) that are used to run the interactive media guidance application or a portion of the interactive media guidance application.

[0106] Personal computer unit 502 may include a hard drive, a recordable DVD drive, a recordable CD drive, or other suitable storage device or devices that stores video, program guide data, and other content. The interactive media guidance application and personal computer unit 502 may use a storage device or devices to, for example, provide the functions of a personal video recorder.

[0107] User equipment, such as user equipment 108, user television equipment 110, user computer equipment 112, and user equipment located on home network 113 (FIG. 1), may be used with network equipment such as server 130, server 140, a home network server, and equipment at service providers such as service provider 142 of FIG. 1 to provide network-based video recording functions. Video recording functions may be provided by storing copies of television programs and other video content on a remote server (e.g., server 130 or server 140 or a home network server) or other network-based equipment, such as equipment at a service provider such as service provider 142.

[0108] Video recordings may be made in response to user commands that are entered at user equipment 108 or user equipment located on home network 113 (FIG. 1). In a personal video recorder arrangement, the interactive media guidance application may be used to record video locally on the user equipment in response to the user commands. In a network-based video recorder arrangement, the interactive media guidance application may be used to record video or to make virtual recordings (described below) on network equipment such as server

130, server 140, a home network server, or equipment at service provider 142 in response to the user commands. The user commands may be provided to the network equipment over the communications paths shown in FIG. 1. The personal video recorder arrangement and the network-based video recorder arrangement can support functions such as fast-forward, rewind, pause, play, and record.

[0109] To avoid unnecessary duplication in a network-based video recorder environment, system 100 may provide network-based video recording capabilities by using virtual copies or recordings. With this approach, each user may be provided with a personal area on the network that contains a list of that user's recordings. The video content need only be stored once (or a relatively small number of times) on the network equipment, even though a large number of users may have that video content listed as one of their recordings in their network-based video recorder personal area. Personal settings or any other suitable data may be stored in a user's personal area on the network.

[0110] The user television equipment and user computer equipment arrangements described above are merely illustrative. A more generalized embodiment of illustrative user equipment 108, 110, and 112 (FIG. 1) and user equipment located on home network 113 (FIG. 1) is shown in FIG. 6. Control circuitry 602 is connected to input/output 604. Input/output 604 may be connected to one or more communications paths such as paths 114, 116, 118, 128, 136, and 138 of FIG. 1. Media (e.g., television programming, music programming, other video and audio, and web pages) may be received via input/output 604 (e.g., from programming sources 102, servers or other equipment, such as server 130, service providers such as service provider 142, distribution facility 104, etc.). Interactive media guidance application data, such as program schedule information for an interactive television program guide, may be received from data source 120 via input/output 604. Input/output 604 may also be used to receive data from data source 120 for other interactive television applications. The user may use control circuitry 602 to send and receive commands, requests, and other suitable data using input/output 604.

[0111] Control circuitry 602 may be based on any suitable processing circuitry 606 such as processing circuitry based on one or more microprocessors, microcontrollers, digital signal processors, programmable logic devices, etc. In some embodiments, control circuitry 602 executes instructions for an interactive media guidance application or other interactive application (e.g., web browser) from memory. Memory (e.g., random-access memory and read-only memory), hard drives, optical drives, or any other suitable memory or storage devices may be provided as storage 608 that is part of control circuitry 602. Tuning circuitry such as one or more analog tuners, one or more MPEG-2 decoders or other digital video circuitry, high-definition tuners, or any other suitable tuning or video circuits or combinations of such cir-

cuits may also be included as part of circuitry 602. Encoding circuitry (e.g., for converting over-the-air, analog, or digital signals to MPEG signals for storage) may also be provided. The tuning and encoding circuitry may be used by the user equipment to receive and display, play, or record a particular television or music channel or other desired audio and video content (e.g., video-on-demand content or requested network-based or local video recorder playback). Television programming and other video and on-screen options and information may be displayed on display 610. Display 610 may be a monitor, a television, or any other suitable equipment for displaying visual images. In some embodiments, display 610 may be HDTV-capable. Speakers 612 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 610 may be played through speakers 612. In some embodiments, the audio may be distributed to a receiver (not shown), which processes and outputs the audio via speakers 612.

[0112] A user may control the control circuitry 602 using user input interface 614. User input interface 614 may be any suitable user interface, such as a mouse, trackball, keypad, keyboard, touch screen, touch pad, voice recognition interface, or a remote control.

[0113] Peripheral device 618 may also be connected to processing circuitry 606 over communications path 616. Peripheral devices may include cellular phones, personal data assistants, handheld media players, and any other suitable peripheral device. Communications path 616 may include for example, USB cables, IEEE 1394 cables, or wireless paths (e.g., Bluetooth, infrared). Processing circuitry 606 may provide content and data to peripheral device 618.

[0114] In some embodiments, user equipment device 108, 110, and 112 may comprise a peripheral device connected to a docking station. The display, speakers, user input interface, processing circuitry, and storage may be provided by the peripheral device. The docking station may allow the peripheral device to connect to input/output 604.

[0115] Processing circuitry 606 of user equipment device 108, 110, and 112 may further be coupled to identification system 620. Identification system 616 may be any suitable device for identifying a user in viewing vicinity of, or interacting with, a user equipment device. Such an identification system may increase or enhance a user's media viewing experience because there may be no need for the user to manually indicate the identity of the person viewing or interacting with the user device. Moreover, the identification system may enhance the user's ability to maintain or update personal user profiles (e.g., viewer history). An example of an identification system 616 may include a fingerprinting system, which may scan in a user a scanner (e.g., located on a remote control). Another example identification system 616 may include a retina scanner that is able to determine the identity of a user based on his or her retina. Yet another example

of identification system 620 is a thermal imaging system that is able to identify a person based on his or her thermal profile. A further example of identification system 620 may include a motion sensor/camera system that takes a picture when a user trips the motion sensor. The picture may be cross-referenced with predetermined data (e.g., height and width) to ascertain the identity of the person or persons in the picture.

[0116] FIGS. 7, 8a, 8b, 8c, 9, and 10 show various illustrative home networks 113. The user equipment devices located on home network 113 may be able to share program data (such as program listings and program information), recorded content, program guide settings, and any other suitable data with other user equipment devices located on home network 113. Interactive television applications implemented on or accessible from user equipment devices located on home network 113 may be able to adjust program guide settings for interactive television applications implemented on or accessible from other user equipment devices located on home network 113.

[0117] FIG. 7 shows an illustrative home network 113 in accordance with the present invention. Home network 113 may include primary user equipment 702 and secondary user equipment 704, 706, and 708. Primary user equipment 702 may be connected to secondary user equipment 704, secondary user equipment 706, and secondary user equipment 708 via communication paths 710. Primary and secondary user equipment may each be any of user equipment 108, 110, and 112 (FIG. 1). Communications paths 710 may be any suitable communications path for in-home networks, such as wired paths, cable paths, fiber-optic paths, wireless paths, or a combination of such paths. Communications paths 119 and 139 may connect home network 113 to television distribution facility 104 (FIG. 1) and communications network 126 (FIG. 1), respectively, via primary user equipment 702. As shown, one or more pieces of secondary user equipment may be connected to primary user equipment 702 in a star configuration, if desired. User equipment devices may be located in different rooms within a home. For example, primary user equipment 702 may be placed in the parents' bedroom, secondary user equipment 708 may be placed in the children's room, secondary user equipment 704 may be placed in a living room, and secondary user equipment 706 may be placed in a guest room. With such an arrangement, the parents' bedroom may be used as a master location to adjust user settings for the program guides on the user equipment in the children's room and the other rooms.

[0118] FIG. 8a is a diagram of an illustrative home network 113 in which a plurality of user equipment are implemented in a tree configuration in accordance with the present invention. Home network 113 may include user equipment 802, 804, 806, and 808, which are connected to each of the others via communications paths 810. User equipment 802, 804, 806, and 808 may each be any of user equipment 108, 110, and 112 (FIG. 1). It should be

understood by one skilled in the art that not all of user equipment 802, 804, 806, and 808 may include recording devices (e.g., recording device 206 (FIG. 2) and recording device 302 (FIG. 3)). Communications paths 810 may be any suitable communications path for in-home networks, such as wired paths, cable paths, fiber-optic paths, wireless paths, or a combination of such paths. Two or more pieces of user equipment may be connected in this way. Communications paths 119 and 139 may connect home network 113 to television distribution facility 104 (FIG. 1) and communications network 126 (FIG. 1), respectively, via user equipment 808. Although, as illustrated, communications paths 119 and 139 are connected to user equipment 808, it could be connected to any one or more of user equipment 802, 804, 806, or 808. The equipment mentioned above may be placed in various rooms within a home. For example, user equipment 802 may be placed in a parents' bedroom, user equipment 804 may be placed in a children's room, user equipment 806 may be placed in a living room, and user equipment 808 may be placed in a guest room. With the arrangement of FIG. 8a, each piece of user equipment on home network 113 may communicate with each other piece of user equipment on home network 113 over communications paths 810.

[0119] Peripheral device 814 may be connected to user equipment device 808, which may provide peripheral device 814 with content and data. It should be understood by one skilled in the art that one or more peripheral devices 814 may be connected to any user equipment device regardless of the configuration of the home network. In some cases, peripheral devices may act as user equipment devices in a home network. For example, the role of user equipment 804 may be limited to receiving data and content from user equipment 808. This role may be filled by a peripheral device (e.g., a handheld media player) that is configured to communicate with user equipment 808 over communications path 810.

[0120] FIG. 8a shows home network 113 connected in a tree topology. If desired, this level of interconnectivity may be achieved using communications paths that are arranged in a ring configuration (FIG. 8b), bus configuration (FIG. 8c) or other suitable topology. Any of these topologies may use the types of communications paths described in connection with the arrangement of home network 113 shown in FIG. 8a. Home network 113 that is arranged in a bus topology may include bus 812 to interconnect the pieces of user equipment on home network 113 and communications paths 119 and 139.

[0121] FIG. 9 shows an illustrative home network 113 based on a client-server architecture. Home network 113 may include server 902 and user equipment 904, 906, and 908. Server 902 may be connected to user equipment 904, 906, and 908 via communication paths 910. In some embodiments, server 902 may be embedded within one of the user equipment devices. Communications paths 119 and 139 may connect home network 113 to television distribution facility 104 (FIG. 1) and commu-

nications network 126 (FIG. 1), respectively, via server 902. User equipment 904, 906, and 908 may each be any of user equipment 108, 110, and 112 (FIG. 1). User equipment 904, 906, and 908 and server 902 may be placed in various rooms within a home. For example, server 902 may be placed in a den, user equipment 904 may be placed in a children's room, user equipment 906 may be placed in a living room, user equipment 908 may be placed in a parents' room. Communication paths 910 may be any suitable communications path for in-home networks, such as wired paths, cable paths, fiber-optic paths, wireless paths, or a combination of such paths.

[0122] As in the examples of FIGS. 8a, 8b, and 8c, different communications path arrangements such as buses, rings and the like, may be used to interconnect a server and user equipment on home network 113 based on a client-server architecture.

[0123] FIG. 10 shows an illustrative configuration of home network 113 based on a single set-top box. Home network 113 may include set-top box 1002, optional recording device 1004, and televisions 1006, 1008, 1010, and 1012. Set-top box 1002 may be similar to set-top box 204 (FIG. 2). Recording device 1004 may be similar to recording device 206 (FIG. 2). Televisions 1006, 1008, 1010, and 1012 may be similar to television 208 (FIG. 2). Set-top box 1002 may be connected to recording device 1004 and televisions 1008, 1010, and 1012 via communication paths 1014. Recording device 1004 may be connected to television 1006. Set-top box 1002 and recording device 1004 may be within a single box. If desired, any combination of televisions with or without recording devices may be connected in a similar manner. The set-top box, recording device and televisions of FIG. 10 may be placed in different rooms within a home. For example, set top box 1002, recording device 1004 and television 1006 may be placed in a parent's bedroom, television 1008 may be placed in a children's room, and television 1010 may be placed in a living room, and television 1012 may be placed in a guest room. Communication paths 1014 may be any suitable communications path for in-home networks, such as wired paths, cable paths, fiber-optic paths, wireless paths, satellite paths, or a combination of such paths. Communications paths 119 and 139 may connect home network 113 to television distribution facility 104 (FIG. 1) and communications network 126 (FIG. 1), respectively, via set top box 1002.

[0124] FIGS. 11a, 11b, 11c, and 11d show illustrative configurations of connections between home networks and television distribution facility 104 (FIG. 1). Only one user equipment device is shown on the home networks in FIGS. 11a, 11b, 11c, and 11d to avoid over-complicating the drawings. However, the home networks shown in FIGS. 11a, 11b, 11c, and 11d may contain multiple pieces of user equipment configured as shown in FIGS. 7, 8a, 8b, 8c, 9, or 10.

[0125] FIG. 11a shows an illustrative configuration in which multiple homes are connected to a common server. Server 140 (FIG. 1) may be located at television dis-

tribution facility 104 (FIG. 1). Television distribution facility 104 may be at or may be one of private home, a commercial building, a network node, or other suitable structure that may be connected to a plurality of homes. In the example of FIG. 11a, server 140 is connected to user equipment 1110, 1112, 1114, and 1116 that is located in homes 1104, 1102, 1106, and 1108, respectively via communication paths 114 (FIG. 1). When multiple user equipment devices exist within a home, such as home 1109, as shown by devices 1118a and 1118b, each user equipment device may communicate with the server 140 independently via communication paths 119 (FIG. 1). Alternatively, only one device may communicate with server 140 while the other device communicates via a home network. In other words, in separate arrangements, there are any of 1) multiple connections to server 140 and each user equipment device communicates with server 140 independently with no need for an in-home network, 2) only one connection to server 140 and each user equipment device communicates with each other through an in-home network, or 3) each user equipment device communicates with server 140 and with each other through an in-home network.

[0126] As shown in FIG. 11b, the capabilities of server 140 (FIG. 1) may be provided using servers 1122 located at network nodes 1120. Servers, such as servers 1122, may be used instead of server 140 or may be used in conjunction with a server 140 located at television distribution facility 104 (FIG. 1). Servers 1122 may be connected to one or more user equipment 108 (FIG. 1). Servers 1122 may also be connected to one or more home networks, such as, for example home network 113 (FIG. 1).

[0127] As shown in FIG. 11c, user equipment in different homes may be connected by communications links. For example, user equipment 1136 may be connected to user equipment 1138 via link 1140.

Link 1140 may be a wired or wireless link. In this manner, home 1132 and home 1134 may share program guide settings and recorded content. Home networks located in different homes may also be interconnected in this manner. In some embodiments, a group of homes (i.e., more than two homes) may also be connected to share program guide settings and recorded content. A tree, ring, or bus configuration may be used to connect the group of homes.

[0128] As shown in FIG. 11d, user equipment in different homes may be connected via an outside server. For example, user equipment 1156 may be connected to user equipment 1158 via server 1150. Communication paths 1160 may be a wired or wireless path. In this manner, home 1152 and home 1154 may share program guide settings and recorded content. Home networks located in different homes may also be interconnected in this manner. In some embodiments, a group of homes (i.e., more than two homes) may also be connected to server 1150 to share program guide settings and recorded content. A tree, ring, or bus configuration may be used to

connect the group of homes and server 1150.

[0129] In a home network, a user may wish to record television programming from any given user equipment device and view the recorded programming from another user equipment device located on the home network. For example, the user may access an interactive media guidance application implemented on user equipment located in the living room to record "American Idol". After the recording is completed, the user may access an interactive media guidance application implemented on user equipment located, for example, in the bedroom to access and view the recording of "American Idol".

[0130] However, the display and recording capabilities of the user equipment devices may differ. As a result, some user equipment devices in the home network may not be able to display content recorded by other user equipment devices in the home network. For example, a cellular phone and a high-definition digital video recorder may be part of two separate user equipment devices in a home network. The cellular phone cannot display recordings having a resolution greater than 160 x 100 pixels. Therefore, the cellular phone cannot display, for example, a recording of a high-definition television program on the digital video recorder. In addition, the cellular phone may also lack the bandwidth to download the high-definition recording in a reasonable amount of time.

[0131] In addition to supporting different resolutions and having different bandwidths, other capabilities that may differ among user equipment devices in a home network may include, for example, the types of media supported by the user equipment devices, the processing power of the user equipment devices, the ability of the user equipment devices to decode various video and audio formats, and any other suitable capabilities.

[0132] The present invention provides systems and methods for providing content, for example, interactive content or media content, for use in one or more home networks. Some of the interactive content may be provided in a "New to Me" context, which may identify content that has been previously viewed or recorded, or which may present information or otherwise perform an action based on identifying previously viewed content, in a flexible manner that optimizes a user's program guide and viewing experience. It may be especially important to keep track of and manage previously viewed content in a home network environment, where users typically interact with multiple different user devices in the home network on a regular basis. Management of content may be performed at different levels of specificity. In one embodiment of the invention, content may be managed at an individual level or at a device level within a particular home network. In another embodiment of the invention, content may be managed at the household level, or across multiple home networks. In yet another embodiment of the invention, content may be managed across multiple home networks, but with respect to an individual or a user device. Each of these aspects are discussed in further detail below, but in order to facilitate an under-

standing of the various embodiments, several terms, all of which are applicable to various embodiments of the present invention, are discussed first. A few of these terms include viewing history, interactive content, and media content.

[0133] The viewing history may represent a history of viewed, played, or displayed content. More particularly, viewing history, as defined herein includes, but is not limited to, a compilation of content that has been displayed, viewed, or played on at least one user device that is communicatively coupled to a home network. In other words, the viewing history is akin to logbook or profile that keeps track of content that has been viewed, played, recorded, or any combination thereof for a particular individual, device, or home network. Thus, a viewing history may be provided for individuals, user devices, and home networks.

[0134] The viewing history may provide a framework or guidelines that enables the interactive media guidance application to manage content. For example, if content is managed at the individual level, a viewing history may be specifically maintained for each individual that interacts with a device communicatively coupled to a home network. When a particular user accesses various user devices communicatively coupled to the home network, the interactive media guidance application may access the viewing history for that particular user to determine the content to be provided to the user device being used by that user. As another example, a viewing history may be maintained for a selected device that is communicatively coupled to a home network. In yet another example, a viewing history may be maintained for one or more home networks, or for an individual or device that is maintained across two or more home networks.

[0135] FIG. 12 shows several different types of content (also referred to as media content) that may be monitored for creating, modifying, or updating a viewing history in accordance with the principles of the present invention. As shown, FIG. 12 includes television programming 1202, music programming 1204, advertisements 1206, interactive media guide application content 1208, additional information 1210, and recorded programming 1212. Television programming 1202 may include content such as broadcast programming, recorded programming, pay-per-view programming, video-on-demand programming, near video-on-demand programming, streaming media programming, Internet accessible programming (e.g., programming that may be downloaded from the Internet or a website), or any other suitable television programming. Music programming 1204 may include music programming such as satellite radio, Internet radio, stored music files (e.g., .mp3 or .wav files), or any other music programming. Advertisements 1206 may include advertisements that are displayed as part of television programming viewed by a user (e.g., displayed at the beginning, middle, and/or end of the programming) or by interactive media guide applications in, for example, an overlay, a flip or browse overlay, a full screen overlay,

a partial screen overlay, in an advertisement window or region, or as a banner advertisement, a targeted advertisement, a channel advertisement, a pop-up advertisement, an interactive advertisement, or any other suitable advertisement. Interactive media guidance application content 1208 may include, for example, a listing of programming, media guide display screens, a listing of recorded programming, or any other suitable interactive media guide content. Additional information 1210 may include, for example, any information from the Internet not previously described, or information stored in databases or servers accessible by the interactive media guidance system. Recorded programming 1212 includes any type of programming that has been recorded on physical media. It is understood that the various types of content shown in FIG. 12, and the discussion accompanying each type of content, that may be monitored for creating or updating a viewing history is not exhaustive, and that other types of content (e.g., media) not specifically discussed herein, or has yet to be developed, may be monitored.

[0136] FIG. 13 shows several monitors that may be used to track various aspects of the viewed or played content. Content viewed monitor 1302 may monitor which content (e.g., any of the content discussed above in connection with FIG. 12) has been viewed. For example, if the first season, fourth episode, of "Family Guy" is viewed, viewed content monitor 1302 may update the viewing history to reflect the fact that this particular episode of "Family Guy" has been viewed. If a particular advertisement is displayed, for example, by the interactive media guidance application, viewed content monitor 1302 may update a viewing history to reflect the fact that this particular advertisement has been displayed. Viewed content monitor 1302 may designate content as being viewed when at least a predetermined portion of the content has been viewed. For example, if a majority of the content (e.g., at least half of the length of the content) has been viewed, the content may be marked as having been viewed. Note that the predetermined viewing portion may vary depending on the type of content being viewed. For example, a user that begins playing a video-on-demand program, but stops play five minutes into the program (because he or she did not like the program) may result in monitor 1302 deeming this program as having been viewed. If desired a timestamp, indicating a date or time the content was last viewed may be stored in the viewing history.

[0137] Frequency monitor 1304 may monitor the number of times particular content has been viewed. For example, the number of times a television program or advertisement is viewed may be stored in the viewing history. In other approaches, frequency monitor 1304 may monitor the number of times a user requests or views, for example, previews or supplemental information such as information blurbs on various programming may be recorded in a viewer history.

[0138] Bookmark monitor 1306 may keep track of the

program (e.g., television program) being viewed or a location in a program (e.g., a video-on-demand or a recorded program) being viewed when the user paused or stopped play. The following example illustrates a use of bookmarked information. Assume that a user is watching a recorded program on user equipment located in a first room, but stops play of the recorded program. The point at which the recorded program is stopped may be bookmarked. Further, assume that the user interacts with user equipment in the second room. The bookmark may enable the user equipment in the second room to resume play of the recorded program at point at which the user stop playback in the first room.

[0139] In some embodiments, in addition to or instead of creating or updating the viewing history using, for example, one of the monitors discussed above, the interactive media guidance application may allow a user to manually create or update a viewing history. For example, the interactive media guidance application may provide one or more display screens that allows a user to specify a viewing history for an individual, a device, or a home network. The display screens may be accessible from an option in a menu provided by the interactive media guidance application that the user may navigate to and select. In other embodiments, a user may be allowed to enter in the content they have viewed, or that they have little or no interest in viewing, at a site that is remote from the home network, but is communicatively coupled to the interactive media guidance system. For example, the user may create or update a viewing history on a website. At the website, the user may specify that they have seen all of the episodes of the first two seasons of the television series "24", or that they have viewed certain episodes of the show "Seinfeld." The user may also describe, among other things, the date that they last viewed specified content, or the frequency with which they have viewed specified content. After the information has been entered, it may be downloaded and incorporated into or supplant an existing viewing history.

[0140] FIG. 14 shows an illustrative screen 1400 provided by an Internet website in which users may manually specify their viewing history. Generally, allowing a user to manually specify or update certain components of their viewing history may be important to more accurately reflect their complete viewing history that has not automatically been captured by the interactive media guide application. This may be necessary for the entry of, for example, programming that a viewer watched prior to the installation of the interactive media guide application, or programming that a viewer watches in an environment outside of the interactive media guide application. Returning to FIG. 14, it will be understood that screen 1400 may also be provided locally by the interactive media guidance application. First, the user may specify a title or description of the previously viewed content in text field 1402. Aides such as an on-screen keyboard or voice dictation may be provided to assist the user in entering in this information into text field 1402. After entering in

the title or description of the previously viewed content, the user may select button 1404 to look up the entered content in a database of all the available content. The interactive media guidance application may present either the content that matches the entered information, or a number of the closest matches, to the user in one or more additional screens. The user may then select the appropriate content, and that content may then be displayed in a format recognizable by the interactive media guidance application in text field 1402.

[0141] Alternatively, if the user is not familiar with the title or the description of the previously viewed content, the user may select button 1406 to search for content. In response to the selection of button 1406, the interactive media guidance application may provide the user with one or more screens for specifying various parameters or criteria for the previously viewed content. For example, the user may be provided with the opportunity to specify the genre of the content (which may be divided into a category and subcategory, such as movies and drama, television show and sitcom, sports and baseball, or advertisement and car commercial), the date the content was viewed, the channel on which the content was viewed, or additional qualifiers that further narrow the content (e.g., rating, actors). After the parameters are entered, the interactive media guidance application may perform a search based on the entered parameters and provide the user with an opportunity to select from the content that matches the entered parameters.

[0142] After identifying the previously viewed content, the user may have an opportunity to provide further details about the previously viewed content. For example, the user may enter in selection area 1408 the dates that the content was viewed (for determining the exact episodes of a television series that the user viewed), or the seasons that the content was viewed. Using drop-down menu 1410, the user may specify, among other things, how many times the content was viewed, how often the content was viewed (e.g., twice in the past week), the date the content was last viewed, how much of the content the viewer viewed (information that may be used by the bookmark monitor), etc.

[0143] When the user has specified the details about the previously viewed content, the user may specify the profile that should be updated by the manually entered previously viewed content. To do this, the user may type in the name of the user, device or household into text field 1412. If the user wants to make the manually entered content part of a new profile, the user may select button 1414. In response to selection of button 1414, the interactive media guidance application may prompt the user to enter in the name of the new profile, as well as any additional information associated with the new profile. The user may also select button 1416 to browse the available profiles and select the appropriate one. If the user wishes to update multiple profiles based on the entered information regarding previously viewed content, the user may identify a first profile, and then select button 1418

to add more user profiles. In response to selection of button 1418, the interactive media guidance application may prompt the user to enter in names of the additional profiles by direct entry or browsing the database of profiles.

[0144] After selecting in the desired profile or profiles to be affected by this information, the user may further specify whether the manually entered viewing history should be incorporated with the existing viewing history associated with the selected profile or profiles, or should replace the viewing history for the selected profile or profiles. If the user selects radio button 1420, the interactive media guidance application may add the entered viewing history into the existing viewing history for the selected profile or profiles. If the user selects radio button 1422, the interactive media guidance application may replace the existing viewing history for the selected profile or profiles with the entered viewing history.

[0145] The user may be provided with the opportunity to select how the manually entered content should affect different interactive content displays or functions provided by the interactive media guidance application where the "New to Me" feature is applicable. If the user selects checkbox 1424, the interactive media guidance application will take the manually entered viewing history into consideration in automatically generated displays of content (i.e., the manually entered content, such as advertisements or programming, will not be automatically displayed to the viewer). If the user selects checkbox 1426, the interactive media guidance application will take the entered viewing history into consideration in automatic recording operations (e.g., in connection with the recording of a season of a television series). If the user selects checkbox 1428, the interactive media guidance application will take the entered viewing history into consideration when presenting recommendations. If the user selects checkbox 1430, the interactive media guidance application will take the entered viewing history into consideration when presenting search results. If the user selects checkbox 1432, the interactive media guidance application will take the entered viewing history into consideration when displaying visual indicators for listings of previously viewed or unviewed content, as will be discussed below in connection with FIGS. 19A-G. If the user selects checkbox 1434, the interactive media guidance application will take the entered viewing history into consideration when displaying visual indicators for displays of previously viewed or unviewed content, as will also be discussed below in connection with FIGS. 21A-H. If the user wishes to select all of the above options, the user may select checkbox 1436. If the user does not select any of checkboxes 1424-1436, the interactive media guidance application may apply the entered viewing history to the same functions specified for the existing viewing history, or according to a default rule, which will be described in connection with FIG. 22.

[0146] When a user has entered in the viewing history and the other above-described details concerning it, the

user may submit this information to the website by selecting submit button 1438. The user may also clear the entered information, or cancel out of the function to enter a viewing history completely, by selecting clear button 1440 or cancel button 1442, respectively. Once the information has been submitted, it is processed, and the viewing history details and corresponding instructions, such as the interactive media guidance applications functions that should be affected by the entered viewing history, are transmitted in an appropriate format to the appropriate interactive media guidance system or systems. Alternatively, if the feature of manually entering a viewing history is provided by a local interactive media guidance system, the local interactive media guidance application may process and format the information and transmit it directly to the appropriate interactive media guidance system or systems.

[0147] FIG. 15 shows illustrative flow diagram 1500 for allowing a user to manually enter a viewing history of previous viewed content in accordance with the principles of the present invention. First, at step 1502, the interactive media guidance application allows a user to specify previously viewed content and details concerning the viewing of the specified content. At step 1504, the interactive media guidance application compiles a viewing history based on the information entered in by the user at step 1502. At step 1506, the user specifies a new or existing user, device or household profile to which the viewing history should be applied. At step 1508, the interactive media guidance application applies the viewing history specified at step 1502 to the profile specified at step 1506. At step 1510, the user specifies how the viewing history should affect the functionality of the interactive media guidance application. At step 1512, the interactive media guidance application updates its own functionality for the profile specified at step 1508 according to the specification by the user at step 1510. More generally, it will be understood that steps 1504, 1508 and 1512 may occur after the user has submitted the information in steps 1502, 1506 and 1510 by, for example, selecting submit button 1438 in FIG. 14.

[0148] The viewing history may be stored on one or more databases, which may be either or both locally or remotely accessible by the user devices and/or home networks. In addition, as will be discussed in more detail below, profiles such as user profiles, device profiles, and/or home network profiles may also be stored on databases.

[0149] FIG. 16 is an illustrative block diagram of an illustrative home network 113 that shows user equipment devices 1602, 1604, 1606 and 1608 each being directly connected to a database 1612, which may store, among other things, viewing history data. Although a home network topology similar to that discussed in connection with FIG. 8a is being used to discuss a database that may store viewing history data, it will be understood that other home network configurations or topologies may be used such as those discussed in connection with FIGS. 8b-c,

9, 10, and 11. User equipment devices 1602, 1604, 1606 and 1608 may send viewing history data to and receive the same from the same database server via communication paths 1614, which may be any suitable communications path for in-home networks, such as wired paths, cable paths, fiber-optic paths, wireless paths, or a combination of such paths. The connection between and database 1612 and user devices 1602, 1604, 1606, and 1608 illustrates that the viewer history data is accessible by user devices communicatively coupled to the home network. Such accessibility may ensure that all user devices are properly configured to manage content according to, for example, a particular individual, a selected device, or home network.

[0150] Moreover, it will further be understood that FIG. 16 shows storing viewer history data for a given home network in a single database on a single, local, standalone server, which is accessible by all the user equipment devices in the home network is merely illustrative. A wide range of alternative arrangements exist for viewer history data. For example, the database may be stored at one of the user equipment devices in the home network (shown as database 1616); the database may be communicatively coupled to the home network as shown with database 1618, or it may be located in a remote location outside of the home network as shown with database 1620 (e.g., at a user equipment device or server within a different home network, at a distribution facility, a server, etc.). In other embodiments, the database may be split up or duplicated for redundancy or added performance, and distributed among any permutations of the previously described locations, or at other suitable sites for hosting such information, in any suitable manner. In addition, the database may, for example, be accessible by only a subset of the user equipment devices in the home network, either because the other user equipment devices lack a communicative coupling to the database, or because those other user equipment devices lack the proper authorization to access the particular database, user profile, or viewing history of interest. In those instances, the user equipment devices that do not have direct access to the database may establish communicative links with user equipment devices that can access the database.

[0151] The content may be identified using unique identifiers such as strings or numbers that are stored by the interactive media guidance system when the content is viewed by the user. In other embodiments, the interactive media guidance application may store the identifiers for all the content that a particular user has not previously viewed.

[0152] The interactive media guidance application may store viewing history in any number of ways. In some embodiments, when the viewer history of interest is stored at a location other than at the user equipment device in use, the user equipment may download and retain a locally cached copy of the viewing history. The interactive media guidance application may then make mod-

ifications to the viewing history of the locally cached copy and then upload the updated viewing history to the externally located database at predefined intervals, on demand (e.g., in response to a request to furnish such information) or in response to a user action (e.g., logging out of the user equipment device), or by any other approach.

[0153] FIG. 17 shows several different types of interactive content that may be generated and displayed by the interactive media guidance application. As shown, FIG. 17 includes menus 1702, program listings 1704, recommendations 1706, search results 1708, advertisements 1710, and additional information 1712. Menus 1702 may include textual menus that enable users to navigate the various functions provided by the interactive media guidance application. Program listings 1704 may include display of available programming of any of the types previously mentioned. Such listings may be organized, for example, by channel, by date, by genre, by user-specified criteria, or by any other suitable manner. Recommendations 1706 may include any displays of recommendations by the interactive program guidance application to a user of available programming or other content for viewing or recording. Search results 1708 may include results of searches that are conducted by users, or automatically performed by the interactive media guidance application for available content. Advertisements 1706 may include the types of advertisement 1206 described in connection with FIG. 12. Finally, additional information 1712 may encompass any of type of information generated by the interactive media guidance application and not described above.

[0154] Content management at the individual level is now described. Managing content on an individual basis within a home network may enable the media guidance system to provide interactive content that is specific to each user regardless of which user device the user uses. Individualized content management offers many advantages that enhance a particular user's media guidance application experience. For example, when a first user views a particular program (e.g., a television show) in the living room, the system may update a viewing history for the first user, to reflect the fact that the first user has viewed that particular program. Thereafter, when the first user retires to the bedroom (or any other room having a user device communicatively coupled to the home network), and decides to watch another program, the system may omit the listing of the particular program that the first user viewed in the living room from a listing of programs that may be displayed on a user device in the bedroom. By contrast, if a second user accesses the user device in either the living room or the bedroom and has not viewed the particular program viewed by the first user, the system may display the particular program in a listing for the second user. It is understood that the references to living room and bedroom are merely illustrative and are not intended to be limiting. It is further understood that the system is not required to omit the particular pro-

gram from a listing of programs, but that this is one of many different ways in which content can be displayed. For example, the particular program listing may be "specially" presented to indicate that the particular program has been viewed by the first user or additional information (e.g., information indicating the particular program was date last viewed) may be displayed in connection with the particular program listing. Additional examples for different ways content may be displayed are discussed in connection with the description accompanying FIG. 17.

[0155] Another advantage of individualized content management may be applied to settings or preferences. For example, any settings a particular user sets at any of the user devices can automatically be applied to all user devices coupled to the home network. Thus, there is no need for the particular user to manually define any desired settings for each user device coupled to the home network. Moreover, whenever the particular user changes a setting on one of the user devices, the updated settings may be applied to all user devices without requiring additional user input. Such settings may be stored, for example, as part of a user profile. It is noted that the viewing history, which may include settings, may be stored as part of a user profile.

[0156] FIG. 18a shows illustrative flow diagram 1800 for displaying interactive or media content based on the viewing history for an identified user using a user device communicatively coupled to a home network. At step 1802, the identity of a user using a user device communicatively coupled to a home network is determined. In one embodiment, the identity of a user may be determined when the user selects a user profile. Referring briefly to FIG. 19, an illustrative user profile selection screen 1900 is shown. Display screen 1900 may be displayed in response to the selection of a button or buttons on a remote control or by navigating a highlight in an interactive media guidance application means to select an option that causes screen 1900 to be displayed. Screen 1900 may include user profile selection area 1902, user profile create button 1904, user profile delete button 1906, and user profile modify button 1908. It is understood that the contents of screen 1900 are merely illustrative and that additional buttons and other selectable features may be added, and that various features may be omitted.

[0157] User profile selection area 1902 may include a highlight region 1910 and user profile buttons 1912, 1914, and 1916. User profile buttons 1912 correspond to user profiles created for a particular individual (shown as Mom and Mary). User profile button 1914 corresponds to a user profile created for a group of individuals (shown as Family). For example, a group profile may be selected when both Mary and Mom are viewing programming. User profile button 1916 corresponds to an anonymous or guest user (shown as Guest). For example, button 1916 may be selected when a user does not have a profile or wishes to view programming without having his or her interactions with the media guidance application moni-

tored as part of a specified individual or group profile. The interactive media guidance application may allow the user to navigate highlight region 1910 to one of user profile buttons 1912, 1914, and 1916 and select the highlighted user profile button. When the user selects one of the user profile buttons 1912, 1914, and 1916, the identity or identities of the user or users, or whether the user is anonymous, is determined.

[0158] The interactive media guidance application may further allow the user to navigate highlight region 1910 to user profile create button 1904, user profile delete button 1906, or user profile modify button 1908, and if desired the user may select a highlighted button. Selection of user profile create button 1904 may cause the interactive media guidance application to display one or more setup screens for the purpose of creating a new user profile. Selection of user profile delete button 1906 may cause the interactive media guidance application to delete a specified user profile that has been created. In some embodiments, in response to the selection of the user profile delete button 1906, the interactive media guidance application may position highlight region 1910 on one of user profile buttons 1912 in user profile selection area 1902 to allow the user to select the user profile that the user would like to delete. Selection of user profile modify button 1904 may cause the interactive media guidance application to display one or more setup screens for the purpose of modifying an existing user profile.

[0159] Referring back to FIG. 18a, an identification system may be used in addition to, or in lieu of, the user profile selection screen 1800 to perform step 1802 of determining the identity of the user. An identification system (e.g., system 620 of FIG. 6) may enable the interactive media guidance application to intelligently identify the user or users using the user device communicatively coupled to the home network. For example, the identification system may perform fingerprinting, retinal or thermal scanning in order to determine the user and load the corresponding user profile.

[0160] At step 1804, the viewing history of the identified user is provided. As discussed above, the viewing history may be stored on a database that is communicatively coupled to a user device being used by the identified user. If desired, the viewing history may be stored in a user profile associated with the identified user and it is the user profile that is stored on the database. In some embodiments, the user profile and/or viewing history information for a user may be made publicly or privately available to some or all user equipment devices within or outside of a home network.

[0161] The interactive media guidance system may identify all the user equipment devices in a home network or elsewhere that are using the same user profile in order to provide up-to-date information on the viewing history of the identified user. In some embodiments, for example, an interactive media guidance application at a user equipment device on which a user has logged in (e.g.,

selected a user profile) or has been identified by an identification system may make a determination as to which, if any, user equipment devices in the home network are using the same user profile, and then proceed to communicate directly with those user equipment devices. In other embodiments, whenever the one or more databases for storing viewing history data and/or user profiles receive updated data, the database or databases may automatically communicate the entire updated viewing history and/or user profile, or only the updated portion of the viewing history and/or user profile to those other user equipment devices having viewing history data and/or user profile data for the identified user.

[0162] At step 1806, interactive content is generated based on the viewing history of the identified user for display on user equipment that is communicatively coupled to the home network. Interactive content generally refers to any type of display screen or series of screens such as menus, prompts, listing of programming, etc., that are generated by the interactive media guidance application and that either prompt or are the result of user interaction. In some embodiments, for example, the interactive media guidance application may generate (based on the viewing history) a listing of programming in which the media content (e.g., television programming) that the identified user has previously viewed, or at least has identified as being viewed, from the list. The listing may be a favorites listings, a recommendation listing, or a search results listing of programming.

[0163] The various parameters or monitors for a viewing history may be further used in the determination of whether to display previously viewed content. If desired, the interactive media guidance application may define or allow the user to define thresholds for determining whether programming or other content should actually be displayed even though it has been previously viewed. For example, a user may instruct the interactive media guidance application not to remove content from generated displays of interactive content unless, for instance, the content was viewed before a specified date or viewed within a range of dates, or unless the content was viewed at least a specified number of times or within a range of times. In other embodiments, the interactive media guidance application may define or allow the user to define a set of weighted criteria, including whether the user has previously viewed the media content, for determining whether to remove the previously viewed content from displayed interactive content.

[0164] The feature of removing from displays of interactive content the media that the user has previously viewed has numerous applications. For example, an interactive media guidance application may use the information regarding the media content that a user has already viewed to modify the list of programs that it may actively recommend a user to watch or record on the basis of, among other things, preferences that have been specified by the user. In other embodiments, the interactive media guidance application may remove from a

search conducted by the user for particular media content or categories of media content the media that the user has previously seen. In still other embodiments, the interactive media guidance application may, automatically or in response to user input, filter and remove from displays of program listings of future programming the media content which the identified user has previously viewed.

[0165] In yet other embodiments, the interactive media application may provide results of a search including only the programming the user has not seen. For example, if the user searches for content on Lucille Ball and the entire "I LOVE LUCY" collection (e.g., all 300 episodes) is available on a VOD server, the media application may display listings for the programs the user has not seen. That is, the media application may not display all 300 episodes if the user has seen, for example, 230 of them. More generally, it will be understood that the interactive media guidance application may remove any type of content from any of the types of interactive content defined in FIG. 17 if the content has been previously viewed.

[0166] It will be understood that the above-described embodiment of the present invention may be applied to various home network environments. In one illustrative example, a user who has viewed television programming at a user equipment device in one room of their home may not be interested in viewing the same programming again, regardless of the user equipment device which the user is using. To solve this, the present invention allows the user to simply create a user profile for himself or herself, and then select the user profile at any user equipment device in the home network prior to using the user equipment device.

[0167] Besides using a user's viewing history to remove previously viewed media content from displays of interactive content, the interactive media guidance application may remove previously viewed media content from displays of media content, as in specified in step 1806 of FIG. 18a. In some embodiments, advertisements (e.g., commercials) or other forms of promotional media, such as previews of television programs or movies, that a given user has already seen may be suppressed from display and substituted with advertisements that the user has not yet seen. As a result, this feature may help advertisers better attract potential buyers of their products. One scenario in which this feature may be particularly beneficial is with serial advertisements, which are a set of advertisements that, when strung together, are designed to tell a story. Such advertisements may be played sporadically and not in any particular order. By presenting a user with only those advertisements that he or she has not previously seen, then, the interactive media guidance application helps viewers to view all of the different individual advertisements within a given set of serial advertisements, and thus be able to piece together the underlying storyline behind the advertisements.

[0168] The interactive media guidance application may provide further support for situations where a user

decides to operate a user equipment device in a home network without first selecting a user profile. Some users may not want to go through the burden of choosing a user profile prior to using the user equipment device. In such cases, the interactive media guidance system may, for example, add the programs that the anonymous user has viewed to the viewing history of all of the stored user profiles for the home network. In other embodiments, the interactive media guidance system may provide one or more setup screens for handling the viewing history of anonymous users. The setup screens may provide options that allow a user to specify explicitly those user profiles that are to include the viewing history of anonymous users.

[0169] In some embodiments, the interactive media guidance application may generate displays of previously viewed content using predetermined criteria. For example, the interactive media guidance application may rank previously viewed programs and display the programs based on their ranking. A more detailed discussion of ranking is discussed below in connection with FIG. 20.

[0170] In some embodiments, the interactive media guidance application may support identification of multiple users viewing a user device that is communicatively coupled to a home network. FIG. 18b shows illustrative flow diagram 1810 of an embodiment that supports multiple user identification in accordance with the principles of the present invention. Beginning at step 1812, the identity of a plurality of users viewing content on a particular user device that is communicatively coupled to a home network is determined. The identity of the users may be determined based on selection of multiple user profiles or by an identification system (e.g., identification system 612 of FIG. 6). At step 1814,

the content (e.g., television programming) being viewed on the user device is monitored. At step 1816, a viewing history of each identified user is updated.

Such updating enhances content management for each user because the viewing history for each user now reflects the fact that the particular program has been viewed by the identified users. For example, after a group of users watch a recording of the movie "When Harry Met Sally," a future generated list of recorded programming may not display the "When Harry Met Sally" program listing.

[0171] Content management at the user device level is now described. Managing content on a user device level within a home network may enable the media guidance system to provide interactive content that is based on the content viewed at a selected user device. In one embodiment, a selected user device may be treated as the master and the other user devices be treated as slaves. In a master/slave arrangement, the viewing history may be created, modified, or updated based on the content viewed at the master user device. Thus, the interactive content generated for display on both the master and slave devices is based on the viewing history of the master user device.

[0172] FIG. 18c shows flow diagram 1820 to illustrate content management at the user device level in accordance with the principles of the present invention. At step 1822, one of several user devices that are communicatively coupled to a home network is selected. For example, the interactive media guidance application may allow the user to select a desired user device by selecting a user device profile. As another example, hardware protocols (e.g., bios settings) may be configured to select a particular user device. At step 1824, a viewing history for the selected user device may be provided. At step 1826, the interactive media guidance application may generate interactive content based on the viewing history of the selected user equipment for display on user equipment communicatively coupled to the home network.

[0173] Content management at the home network level and across multiple home networks is now described. Managing content on a home network level enables the media guidance system to provide interactive content that is based on the content viewed at any one of several user devices communicatively coupled to a home network. In this arrangement, whenever an item of programming is viewed on a user device that is communicatively coupled to the home network, that program may not be presented in a listing of programming on that particular user device, nor any other user device that is communicatively coupled to the home network. It will be understood that this arrangement can be contrasted to the master/slave arrangement as discussed above in connection with FIG. 18c. In fact, this arrangement is akin to master/master relationship, where each user device communicatively coupled to the home network may manage content. For example, assume that a home network is communicatively coupled to three different user devices. If "Superman" is viewed on a first user device, a viewing history for the home network may be updated to reflect this viewing event. Thus, none of the user devices may display "Superman" in a listing of programming. If "Wonderwoman" is viewed on a second user device, the viewing history for the home network is updated to reflect this viewing event. Again, none of the user devices may display "Wonderwoman" in a listing of programming.

[0174] FIG. 18d shows illustrative flow diagram 1830 managing content based on the viewing history at home network. At step 1832, a plurality of user devices that are communicatively coupled to a home network is provided. At step 1834, a viewing history for the home network is provided. At step 1836, interactive content based on the viewing history of the home network is generated for display on all of the user devices that are communicatively coupled to the home network.

[0175] Managing content across two or more home networks may enable the media guidance system to provide interactive content that is based on the content viewed at a selected home network or viewed at each home network. For example, a user may have a first home network (e.g., located at his or her house) and a second home network (e.g., located at his or her vacation

house). In one embodiment, which assumes that the first home network is the selected home network, any item of programming that is viewed at the first home network may not be presented in a listing of programming at the second network. In another embodiment, assuming that none of the home networks are selected, any item of programming viewed at the first network may not be presented in a listing of programming at the second network, and any item of programming viewed at the second network may not be presented in a listing of programming at the first network.

[0176] FIG. 18e shows illustrative flow diagram 1840 for displaying interactive content based on the viewing history of a selected home network in accordance with the principles of the present invention. At step 1842, a home network is selected out of at least two home networks that are communicatively coupled to each other. At step 1844, a viewing history is provided based on the selected home network. At step 1846, interactive content based on the viewing history of the selected home network is generated for display at each home network.

[0177] It is understood that in cross-coupled home network arrangements (e.g., see FIGS. 11c and 11d), a selected user device or an identified user may determine the interactive content that is generated for display for user devices communicatively coupled to the cross-coupled home networks.

[0178] The foregoing discussion of managing content across multiple home networks illustrates the ability to share a viewing history for a particular home network with external user equipment devices or home networks. This concept may extend to the user-level and device-level aspects of the present invention as well. For example, a user at a user equipment device that is outside of a home network may still access the profile for a particular user or device within the home network, provided that the user equipment device is communicatively coupled to the home network. In this manner, a user spending time at their vacation house may access a user or device profile from their regular house, which may have a more complete viewing history for the user and therefore be more desirable.

[0179] FIG. 20 shows illustrative flow diagram 2000 for displaying ranked interactive content based on a predetermined criteria that is applied to previously viewed programming. At step 2002, the interactive media guidance application may assign rankings to some or all of the previously viewed media (e.g., an episode of a television series, a movie, or an advertisement) based on one or more criteria. In some embodiments, the interactive media guidance application may rank previously viewed media on the sole basis of when the media was last viewed. In other embodiments, the interactive media guidance application may assign a cumulative ranking to each previously viewed media based on a number of criteria that may include when the media was last viewed, how frequently the media was viewed, and any particular preferences that the user has specified for the media. The

criteria may be weighted in determining the ranking for the particular media that has been previously viewed. Parameters such as the different criteria for determining the ranking of previously viewed media, whether or not they are weighted, the particular weightings for each of the different criteria, and the specific media or types of media to actually apply the ranking to may be preset by the interactive media guidance application in an optimized fashion, or may be customized by the user and for each user profile, using for example a display screen provided by the interactive media guidance application for specifying such settings.

[0180] After rankings have been applied to the previously viewing media, the interactive media guidance application may, at step 2004, display interactive content or media content based on the assigned rankings. By default, unviewed content may be ranked higher than previously viewed content. In some embodiments, previously viewed media content that was more recently viewed or that has been viewed more often, for example, may be ranked lower, and as a result may be less likely to be displayed, or may be displayed lower in a ranked list of interactive content. In other embodiments, previously viewed media content that has been ranked may be displayed in interactive content based on a color gradient that corresponds with the ranking of the previously viewed content. In this manner, interactive listings for content that has been viewed more recently or that has been viewed more frequently may appear brighter or more intense than interactive listings for less recently or less frequently viewed content, or vice-versa. In still other embodiments, the viewing history for previously viewed media content, such as the date that the content was last viewed, or the number of the times that the content was viewed, may be displayed in the interactive content generated by the interactive media guidance application.

[0181] Media content may similarly be displayed based on rankings of previously viewed content. In some embodiments, advertisements or promotional media that were more recently or more frequently viewed than other available media content may be less likely to be displayed.

[0182] FIGS. 21A-F show illustrative content 2100 that may be generated and displayed by the interactive media guidance application based on a viewing history for an identified user, a selected device, or a home network in accordance with the present invention. In particular, FIGS. 21A-F show different illustrative visual indicators that may be used by the interactive media guidance application to represent displays and/or listings of previously viewed content. In FIGS. 21A-F, display screen 2100 may include selectable advertisement 2102, selectable pay-per-view ("PPV") advertisement 2104, picture-in-guide ("PIG") screen 2106, and program listings 2108, 2110, 2112 and 2114. Advertisements 2102 and 2104 may be referred to as selectable advertisements because the user can select the advertisements, and in response, the user may be provided with an opportunity to order

the advertised product, may be automatically directed to the advertised show, etc.

[0183] In FIG. 21A, program listing 2108 for the movie "Matrix" is displayed with a watched icon to indicate that the movie has been previously viewed. In FIG. 21B, program listing 2110 for the movie "Top Gun" is displayed with text indicating that the movie was last viewed on October 26, 2005. In FIG. 21C, program listing 2112 for the movie "X-Men" is shaded to denote that the movie has been previously viewed. As described above in connection with FIG. 20, the brightness or color of program listing 2112 may vary based on factors such as, for example, the date that the content corresponding to the program listing was last viewed, how often it was viewed, etc. In FIG. 21D, program listing 2114 for episode three from season one of the television series "Entourage" is displayed with textual information describing that the particular episode has been viewed two times. In FIG. 21E, selectable advertisement 2102 and selectable PPV advertisement 2104 may include visual indicators to denote that either the particular advertisement or the advertised content has been previously viewed. For example, as shown in FIG. 21E, selectable advertisements 2102 and 2104 may be displayed with the circle icon with the letter "W" to denote that either the particular advertisement, or the advertised content has been previously viewed. Different visual indicators may be used to distinguish for the viewer when advertisements themselves have been previously viewed from when the content being advertised has been viewed. In FIG. 21F, PIG screen 2106 may also display an indicator that content has been previously viewed when, for example, a user selects one of the program listings 2108, 2110, 2112, or 2114 or one of selectable advertisements 2102 or 2104 using highlight region 2118, and media content relating to the selected listing or advertisement is displayed in the PIG.

[0184] In some embodiments, the interactive media guidance application may display visual indicators to denote that content is "New to Me" instead of or in addition to displaying visual indicators to denote previously viewed content, as is shown in FIGS. 21A-F. As will be explained below in connection with FIG. 22, the decision to display visual indicators for unviewed versus viewed content may be set by the user. If this preference has not yet been specified by the user, the interactive media guidance application may by default (i.e., according to a default rule either chosen by the user or defined by the interactive media guidance system) display visual indicators in accordance with one of the above-described alternatives. If the interactive media guidance application is in fact configured to display visual indicators for previously unviewed content, visual indicators similar to those described above may be employed. For example, a rectangular icon with the word "New to Me", or a circular icon with the letters "NM" may be used to denote content that is new to the viewer, according to the particular user, device or household profile that has been loaded. Alternatively, the previously unviewed content (e.g., program

listing, advertisement, or PIG screen content) may be shaded to indicate that it is new. The shading for previously unviewed content may be purposely set to be a different color or level of brightness from the shading for previously viewed content to make it easier for a user to distinguish the two types of content when, for example, the user desires to view different visual indicators for both unviewed and viewed content. Also, any combination of the visual indicators described above may be used to denote unviewed or viewed content. For example, the interactive media guidance application may apply shading to represent previously unviewed or viewed content within the program listing portion of a display screen, and then apply the circular icons to the advertisement, PIG or other areas of the display screen where previously unviewed or viewed content may be presented. The actual visual indicators that are to be employed for the different areas of a display may be specified either by the user or by the interactive media guidance system. Moreover, it will be generally understood that the visual indicators described in FIGS. 21A-F are only illustrative and not intended to be limiting, and that other forms of indicators appropriate for interactive media guidance applications may be used to represent unviewed or viewed content.

[0185] FIG. 21G shows an illustrative screen in which previously viewed content has been ranked according to predetermined criteria. Here, it will be assumed program listings 2108, 2110, 2112 and 2114 all correspond to previously viewed content, and are ranked according to the date that the content was last viewed. The interactive media guidance application may rank the most recently viewed program first, and thus display the most recently viewed program on the top of the display. Alternatively, the user may specify, or the interactive media guidance application may automatically set, a different order in which the previously viewed content should be ranked. Also, as discussed above, the ranking may be determined based on a weighted combination of criteria that again may be specified by the user or automatically set by the interactive media guidance application. Therefore, if, for example, program listings 2108, 2110, 2112 and 2114 were ranked on the basis of not only when the content represented in the listings was last viewed, but also how many times the content was viewed, it is entirely possible that program listing 2110 for "Top Gun" may not be the highest ranked program listing, and thus would not be displayed. Also, it will be understood that the indicators that are displayed in a ranked list do not necessarily have to correspond to the way in which the content is being ranked. For example, as will be explained below in connection with FIG. 22, the user may specify that visual indicators for identifying the frequency with which previously viewed content was viewed be used, and then separately specify that the criterion of when content was last viewed be used to rank such content.

[0186] FIG. 21H illustrates the use of "New to Me" visual indicators to denote content that has been previously

viewed, where the previously viewed content corresponds to reruns or repeats of television program episodes (i.e., episodes that have aired at least once in the past). FIG. 21H shows a display screen 2150 that may include selectable advertisement 2152, selectable PPV advertisement 2154 and PIG screen 2156. Display screen 2150 also includes program listings 2158, 2160, 2162 and 2164 that each correspond to an episode of a television series. Each of program listings 2158, 2160, 2162 and 2164 may be selected using highlight region 2166.

[0187] It is seen in FIG. 21H that program listings 2158, 2160, and 2164 are all indicated as being reruns. However, "New to Me" indicators 2168 are displayed only in connection with program listings 2160 and 2164, meaning that although the episodes identified by program listings 2160 and 2164 -- Season 1, Episode 9 of Prison Break and Season 1, Episode 3 of Entourage have presumably aired before, depending on the profile that has been loaded, those reruns have not been previously viewed by the corresponding viewer, device or household.

[0188] This example emphasizes the usefulness of the "New to Me" feature applied to television shows that have been airing for a considerable amount of time, or that are otherwise in syndication. When a particular episode of a television program is a rerun, the listing of, or the detailed program schedule information for the episode typically indicates that the episode is a rerun, suggesting to a viewer that they have already watched the episode. However, viewers who have only begun to consistently watch the television program often have not seen many of the reruns. It is not until the viewers start watching more episodes of the program that the episodes that are flagged as reruns actually correspond to episodes that the viewer has seen. These repeat indicators are thus at least initially of little use to viewers who did not begin to watch a television series from the outset, when the program first started airing. Compounding this problem is the fact that repeat indicators can sometimes be inaccurate. By enabling users to maintain a viewing history for a viewer, device or household, then, the "New to Me" feature alleviates these problems by keeping track of the precise episodes of the programs that have been previously viewed.

[0189] FIG. 22 shows an illustrative menu screen 2200 that allows a user to activate, deactivate and configure the "New to Me" feature at will. In some embodiments, menu screen 2200 may be presented to a user, by default, immediately preceding or following the display of profile selection screen 1900 shown in FIG. 19. Menu screen 2200 may also be generally designed to be accessible at any time by pressing a corresponding "New to Me" function button on the remote control, or by selecting a "New to Me" function button displayed on any display screen generated by the interactive media guidance application. In particular, screen 2200 may include buttons 2202, 2204, 2206 and 2208. It is understood that

the contents of screen 2200 are merely illustrative and that additional selectable features may be added, and that existing features may be omitted.

[0190] Button 2202 allows a user to run the "New to Me" feature on specific content. Thus, button 2202 may be selected when a user is interested in invoking the feature only on content for which the user believes that it worth identifying whether the content has been previously viewed. In response to selection of button 2202, the user may be presented with another screen for specifying the type or types of content that the user wishes to invoke the "New to Me" feature on. For example, the user may specify to invoke the feature only on advertisements, or on specific television programs, or on specific genres of movies. Any suitable type of display screen for entering in such information may be provided by the interactive media guidance application.

[0191] Button 2204 enables a user to run the "New to Me" feature on specific functions or interactive content provided by the interactive media guidance application. In response to selection of button 2204, the interactive media guidance application provide one or more display screens in order to allow the user to select the type of functions or interactive content that the "New to Me" feature should impact. For example, the user may choose to turn on the "New to Me" feature only with respect to menu displays, program listing displays, recommendations, search results, automatic displays of advertisements or other content, any combination of these functions or interactive content, or any additional types of functions or interactive content supported by the interactive media guidance application for which the "New to Me" feature is applicable. The amount of user control may be even more refined in that a user may choose that, for each type of applicable function, a different "rule" be provided. The different available rules may include not displaying previously viewed content, displaying previously viewed or unviewed content using indicators, and displaying previously unviewed content according to a ranking. Where appropriate, these rules may be combined. For example, a user may opt to display previously viewed content using indicators and according to a ranking. Alternatively, selection of these rules may be applied globally across and independent of the different functions provided by the interactive media guidance application for which the "New to Me" function applies (e.g., by a button other than button 2204). The interactive media guidance application may also set a default rule that applies absent any selection of a rule by a user.

[0192] Button 2206 enables a user to activate the "New to Me" function on all the available types of content provided, and for every instance in which the "New to Me" function is applicable. In some embodiments, absent any specification by the user, the interactive media guidance application may run the "New to Me" function by default according to this nondiscretionary rule. In response to selection of button 2206, the interactive media guidance application may proceed to track the viewing history of

all content for the specified user, device or household profile, and then use this information to update or modify the functions or interactive content provided based on this viewing history.

[0193] Button 2208 allows a user to configure additional options associated with the "New to Me" feature. For example, by selecting button 2208, the user may be presented with the opportunity via one or more display screens to, among other things, explicitly set the different types of visual indicators to be employed by the interactive media guidance application as described above in connection with FIGS. 21A-H, set default rules, etc.

[0194] Finally, button 2210 enables a user to voluntarily turn off the "New to Me" feature. In response to selection of button 2210, the interactive media guidance application may completely stop keeping track of the content viewed by the user.

[0195] 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.

[0196] The following embodiments are disclosed:

1. A method for using an interactive media guidance application implemented on a user equipment device, comprising:

providing a profile for use by the interactive media guidance application, wherein the profile comprises a viewing history of previously viewed content, and further wherein the profile is shared among a plurality of user equipment devices; and
displaying interactive content using the interactive media guidance application based on the viewing history for the profile.

2. The method of item 1, further comprising receiving a user input for selecting the profile.

3. The method of item 1, further comprising automatically selecting the profile using the interactive media guidance application.

4. The method of item 1, wherein the interactive media guidance application automatically selects the profile after a predetermined time.

5. The method of item 4, wherein the predetermined time is set by a user, or is set by default by the interactive media guidance application.

6. The method of item 1, wherein the profile corresponds to a user profile comprising a viewing history of previously viewed content by a user associated with the user profile.

7. The method of item 1, wherein the profile corre-

sponds to a device profile comprising a viewing history of previously viewed content on one of the user equipment devices.

8. The method of item 1, wherein the plurality of user equipment devices comprises a smaller plurality of user equipment devices that are located in a household, and further wherein the profile corresponds to a household profile comprising a viewing history of previously viewed content by the smaller plurality of user equipment devices located in the household.

9. The method of item 1, wherein the previously viewed content comprises programming, advertisements, content identified based on interactions by a user with the interactive media guidance application, or additional information.

10. The method of item 1, wherein displaying interactive content using the interactive media guidance application based on the viewing history for the profile comprises displaying a display of recommended content based on the viewing history for the profile.

11. The method of item 10, wherein the recommended content comprises advertisements, programming or additional information.

12. The method of item 1, wherein displaying interactive content using the interactive media guidance application based on the viewing history for the profile comprises displaying a display of results of a search for content based on the viewing history for the profile.

13. The method of item 1, wherein displaying interactive content using the interactive media guidance application based on the viewing history for the profile comprises displaying a display of program listings based on the viewing history for the profile.

14. The method of item 1, wherein displaying interactive content using the interactive media guidance application based on the viewing history for the profile comprises displaying an automatic display of content based on the viewing history for the profile.

15. The method of item 14, wherein the automatic display of content comprises advertisements, programming or additional information.

16. The method of item 1, wherein displaying interactive content using the Interactive media guidance application based on the viewing history for the profile comprises displaying an interactive menu based on the viewing history for the profile.

17. The method of item 1, wherein displaying inter-

active content using the interactive media guidance application based on the viewing history for the profile comprises displaying a display comprising at least one indicator to denote previously viewed or unviewed content.

18. The method of item 17, wherein a user sets whether the indicator should denote previously viewed content, previously unviewed content, or both.

19. The method of item 17, wherein the interactive media guidance application sets by default whether the indicator should denote previously viewed content previously unviewed content, or both.

20. The method of item 17, wherein the display comprises a first indicator to denote previously viewed content, and a second indicator to denote previously unviewed content.

21. The method of item 17, wherein the indicator comprises an icon, or a shading of the previously viewed or unviewed content.

22. The method of item 17, wherein the indicator indicates the last time the previously viewed content was viewed, the number of times the previously viewed content was viewed, how often the previously viewed content was viewed, or how much of the previously viewed content was viewed.

23. The method of item 17, wherein the indicator is displayed with an advertisement in a panel display.

24. The method of item 17, wherein the indicator is displayed with an advertisement to denote that the advertisement has been previously viewed or not viewed.

25. The method of item 17, wherein the indicator is displayed with an advertisement for an advertised program to denote that the advertised program has been previously viewed or not viewed.

26. The method of item 17, wherein the indicator is displayed with a program listing for a particular program to denote that the particular program has been previously viewed or not viewed.

27. The method of item 17, wherein the indicator is displayed in a picture-in-guide display to denote that content displayed in the picture-in-guide display has been previously viewed or not viewed.

28. The method of item 27, wherein the content displayed in the picture-in-guide display corresponds to an advertisement, a preview for a program, or a

program.

29. The method of item 1, wherein displaying interactive content using the interactive media guidance application based on the viewing history for the profile comprises displaying interactive content that does not include the previously viewed content. 5

30. The method of item 1, wherein displaying interactive content using the interactive media guidance application based on the viewing history for the profile comprises displaying previously viewed content according to a rank within a display of interactive content. 10

31. The method of item 1, wherein the viewing history of previously viewed content is defined by the interactive media guidance application. 15

32. The method of item 1, wherein the viewing history of at least a portion of the previously viewed content is defined by a user. 20

33. The method of item 32, wherein the user enters the viewing history of the portion of the previously viewed content on an Internet website or on a display generated by the interactive media guidance application. 25

34. The method of item 1, wherein displaying interactive content using the interactive media guidance application based on the viewing history for the profile comprises displaying a portion of the previously viewed content that has not yet been viewed. 30

35. The method of item 1, further comprising receiving a user input to display interactive content using the interactive media guidance application based on the viewing history for the profile. 35

36. The method of item 1, further comprising receiving a user input to display interactive content using the interactive media guidance application based only on a portion of the previously viewed content in the viewing history for the profile. 40

37. The method of item 1, further comprising receiving a user input to display interactive content using the interactive media guidance application for only a portion of the functionality provided by the interactive media guidance application based on the viewing history for the profile. 50

38. The method of item 1, further comprising receiving a user input to stop displaying interactive content using the interactive media guidance application based on the viewing history for the profile. 55

39. The method of item 1, wherein the interactive media guidance application is an interactive television program guide or an online television program guide.

40. A system that uses an interactive media guidance application, comprising:

a plurality of user equipment devices connected by a network, wherein at least one of the plurality of user equipment devices is operative to:

provide a profile for use by the interactive media guidance application, wherein the profile comprises a viewing history of previously viewed content, and further wherein the profile is shared among the plurality of user equipment devices; and display interactive content using the interactive media guidance application based on the viewing history for the profile.

41. The system of item 40, wherein at least one of the user equipment devices receives a user input for selecting the profile.

42. The system of item 40, wherein at least one of the plurality of user equipment devices automatically selects the profile.

43. The system of item 42, wherein the user equipment device selects the profile after a predetermined time.

44. The system of item 43, wherein the predetermined time is set by a user, or is set by default.

45. The system of item 40, wherein the profile corresponds to a user profile comprising a viewing history of previously viewed content by a user.

46. The system of item 40, wherein the profile corresponds to a device profile comprising a viewing history of previously viewed content on one of the user equipment devices.

47. The system of item 40, wherein the plurality of user equipment devices comprises a smaller plurality of user equipment devices that are located in a household, and further wherein the profile corresponds to a household profile comprising a viewing history of previously viewed content by the smaller plurality of user equipment devices located in the household.

48. The system of item 40, wherein the previously viewed content comprises programming, advertisements, content identified based on interactions by a

user with at least one of the plurality of user equipment devices, or additional information.

49. The system of item 40, wherein the user equipment device is operative to display recommended content based on the viewing history for the profile. 5

50. The system of item 49, wherein the recommended content comprises advertisements, programming or additional information. 10

51. The system of item 40, wherein the user equipment device is operative to display results of a search for content based on the viewing history for the profile. 15

52. The system of item 40, wherein the user equipment device is operative to display program listings based on the viewing history for the profile. 20

53. The system of item 40, wherein the user equipment device is operative to display content based on the viewing history for the profile.

54. The system of item 53, wherein the automatic display of content comprises advertisements, programming or additional information. 25

55. The system of item 40, wherein the user equipment device is operative to display an interactive menu based on the viewing history for the profile. 30

56. The system of item 40, wherein the user equipment device is operative to display at least one indicator to denote previously viewed or unviewed content. 35

57. The system of item 56, wherein a user sets whether the indicator should denote previously viewed content, previously unviewed content, or both. 40

58. The system of item 56, wherein the user equipment device sets by default whether the indicator should denote previously viewed content previously unviewed content, or both. 45

59. The system of item 56, wherein the display comprises a first indicator to denote previously viewed content, and a second indicator to denote previously unviewed content. 50

60. The system of item 56, wherein the indicator comprises an icon, or a shading of the previously viewed or unviewed content. 55

61. The system of item 56, wherein the indicator indicates the last time the previously viewed content

was viewed, the number of times the previously viewed content was viewed, how often the previously viewed content was viewed, or how much of the previously viewed content was viewed.

62. The system of item 56, wherein the indicator is displayed with an advertisement in a panel display.

63. The system of item 56, wherein the indicator is displayed with an advertisement to denote that the advertisement has been previously viewed or not viewed.

64. The system of item 56, wherein the indicator is displayed with an advertisement for an advertised program to denote that the advertised program has been previously viewed or not viewed.

65. The system of item 56, wherein the indicator is displayed with a program listing for a particular program to denote that the particular program has been previously viewed or not viewed.

66. The system of item 56, wherein the indicator is displayed in a picture-in-guide display to denote that content displayed in the picture-in-guide display has been previously viewed or not viewed.

67. The system of item 66, wherein the content displayed in the picture-in-guide display corresponds to an advertisement, a preview for a program, or a program.

68. The system of item 40, wherein the user equipment device is operative to display interactive content that does not include the previously viewed content.

69. The system of item 40, wherein the user equipment device is operative to display previously viewed content according to a rank within a display of interactive content.

70. The system of item 40, wherein the viewing history of previously viewed content is defined by the interactive media guidance application.

71. The system of item 40, wherein the viewing history of at least a portion of the previously viewed content is defined by a user on at least one of the plurality of user equipment devices.

72. The system of item 71, wherein the user enters the viewing history of the portion of the previously viewed content on an Internet website or on a display generated by the interactive media guidance application.

73. The system of item 40, wherein the user equipment is operative to display a portion of the previously viewed content that has not yet been viewed.

74. The system of item 40, wherein at least one of the plurality of user equipment devices receives a user input to display interactive content based on the viewing history. 5

75. The system of item 40, wherein at least one of the plurality of user equipment devices receives a user input to display interactive content based only on a portion of the previously viewed content in the viewing history. 10

76. The system of item 40, wherein at least one of the plurality of user equipment devices receives a user input to stop display of interactive content for only a portion of the functionality based on the viewing history. 15

77. The system of item 40, wherein at least one of the plurality of user equipment devices receives a user input to stop display of interactive content based on the viewing history. 20

78. The system of item 40, wherein the interactive media guidance application is an interactive television program guide or an online television program guide. 25

79. A method for using an interactive media guidance application, comprising:

providing a plurality of user equipment devices each capable of supporting an interactive media guidance application and that are communicatively coupled to each other via a home network; determining the identity of a user using one of the user devices; 35
providing a viewing history of the identified user, the viewing history including monitored interactions by the identified user on all of the user devices; and
generating interactive content based on the viewing history of the identified user for display using any user device communicatively coupled to the home network. 40

80. The method of item 79, further comprising displaying the generated interactive content on a display screen of a first one of the user devices for the identified user. 45

81. The method of item 79, further comprising displaying the generated interactive content on a display screen of a second one of the user devices for the identified user. 50

82. The method of item 79, wherein the determining comprises using an identification system to determine the identity of the identified user.

83. The method of item 79, wherein the determining comprises receiving a user input command that indicates the identity of the identified user.

84. The method of item 79, wherein the determining comprises selecting a default identity for the user.

85. The method of item 79, further comprising:
selecting a user profile for the identified user.

86. The method of item 85, wherein the selected user profile comprises the viewer history for the identified user.

87. The method of item 79, further comprising:
monitoring interactions performed by the identified user on all of the user devices; and
updating the viewer history for the identified user based on the monitored interactions.

88. The method of item 79, wherein the generated interactive content is accessible by each of the user devices.

89. The method of item 79, wherein the viewer history is accessible by each of the user devices.

90. The method of item 79, further comprising:
storing the viewer history on a database.

91. The method of item 90, wherein the database is located locally on one of the user devices.

92. The method of item 90, wherein the database is a home network database that is communicatively coupled to the home network.

93. The method of item 90, wherein the database is a remote database that is communicatively coupled to the home network.

94. The method of item 93, wherein the remote database is located on a server or a distribution facility.

95. The method of item 79, wherein the viewing history comprises data that indicates which programming has been viewed by the identified user, data that monitors the identified user's interactions with the interactive media guidance application, data that indicates which advertisements have been viewed or selected by the identified user, or data that indi-

cates which additional information has been viewed or selected by the identified user.

96. The method of item 79, wherein the generated interactive content comprises a list of programming that has not been viewed by the identified user, advertisements that have not been viewed by the identified user, additional information that has not been viewed by the identified user, additional information that informs the identified user whether a particular program has been viewed, additional information that informs the identified user the last time a particular program was viewed, or a list of programming that has been ranked according to predetermined criteria.

97. The method of item 79, wherein the generated interactive content comprises a listing of programming, the method further comprising:

storing in a database an identifier associated with each program that has been viewed by the identified user; and
cross-referencing identifiers associated with all available programming with the identifiers stored in the database to determine which programming can be included in the listing of programming.

98. The method of item 79, wherein the generated interactive content comprises a listing of programming, the method further comprising:

providing a group of identifiers corresponding to all programming available that can be viewed for the identified user, wherein the listing of programming is derived from the group of identifiers; and

removing from the group identifiers corresponding to programming that has been viewed by the identified user.

99. The method of item 98, further comprising:

adding new identifiers to the group as new programming becomes available; and
deleting identifiers from the group when programming corresponding to the deleted identifiers is no longer available.

100. The method of item 79, wherein the identified user is a first user and the generated interactive content is first user generated interactive content, the method further comprising:

determining that a second user is using one of the user devices; and

generating second user interactive content based on a viewing history for the second user for display on a display screen of any user device communicatively coupled to the home network.

101. The method of item 79, wherein the interactive media guidance application is an interactive television program guide or an online television program guide.

102. A system for using an interactive media guidance application, comprising:

a plurality of user equipment devices communicatively coupled to each other via a home network, wherein at least one user equipment device is operative to:

determine the identity of a user;
provide a viewing history of the identified user, the viewing history including monitored interactions by the identified user on the plurality of user equipment devices; and
generate interactive content based on the viewing history of the identified user for display.

103. The system of item 102, wherein any one of the user equipment devices is operative to display the generated interactive content for the identified user.

104. The system of item 102, wherein the at least one user equipment device is operative to display the generated interactive content for the identified user.

105. The system of item 102, wherein the at least one user equipment device is operative to determine the identity of the identified user using an identification system.

106. The system of item, 102, wherein the at least one user equipment device is operative to receive a user input command that indicates the identity of the identified user.

107. The system of item 102, wherein the at least one user equipment device is operative to select a default identity for the user.

108. The system of item 102, wherein the at least one user equipment device is operative to:

select a user profile for the identified user.

109. The system of item 108, wherein the selected user profile comprises the viewer history for the identified user.

110. The system of item 102, wherein the at least one user equipment device is operative to:

monitor interactions performed by the identified user on all of the user devices; and
update the viewer history for the identified user based on the monitored interactions.

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111. The system of item 102, wherein the generated interactive content is accessible by each of the user equipment devices.

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112. The system of item 102, wherein the viewer history is accessible by each of the user equipment devices.

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113. The system of item 102, wherein the at least one user equipment device is operative to:

store the viewer history on a database.

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114. The system of item 113, wherein the database is located locally on one of the user equipment devices.

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115. The system of item 113, wherein the database is a home network database that is communicatively coupled to the home network.

116. The system of item 113, wherein the database is a remote database that is communicatively coupled to the home network.

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117. The system of item 116, wherein the remote database is located on a server or a distribution facility.

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118. The system of item 102, wherein the viewing history comprises data that indicates which programming has been viewed by the identified user, data that monitors the identified user's interactions with the user equipment devices, data that indicates which advertisements have been viewed or selected by the identified user, or data that indicates which additional information has been viewed or selected by the identified user.

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119. The system of item 102, wherein the generated interactive content comprises a list of programming that has not been viewed by the identified user, advertisements that have not been viewed by the identified user, additional information that has not been viewed by the identified user, additional information that informs the identified user whether a particular program has been viewed, additional information that informs the identified user the last time a particular program was viewed, or a list of programming that has been ranked according to predetermined

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criteria.

120. The system of item 102, wherein the generated interactive content comprises a listing of programming, wherein the at least one user equipment device is operative to:

store in a database an identifier associated with each program that has been viewed by the identified user; and
cross-reference identifiers associated with all available programming with the identifiers stored in the database to determine which programming can be included in the listing of programming.

121. The system of item 102, wherein the generated interactive content comprises a listing of programming, wherein the at least one user equipment device is operative to:

provide a group of identifiers corresponding to all programming available that can be viewed for the identified user, wherein the listing of programming is derived from the group of identifiers; and
remove from the group identifiers corresponding to programming that has been viewed by the identified user.

122. The system of item 121, wherein the at least one user equipment device is operative to:

add new identifiers to the group as new programming becomes available; and
delete identifiers from the group when programming corresponding to the deleted identifiers is no longer available.

123. The system of item 102, wherein the identified user is a first user and the generated interactive content is first user generated interactive content, wherein the at least one user equipment device is operative to:

determine that a second user is using one of the user devices; and
generate second user interactive content based on a viewing history for the second user for display on a display screen of any user device communicatively coupled to the network.

124. The system of item 102, wherein the interactive media guidance application is an interactive television program guide or an online television program guide.

125. A method for using an interactive media guid-

ance application, comprising:

providing a plurality of user equipment devices each capable of supporting an interactive media guidance application and that are communicatively coupled to each other via a home network; providing a viewing history of a selected one of the user devices, the viewing history including monitored interactions that occurred at the selected user device; and generating interactive content based on the viewing history of the selected user device for display on all of the user devices communicatively coupled to the home network.

126. The method of item 125, wherein the selected user device is a master device and all remaining user devices are slave devices that display generated interactive content based on the viewing history of the master device.

127. The method of item 125, further comprising displaying the generated interactive content on a display screen of any user device communicatively coupled to the home network.

128. The method of item 125, further comprising:

enabling a user to select which user device is the selected device.

129. The method of item 125, further comprising:

selecting a device profile for the selected device.

130. The method of item 129, wherein the selected user profile comprises the viewer history for the selected device.

131. The method of item 125, further comprising:

monitoring interactions performed on the selected user device; and updating the viewer history for the selected device based on the monitored interactions.

132. The method of item 125, wherein the generated interactive content is accessible by each of the user devices.

133. The method of item 125, wherein the viewer history is accessible by each of the user devices.

134. The method of item 125, further comprising:

storing the viewer history on a database.

135. The method of item 134, wherein the database

is located locally on one of the user devices.

136. The method of item 134, wherein the database is a home network database that is communicatively coupled to the home network.

137. The method of item 134, wherein the database is a remote database that is communicatively coupled to the home networks.

138. The method of item 137, wherein the remote database is located on a server or a distribution facility.

139. The method of item 125, wherein the viewing history comprises data that indicates which programming has been viewed on the selected user device, data that monitors interactions with the interactive media guidance application on the selected user device, data that indicates which advertisements have been displayed on a display screen of the selected user device, or data that indicates which additional information has been displayed on a display screen of the selected user device.

140. The method of item 125, wherein the generated interactive content comprises a list of programming that includes programming that has not been displayed on a display screen of the selected user device, advertisements that have not been displayed on a display screen of the selected user device, additional information that has not been displayed on a display screen of the selected user device, additional information that indicates whether a particular program has been viewed, additional information that indicates the last time a particular program was viewed, or a list of programming that has been ranked according to predetermined criteria.

141. The method of item 125, wherein the generated interactive content comprises a listing of programming, the method further comprising:

storing in a database an identifier associated with each program that has been viewed by the selected user device; and cross-referencing identifiers associated with all available programming with the identifiers stored in the database to determine which programming can be included in the listing of programming.

142. The method of item 125, wherein the generated interactive content comprises a listing of programming, the method further comprising:

providing a group of identifiers corresponding to all programming available that can be viewed

- on any of the user devices communicatively coupled to the home network, wherein the listing of programming is derived from the group of identifiers; and
removing from the group identifiers corresponding to programming that has been viewed on the selected user device. 5
143. The method of item 142, further comprising:
adding new identifiers to the group as new programming becomes available; and
deleting identifiers from the group when programming corresponding to the deleted identifiers is no longer available. 10 15
144. The method of item 125, wherein the interactive media guidance application is an interactive television program guide or an online television program guide. 20
145. A system for using an interactive media guidance application, comprising:
a plurality of user equipment devices communicatively coupled to each other via a home network, wherein the system is operative to:
provide a viewing history of a selected one of the plurality of user equipment devices, the viewing history including monitored interactions that occurred at the selected user equipment device; and
generate interactive content based on the viewing history of the selected user equipment device for display. 25 30 35
146. The system of item 145, wherein the selected user device is a master device and all remaining user devices are slave devices that display generated interactive content based on the viewing history of the master device. 40
147. The system of item 145, wherein the at least one user equipment device is operative to display the generated interactive content. 45
148. The system of item 145, wherein the system is operative to:
enable a user to select which user device is the selected device. 50
149. The system of item 145, wherein the system is operative to:
select a device profile for the selected device. 55
150. The system of item 149, wherein the selected user profile comprises the viewer history for the selected device.
151. The system of item 145, wherein the system is operative to:
monitor interactions performed on the selected user device; and
update the viewer history for the selected device based on the monitored interactions.
152. The system of item 145, wherein the generated interactive content is accessible by each of the user devices.
153. The system of item 145, wherein the viewer history is accessible by each of the user devices.
154. The system of item 145, wherein the system is operative to:
store the viewer history on a database.
155. The system of item 154, wherein the database is located locally on one of the user devices.
156. The system of item 154, wherein the database is a network database that is communicatively coupled to the network.
157. The system of item 154, wherein the database is a remote database that is communicatively coupled to the network.
158. The system of item 157, wherein the remote database is located on a server or a distribution facility.
159. The system of item 145, wherein the viewing history comprises data that indicates which programming has been viewed on the selected user device, data that monitors interactions on the selected user device, data that indicates which advertisements have been displayed by the selected user device, or data that indicates which additional information has been displayed by the selected user device.
160. The system of item 145, wherein the generated interactive content comprises a list of programming that includes programming that has not been displayed by the selected user device, advertisements that have not been displayed by the selected user device, additional information that has not been displayed by the selected user device, additional information that indicates whether a particular program has been viewed, additional information that indicates the last time a particular program was viewed,

or a list of programming that has been ranked according to predetermined criteria.

161. The system of item 145, wherein the generated interactive content comprises a listing of programming, wherein the system is operative to:

store in a database an identifier associated with each program that has been viewed by the selected user device; and
cross-reference identifiers associated with all available programming with the identifiers stored in the database to determine which programming can be included in the listing of programming.

162. The system of item 145, wherein the generated interactive content comprises a listing of programming, wherein the system is operative to:

provide a group of identifiers corresponding to all programming available that can be viewed on any of the user devices communicatively coupled to the network, wherein the listing of programming is derived from the group of identifiers; and

remove from the group identifiers corresponding to programming that has been viewed on the selected user device.

163. The system of item 162, wherein the system is operative to:

add new identifiers to the group as new programming becomes available; and
delete identifiers from the group when programming corresponding to the deleted identifiers is no longer available.

164. The system of item 145, wherein the interactive media guidance application is an interactive television program guide or an online television program guide.

165. A method for using an interactive media guidance application, comprising:

providing at least two home networks that are communicatively coupled to each other, each home network comprising at least one user equipment device capable of supporting an interactive media guidance application;
providing a viewing history for at least a first of the home networks, the viewing history including monitored interactions that occurred at the first home network; and
generating interactive content based on the

viewing history for the first home network.

166. The method of item 165, further comprising:

displaying the generated interactive content on a display device of at least one user device of at least one of the home networks.

167. The method of item 165, further comprising:

displaying the generated interactive content on at least one display device of a second of the home networks.

168. The method of item 165, further comprising:

displaying the generated interactive content on at least one display device of the first of the home networks.

169. The method of item, 165, wherein the generated interactive content is accessible by each of the home networks.

170. The method of item 165, wherein the viewing history of the first of the home networks is accessible by each of the home networks.

171. The method of item 165, further comprising:

providing a home profile, wherein the home profile comprises the viewer history for at least the first of the home networks.

172. The method of item 165, further comprising:

monitoring interactions performed on the first of the home networks; and
updating the viewer history for at least the first of the home networks based on the monitored interactions.

173. The method of item 165, wherein the viewer history is associated with the first of the home networks and a second of the home networks, the method further comprising:

monitoring interactions performed on a second of the home networks; and
updating the viewer history for the first and second of the home networks.

174. The method of item 165, further comprising:

storing the viewer history on a database.

175. The method of item 174, wherein the database is located locally on a user device that is communi-

catively coupled to one of the home networks.

176. The method of item 174, wherein the database is a home network database that is communicatively coupled to one of the home networks.

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177. The method of item 174, wherein the database is a remote database that is communicatively coupled to each of the home networks.

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178. The method of item 177, wherein the remote database is located on a server or a distribution facility.

179. The method of item 165, wherein the viewing history comprises data that indicates which programming has been viewed on the first of the home networks, data that monitors interactions with the interactive media guidance application on the first of the home networks, data that indicates which advertisements have been displayed on the first of the home networks, or data that indicates which additional information has been displayed on the first of the home networks.

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180. The method of item 165, wherein the generated interactive content comprises a list of programming that includes programming that has not been displayed on the first of the home networks, advertisements that have not been displayed on the first of the home networks, additional information that has not been displayed on the first of the home networks, additional information that indicates whether a particular program has been viewed, additional information that indicates the last time a particular program was viewed, or a list of programming that has been ranked according to predetermined criteria.

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181. The method of item 165, wherein the generated interactive content comprises a listing of programming, the method further comprising:

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storing in a database an identifier associated with each program that has been viewed on the first of the home networks; and cross-referencing identifiers associated with all available programming with the identifiers stored in the database to determine which programming can be included in the listing of programming.

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182. The method of item 165, wherein the generated interactive content comprises a listing of programming, the method further comprising:

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providing a group of identifiers corresponding to all programming available that can be viewed at any of the home networks, wherein the listing of

programming is derived from the group of identifiers; and removing from the group identifiers corresponding to programming that has been viewed on the first of the home networks.

183. The method of item 182, further comprising:

adding new identifiers to the group as new programming becomes available; and deleting identifiers from the group when programming corresponding to the deleted identifiers is no longer available.

184. The method of item 165, wherein the interactive media guidance application is an interactive television program guide or an online television program guide.

185. A system for using an interactive media guidance application, comprising:

at least two home networks that are communicatively coupled to each other, each home network comprising at least one user equipment device, wherein the system is operative to:

provide a viewing history for at least a first of the home networks, the viewing history including monitored interactions that occurred at the first home network; and generate interactive content based on the viewing history for the first home network.

186. The system of item 185, wherein the system is operative to:

display the generated interactive content on a display device of at least one user equipment device of at least one of the home networks.

187. The system of item 185, wherein the system is operative to:

display the generated interactive content on at least one display device of a second of the home networks.

188. The system of item 185, wherein the system is operative to:

display the generated interactive content on at least one display device of the first of the home networks.

189. The system of item 185, wherein the generated interactive content is accessible by each of the home networks.

190. The system of item 185, wherein the viewing history of the first of the home networks is accessible by each of the home networks.

191. The system of item 185, wherein the system is operative to:

provide a home profile, wherein the home profile comprises the viewer history for at least the first of the home networks.

192. The system of item 185, wherein the system is operative to:

monitor interactions performed on the first of the home networks; and
update the viewer history for at least the first of the home networks based on the monitored interactions.

193. The system of item 185, wherein the viewer history is associated with the first of the home networks and a second of the home networks, wherein the system is operative to:

monitor interactions performed on a second of the home networks; and
update the viewer history for the first and second of the home networks.

194. The system of item 185, wherein the system is operative to:

store the viewer history on a database.

195. The system of item 194, wherein the database is located locally on a user device that is communicatively coupled to one of the home networks.

196. The system of item 194, wherein the database is a home network database that is communicatively coupled to one of the home networks.

197. The system of item 194, wherein the database is a remote database that is communicatively coupled to each of the home networks.

198. The system of item 197, wherein the remote database is located on a server or a distribution facility.

199. The system of item 185, wherein the viewing history comprises data that indicates which programming has been viewed on the first of the home networks, data that monitors interactions with the user equipment device on the first of the home networks, data that indicates which advertisements have been displayed by the first of the home networks, or data

that indicates which additional information has been displayed by the first of the home networks.

200. The system of item 185, wherein the generated interactive content comprises a list of programming that includes programming that has not been displayed by the first of the home networks, advertisements that have not been displayed by the first of the home networks, additional information that has not been displayed by the first of the home networks, additional information that indicates whether a particular program has been viewed, additional information that indicates the last time a particular program was viewed, or a list of programming that has been ranked according to predetermined criteria.

201. The system of item 185, wherein the generated interactive content comprises a listing of programming, wherein the system is operative to:

store in a database an identifier associated with each program that has been viewed on the first of the home networks; and
cross-reference identifiers associated with all available programming with the identifiers stored in the database to determine which programming can be included in the listing of programming.

202. The system of item 185, wherein the generated interactive content comprises a listing of programming, wherein the system is operative to:

provide a group of identifiers corresponding to all programming available that can be viewed at any of the home networks, wherein the listing of programming is derived from the group of identifiers; and
remove from the group identifiers corresponding to programming that has been viewed on the first of the home networks.

203. The system of item 202, wherein the system is operative to:

add new identifiers to the group as new programming becomes available; and
delete identifiers from the group when programming corresponding to the deleted identifiers is no longer available.

204. The system of item 185, wherein the interactive media guidance application is an interactive television program guide or an online television program guide.

205. A method for creating a viewing history using an interactive media guidance application, compris-

ing:

creating a viewing history for a user based on previously viewed content;
automatically updating the viewing history based on content that is viewed by the user on a user equipment device; and
allowing the user to manually update the viewing history using the interactive media guidance application.

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206. The method of item 205, wherein the user equipment device is a first user equipment device, the method further comprising automatically updating the viewing history based on content that is viewed by the user on a second user equipment device.

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207. The method of item 206, wherein the second user equipment device is part of a home network, the home network comprises a plurality of user equipment devices, including the first user equipment device.

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208. The method of item 206, wherein the second user equipment device is not part of a home network, the home network comprises a plurality of user equipment devices, including the first user equipment device.

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209. The method of item 205, wherein allowing the user to manually update the viewing history through the interactive media guidance application comprises:

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receiving a first user input for specifying previously viewed content; and
receiving a second user input for selecting a user profile, wherein the user profile comprises the viewing history for the user based on the previously viewed content.

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210. The method of item 209, further comprising:

updating the viewing history of the selected user profile with the specified content.

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211. The method of item, 209, wherein receiving a first user input for specifying previously viewed content comprises:

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allowing a user to perform a search for the previously viewed content; and
receiving a user input of the previously viewed content based on the search.

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212. The method of item 209, wherein receiving a first user input for specifying previously viewed content further comprises receiving a user input for specifying details of the viewing of the previously viewed content.

ifying details of the viewing of the previously viewed content.

213. The method of item 209, wherein receiving a second user input for selecting a profile comprises:

allowing a user to perform a search for the profile; and
receiving a user input of the profile based on the search.

214. The method of item 209, further comprising receiving a user input for creating a profile.

215. The method of item 210, wherein updating the viewing history of the selected profile with the specified content comprises adding the specified content to the viewing history of the selected profile, or replacing the viewing history of the selected profile with the specified content.

216. The method of item 209, further comprising receiving a user input to begin displaying interactive content using the interactive media guidance application for only a portion of the functionality provided by the interactive media guidance application based on the specified content.

217. The method of item. 209, wherein the specified content and the selected profile are provided on a website, and further wherein the interactive media guidance application receives the specified content and the selected profile from the website to perform the updating.

218. The method of item 209, wherein the specified content and the selected profile are provided to the interactive media guidance application.

219. The method of item 205, wherein the interactive media guidance application is an interactive television program guide, or an online television program guide.

220. The method of item 205, wherein the previously viewed content comprises programming, advertisements, content identified based on interactions by a user with the interactive media guidance application, or additional information.

221. The method of item 205, wherein the viewing history makes up a portion of a user profile for the user.

222. The method of item 221, wherein the user profile is stored in a single database that is accessible by at least one of a plurality of user equipment devices that are part of a home network, wherein the plurality

of user equipment devices in the home network includes the user equipment device, and further wherein the plurality of user equipment devices in the home network are communicatively coupled to one another.

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223. The method of item 222, wherein the single database is located in a local server within the home network.

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224. The method of item 223, wherein the local server is a standalone local server.

225. The method of item 222, wherein the single database is located in a remote server outside of the home network.

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226. The method of item 222, wherein the single database is located in one of the plurality of user equipment devices in the home network, or in another user equipment device outside of the home network.

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227. The method of item 222, wherein authorization is required to access the single database, the user profile, or the viewing history portion of the user profile.

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228. The method of item 222, wherein a first user equipment device in the home network accesses the viewing history stored in the single database by establishing a communicative link with at least a second user equipment device that has direct access to the single database.

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229. The method of item 221, wherein the user profile is stored in a single database that is accessible by the user equipment device.

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230. The method of item 221, wherein the user profile is duplicated and stored in a plurality of databases, at least one of which is accessible by at least one of a plurality of user equipment devices that are part of a home network, and wherein the plurality of user equipment devices in the home network includes the user equipment device.

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231. The method of item 230, wherein the plurality of databases are located at any of the locations from the group consisting of a local server within the home network, a remote server outside of the home network, and at least one of the plurality of user equipment devices in the home network.

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232. The method of item 231, wherein the user profile, including the viewing history, is stored in a plurality of databases, at least one of which is accessible by at least one of a plurality of user equipment devices that are part of a home network, and wherein

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the plurality of user equipment devices in the home network includes the user equipment device.

233. The method of item 232, wherein the plurality of databases are located at any of the locations from the group consisting of a local server within the home network, a remote server outside of the home network, and at least one of the plurality of user equipment devices in the home network.

234. A system for creating a viewing history using an interactive media guidance application, the system comprising a user equipment device operative to:

create a viewing history for a user based on previously viewed content;
automatically update the viewing history based on content that is viewed by the user on the user equipment device; and
allow the user to manually update the viewing history.

235. The system of item 234, wherein the viewing history is automatically updated based on content that is viewed by the user on a second user equipment device.

236. The system of item 235, wherein the second user equipment device is part of a home network, wherein the home network comprises a plurality of user equipment devices that includes the user equipment device.

237. The system of item 235, wherein the second user equipment device is outside of a home network, wherein the home network comprises a plurality of user equipment devices that includes the user equipment device.

238. The system of item 234, wherein the user equipment device is operative to:

receive a first user input for specifying previously viewed content; and
receive a second user input for selecting a user profile, wherein the user profile comprises the viewing history for the user based on the previously viewed content.

239. The system of item 238, wherein the user equipment is operative to:

update the viewing history of the selected user profile with the specified content.

240. The system of item 234, wherein the user equipment device is operative to:

- allow a user to perform a search for the previously viewed content; and
receive a user input of the previously viewed content based on the search.
241. The system of item 234, wherein the user equipment device is operative to receive a user input for specifying details of the viewing of the previously viewed content.
242. The system of item 234, wherein the user equipment device is operative to:
- allow a user to perform a search for a profile; and
receive a user input to select a profile based on the search.
243. The system of item 234, wherein the user equipment device is operative to receive a user input for creating a profile.
244. The system of item 239, wherein the user equipment device is operative to add the specified content to the viewing history of the selected profile, or to replace the viewing history of the selected profile with the specified content.
245. The system of item 239, wherein the user equipment device is operative to receive a user input to begin displaying interactive content for only a portion of the functionality based on the specified content.
246. The system of item 238, wherein the specified content and the selected profile are provided on a website, and further wherein the user equipment device is operative to receive the specified content and the selected profile from the website to perform the update.
247. The system of item 238, wherein the specified content and the selected profile are provided to the interactive media guidance application.
248. The system of item 234, wherein the interactive media guidance application is an interactive television program guide, or an online television program guide.
249. The system of item 234, wherein the previously viewed content comprises programming, advertisements, content identified based on interactions by a user with the user equipment, or additional information.
250. The system of item 234, wherein the viewing history makes up a portion of a user profile for the user.
251. The system of item 250, wherein the user profile is stored in a single database that is accessible by at least one of a plurality of user equipment devices that are part of a home network, wherein the plurality of user equipment devices in the home network includes the user equipment device, and further wherein the plurality of user equipment devices in the home network are communicatively coupled to one another.
252. The system of item 251, wherein the single database is located in a local server within the home network.
253. The system of item 252, wherein the local server is a standalone local server.
254. The system of item 251, wherein the single database is located in a remote server outside of the home network.
255. The system of item 251, wherein the single database is located in one of the plurality of user equipment devices in the home network, or in another user equipment device outside of the home network.
256. The system of item 251, wherein authorization is required to access the single database, the user profile, or the viewing history portion of the user profile.
257. The system of item 251, wherein a first user equipment device in the home network accesses the viewing history stored in the single database by establishing a communicative link with at least a second user equipment device that has direct access to the single database.
258. The system of item 250, wherein the user profile is stored in a single database that is accessible by the user equipment device.
259. The system of item 250, wherein the user profile is duplicated and stored in a plurality of databases, at least one of which is accessible by at least one of a plurality of user equipment devices that are part of a home network, and wherein the plurality of user equipment devices in the home network includes the user equipment device.
260. The system of item 259, wherein the plurality of databases are located at any of the locations from the group consisting of a local server within the home network, a remote server outside of the home network, and at least one of the plurality of user equipment devices in the home network.
261. The system of item 260, wherein the user pro-

file, including the viewing history, is stored in a plurality of databases, at least one of which is accessible by at least one of a plurality of user equipment devices that are part of a home network, and wherein the plurality of user equipment devices in the home network includes the user equipment device.

262. The system of item 261, wherein the plurality of databases are located at any of the locations from the group consisting of a local server within the home network, a remote server outside of the home network, and at least one of the plurality of user equipment devices in the home network.

263. A method for displaying a list of previously viewed content in an interactive media guidance application implemented on a user equipment device, comprising:

ranking previously viewed content according to at least one predetermined criterion; and displaying interactive content using the interactive media guidance application based on the ranking.

264. The method of item 263, wherein the predetermined criterion is specified by a user.

265. The method of item 263, wherein a user specifies an order in which the previously viewed content is ranked.

266. The method of item 263, wherein the predetermined criterion comprises the last time the previously viewed content was viewed, the number of times the previously viewed content was viewed, how often the previously viewed content was viewed, or how much of the previously viewed content was viewed.

267. The method of item 263, further comprising ranking previously viewed content according to a plurality of predetermined criteria, wherein the predetermined criteria are combined according to a weighting.

268. The method of item 267, wherein the weighting is specified by a user.

269. The method of item 263, wherein the previously viewed content comprises programming, advertisements, content identified based on interactions by a user with the interactive media guidance application, or additional information.

270. A system for creating a viewing history using an interactive media guidance application, the system comprising a user equipment device operative to:

rank previously viewed content according to at least one predetermined criterion; and display interactive content based on the ranking.

271. The system of item 270, wherein the predetermined criterion is specified by a user.

272. The system of item 270, wherein a user specifies an order in which the previously viewed content is ranked.

273. The system of item 270, wherein the predetermined criterion comprises the last time the previously viewed content was viewed, the number of times the previously viewed content was viewed, how often the previously viewed content was viewed, or how much of the previously viewed content was viewed.

274. The system of item 270, wherein the user equipment device is operative to rank previously viewed content according to a plurality of predetermined criteria, wherein the predetermined criteria are combined according to a weighting.

275. The system of item 274, wherein the weighting is specified by a user.

276. The system of item 270, wherein the previously viewed content comprises programming, advertisements, content identified based on interactions with the user equipment device, or additional information.

277. A method for displaying a list of programming in an interactive media guidance application, the method comprising:

providing a plurality of user equipment devices capable of supporting an interactive media guidance application and that are communicatively coupled to each other via a home network; assigning a timestamp to each program that has been viewed on at least one of the user devices; ranking programming according to predetermined criteria to determine the order in which the programming is displayed in a ranked list of programming, the predetermined criteria comprising the timestamp; and displaying the ranked list of programming using at least one of the user devices.

278. The method of item 277, wherein the ranking comprises placing previously viewed programs in the list according to their timestamps.

279. The method of item 277, wherein the ranking comprises placing programs having timestamps that are more recent lower in the list of programming than programs having timestamps that are less recent

and programs that do not have an assigned timestamp.

280. The method of item 277, wherein the ranking comprises placing the most recently viewed program at the bottom of the list of programming. 5

281. The method of item 277, wherein the list of programming includes programming that has been viewed and programming that has not been viewed. 10

282. The method of item 277, wherein the list of programming includes only programming that has not been viewed. 15

283. The method of item 277, wherein the displayed list of programming is a list available for display on any one of the user devices based on a viewing history for an identified user. 20

284. The method of item 277, wherein the displayed list of programming is based on a viewing history for a selected one of the plurality of user devices.

285. The method of item 277, wherein the displayed list of programming is based on a viewing history for at least one home network. 25

286. The method of item 277, further comprising:
displaying additional information for a particular program displayed in the list of programming. 30

287. The method of item 286, wherein the additional information comprises an indicator that indicates that the particular program has been previously viewed. 35

288. The method of item 287, wherein the indicator comprises an icon or a change in an appearance of the particular program. 40

289. The method of item 286, wherein the additional information comprises the timestamp associated with the particular program. 45

290. The method of item 277, wherein programs that are ranked lower may be colored different than higher ranked programs.

291. A system for using an interactive media guidance application, comprising: 50

a plurality of user equipment devices connected by a network, wherein the system is operative to:

assign a timestamp to each program that has been viewed on the user equipment device; 55

rank programming according to predetermined criteria to determine the order in which the programming is displayed in a ranked list of programming, the predetermined criteria comprising the timestamp; and
display the ranked list of programming.

292. The system of item 291, wherein the system is operative to place previously viewed programs in the list according to their timestamps.

293. The system of item 291, wherein the system is operative to place programs having timestamps that are more recent lower in the list of programming than programs having timestamps that are less recent and programs that do not have an assigned timestamp. 20

294. The system of item 291, wherein the system is operative to place the most recently viewed program at the bottom of the list of programming.

295. The system of item 291, wherein the list of programming includes programming that has been viewed and programming that has not been viewed.

296. The system of item 291, wherein the list of programming includes only programming that has not been viewed.

297. The system of item 291, wherein the displayed list of programming is a list available for display on any one of the user devices based on a viewing history for an identified user.

298. The system of item 291, wherein the displayed list of programming is based on a viewing history for a selected one of the plurality of user devices.

299. The system of item 291, wherein the displayed list of programming is based on a viewing history for at least one home network.

300. The system of item 291, wherein the system is operative to:

display additional information for a particular program displayed in the list of programming.

301. The system of item 300, wherein the additional information comprises an indicator that indicates that the particular program has been previously viewed.

302. The system of item 301, wherein the indicator comprises an icon or a change in an appearance of the particular program.

303. The system of item 300, wherein the additional information comprises the timestamp associated with the particular program.

304. The system of item 291, wherein programs that are ranked lower may be colored different than higher ranked programs.

Claims

1. A method for using an interactive media guidance application, comprising:

providing a plurality of user equipment devices, each having an interactive media guidance application implemented thereon, communicatively coupled to each other via a network;
providing a viewing history of a user, the viewing history including monitored interactions by the user on all of the user equipment devices; and
generating interactive content based on the viewing history of the user for display using the plurality of user equipment devices communicatively coupled to the network.

2. The method of claim 1, wherein the network is a home network.

3. The method of claim 1, wherein each interactive media guidance application is configured to provide media guidance services independent of other interactive media guidance applications and provide media guidance services in communication with one or more of the other media guidance applications.

4. The method of claim 1, further comprising determining the identity of the user using one of the user equipment devices, wherein the determining comprises at least one of using an identification system to determine the identity of the identified user, receiving a user input command that indicates the identity of the identified user, selecting a default identity for the user, and selecting for the user a user profile comprising the viewing history of the user.

5. The method of claim 1, wherein the generated interactive content comprises at least one of menus, program listings, recommendations, search results, advertisements, and additional information.

6. The method of claim 1, further comprising:

displaying the generated interactive content on a display screen of a first one of the user equipment devices for the user; and
displaying the generated interactive content on a display screen of a second one of the user

equipment devices for the user.

7. The method of claim 1, further comprising:

monitoring interactions performed by the user on all of the user equipment devices; and
updating the viewing history for the user based on the monitored interactions.

8. The method of claim 1, wherein at least one of the generated interactive content and the viewing history is accessible by each of the user equipment devices.

9. The method of claim 1, further comprising:

storing the viewing history on a database, wherein the database is at least one of a local database on one of the user equipment devices, a network database that is communicatively coupled to the network, and a remote database that is communicatively coupled to the network and located on a server or a distribution facility.

10. The method of claim 1, wherein:

the viewing history comprises data that indicates which programming has been viewed by the user, data that monitors the user's interactions with the interactive media guidance application, data that indicates which advertisements have been viewed or selected by the user, or data that indicates which additional information has been viewed or selected by the user; and
the generated interactive content comprises a list of programming that has not been viewed by the user, advertisements that have not been viewed by the user, additional information that has not been viewed by the user, additional information that informs the user whether a particular program has been viewed, additional information that informs the identified user the last time a particular program was viewed, or a list of programming that has been ranked according to predetermined criteria.

11. The method of claim 1, wherein the generated interactive content comprises a listing of programming, the method further comprising:

storing in a database an identifier associated with each program that has been viewed by the user; and
cross-referencing identifiers associated with all available programming with the identifiers stored in the database to determine which programming can be included in the listing of programming.

12. The method of claim 1, wherein the user is a first user and the generated interactive content is first user interactive content generated for the first user, the method further comprising:

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determining that a second user is using one of the user equipment devices; and
generating second user interactive content for the second user based on a viewing history for the second user for display on a display screen
of any user equipment device communicatively coupled to the network.

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13. The method of claim 1, wherein the interactive media guidance application is an interactive television program guide or an online media guide.

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14. A system that performs any of the methods of claims 1-13.

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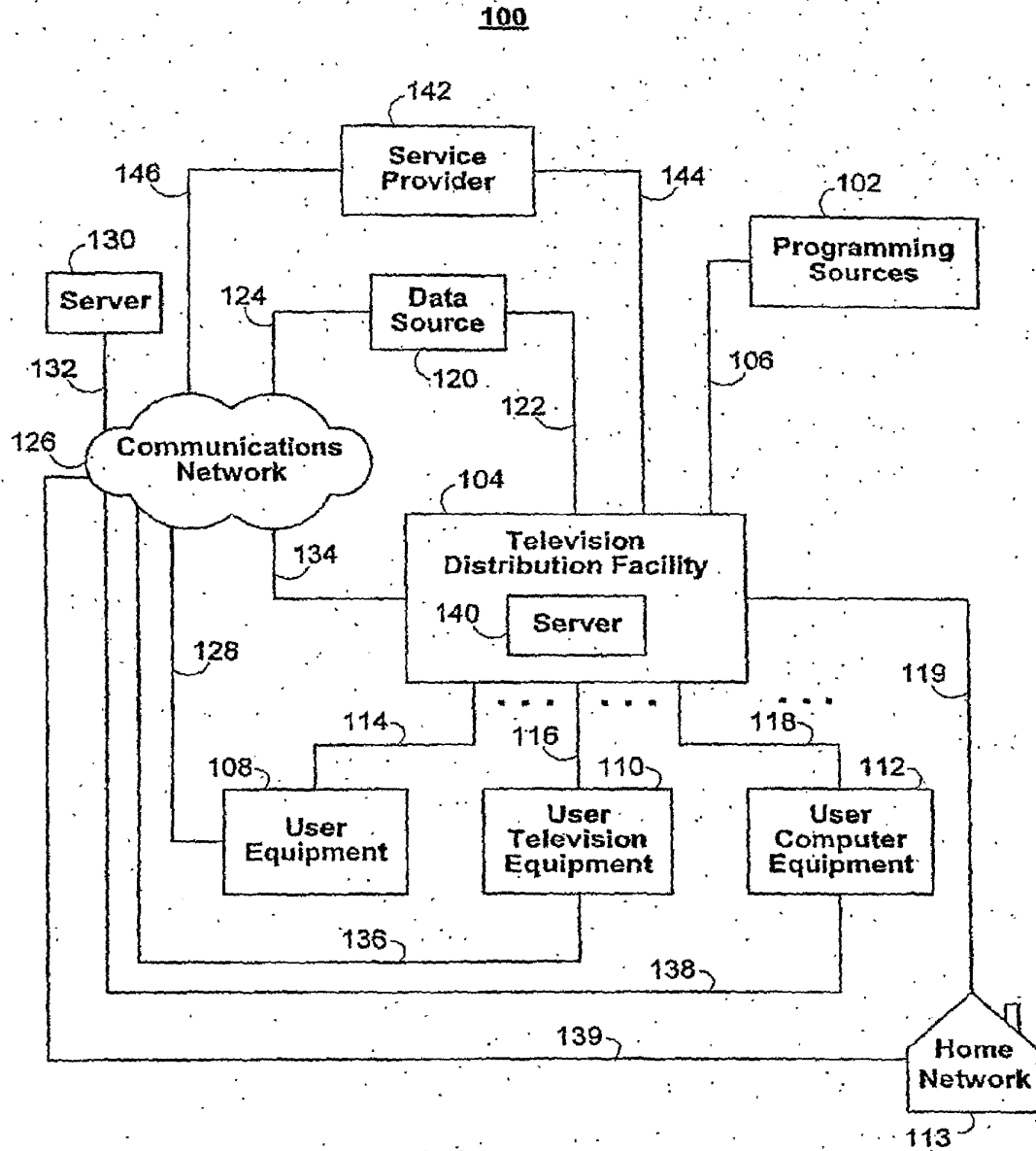
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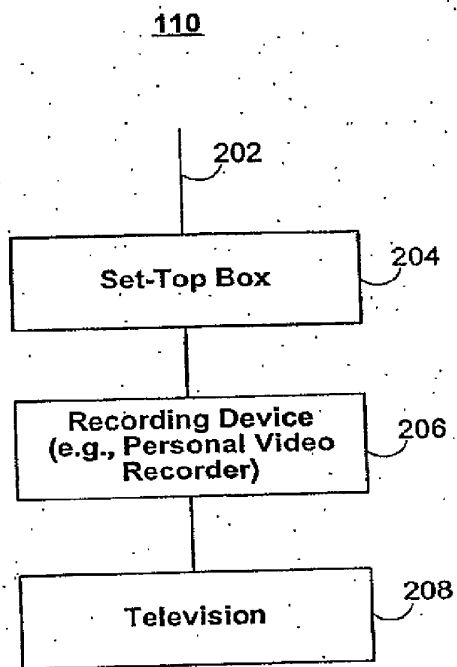


FIG. 2

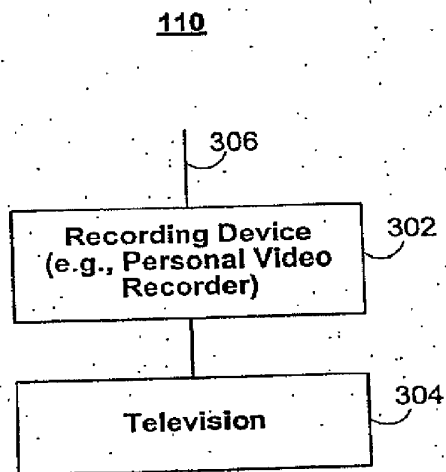
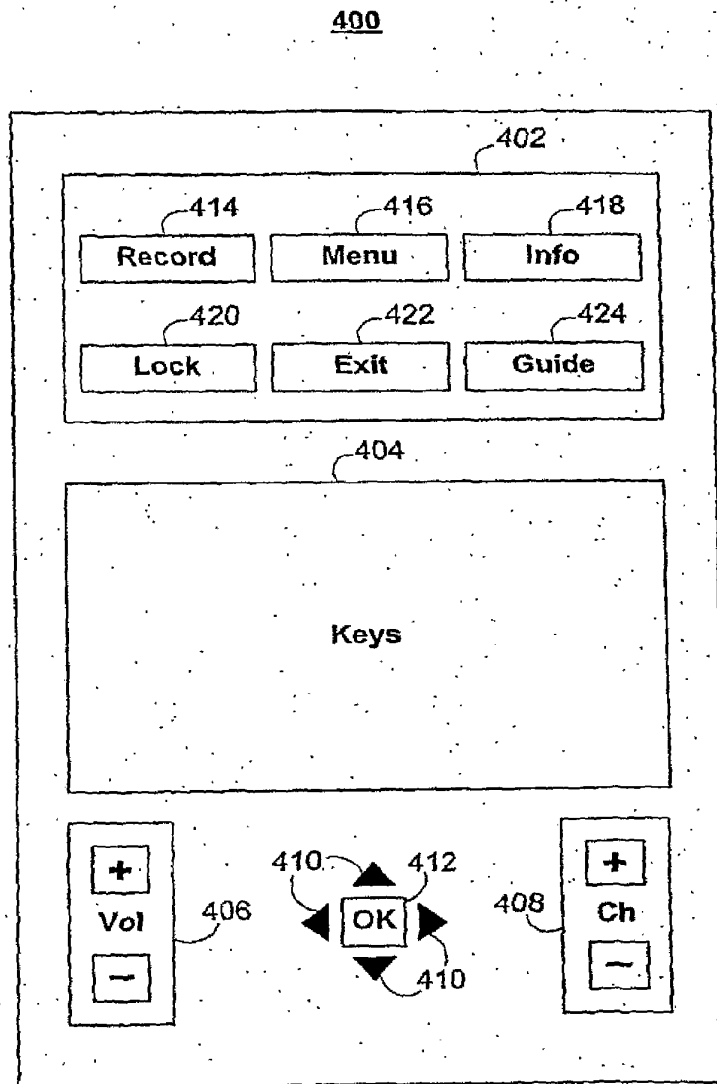


FIG. 3



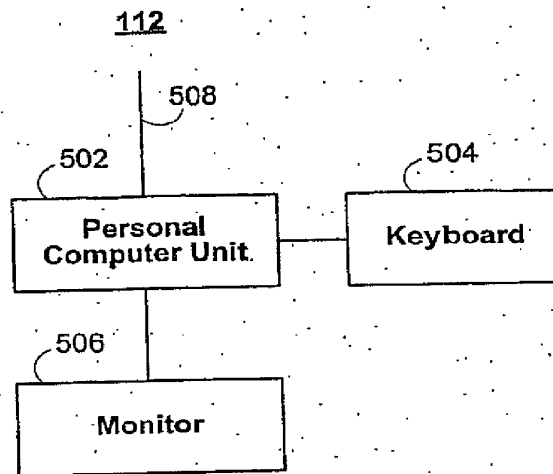


FIG. 5

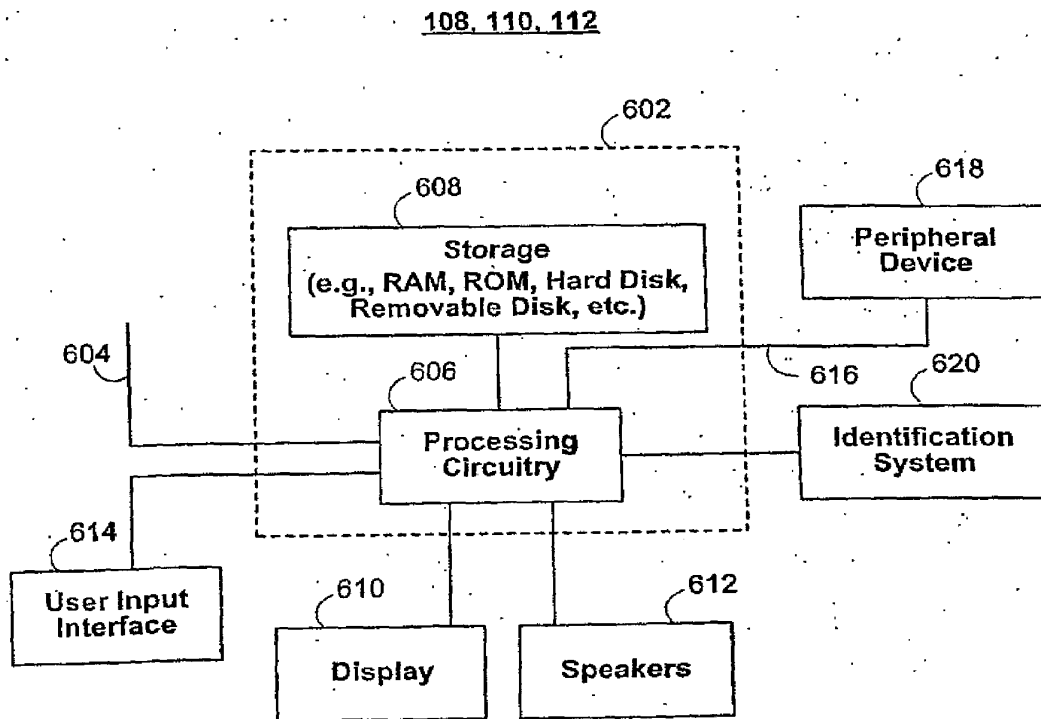


FIG. 6

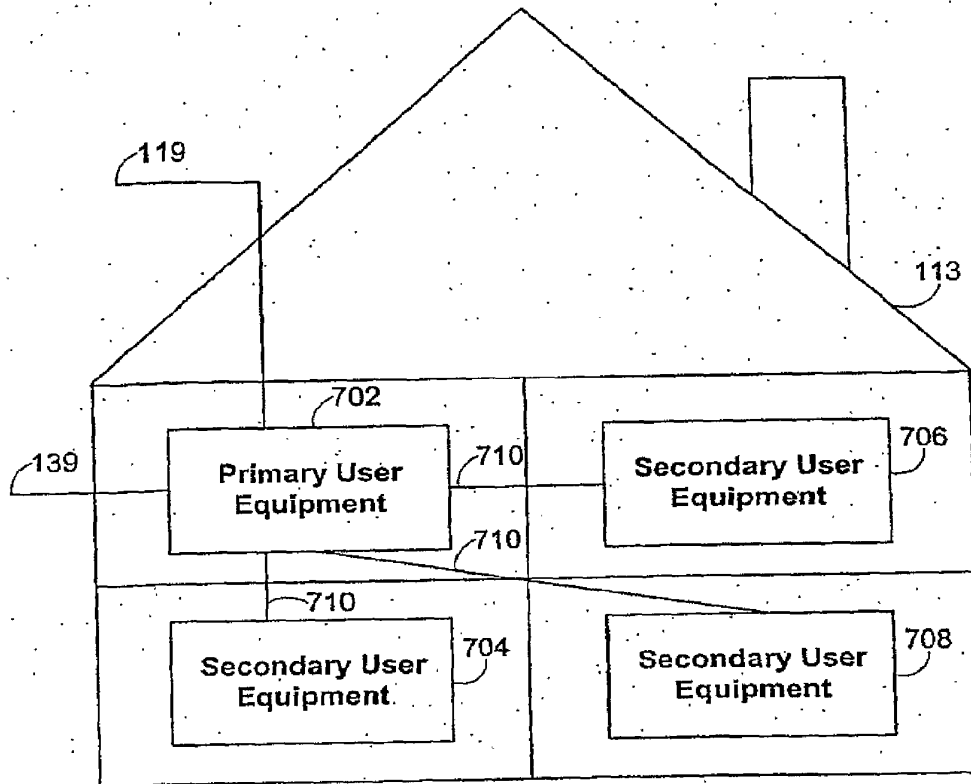


FIG. 7

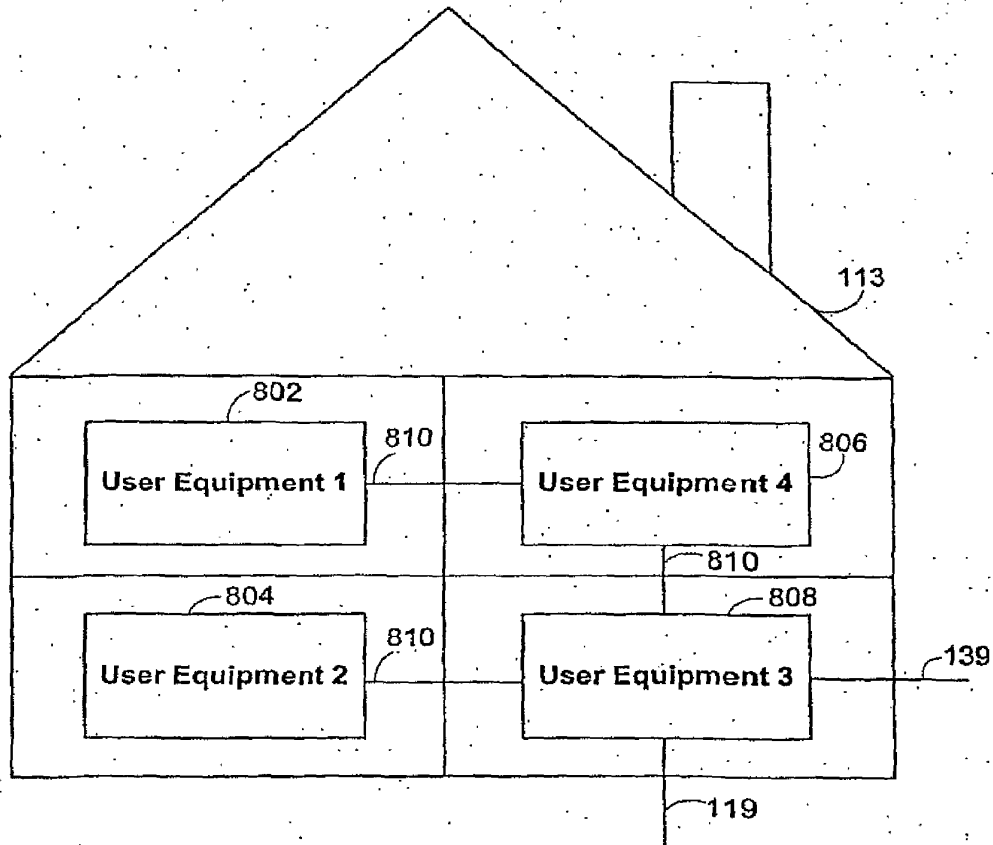


FIG. 8a

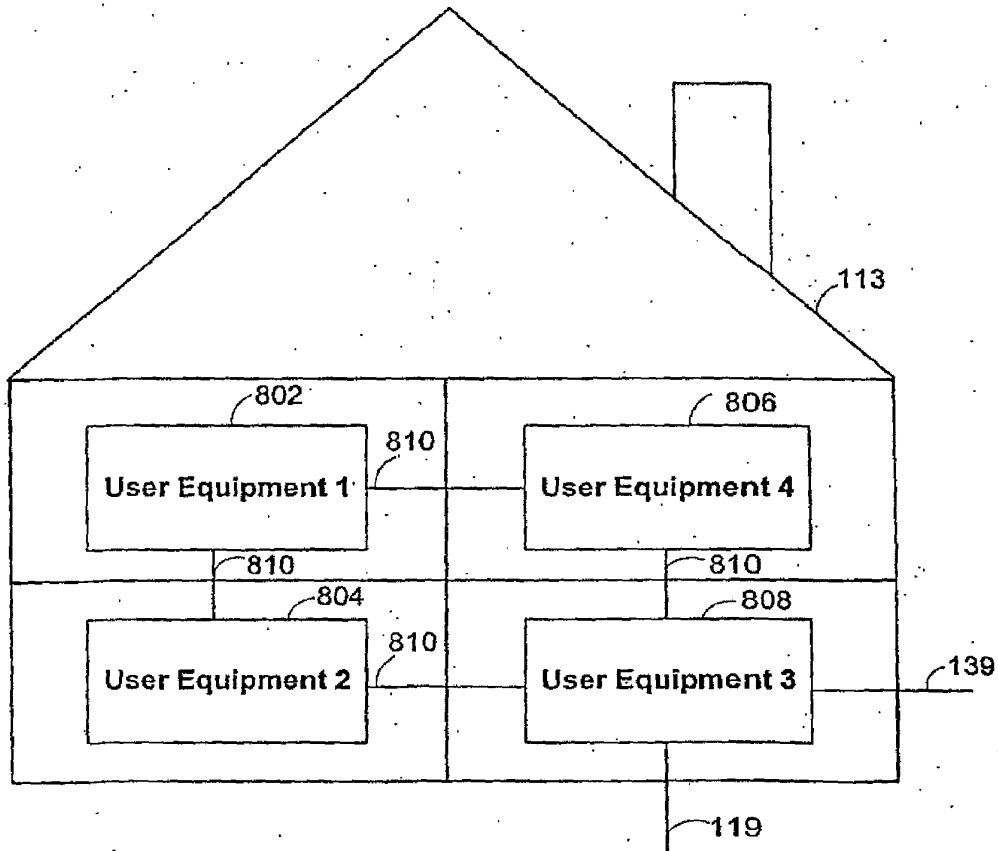


FIG. 8b

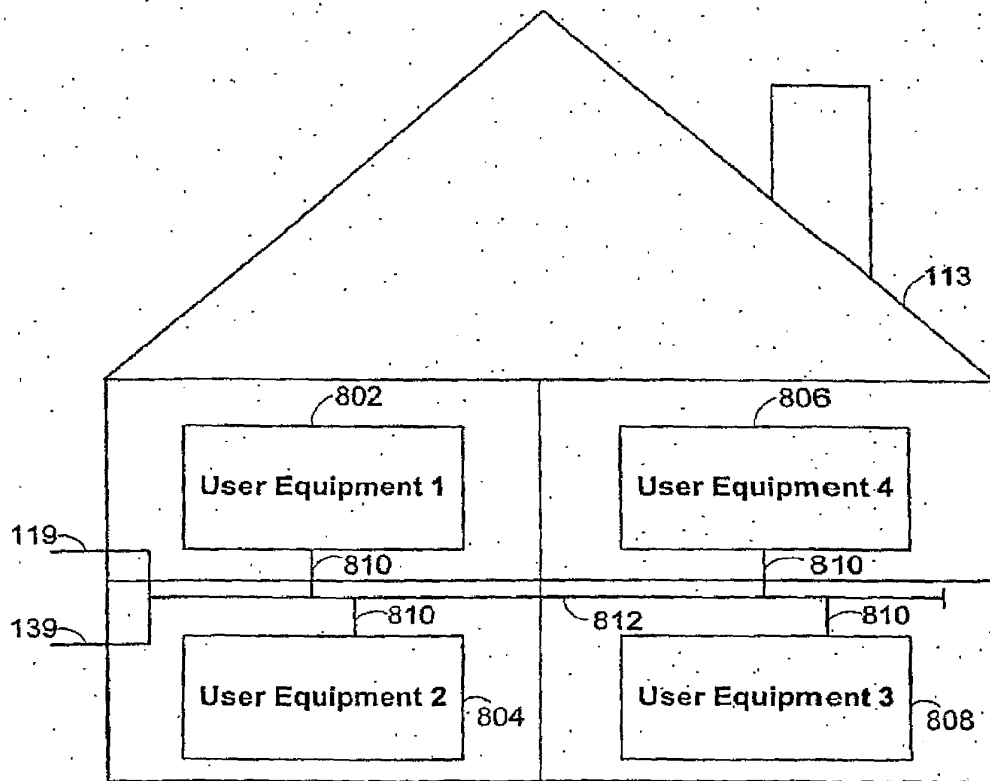


FIG. 8c

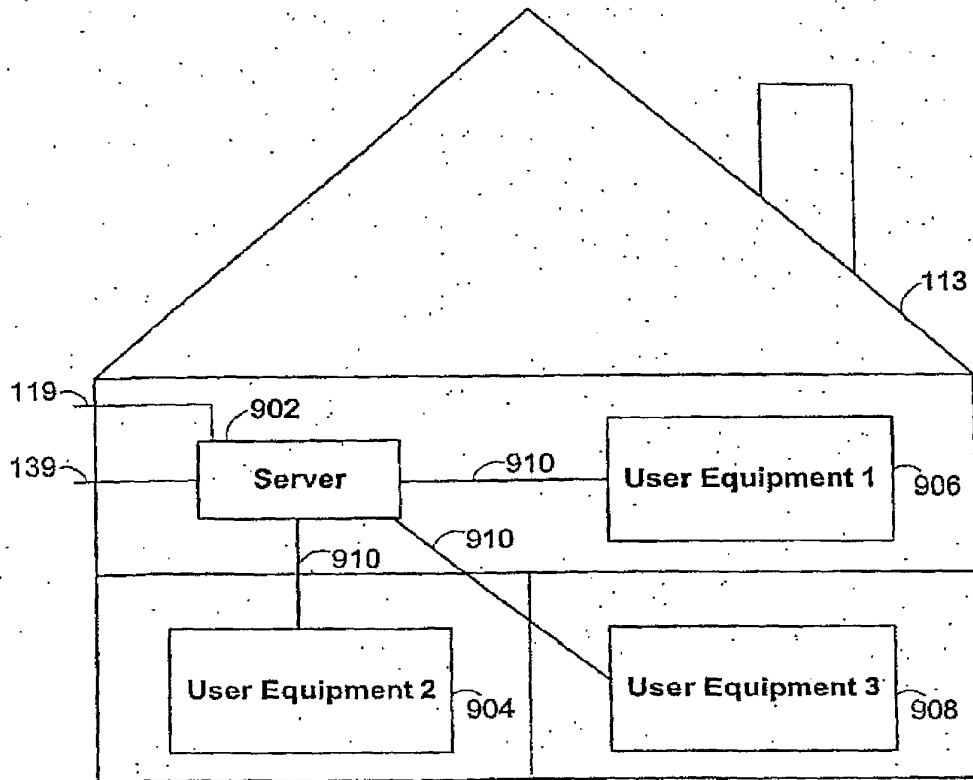


FIG. 9

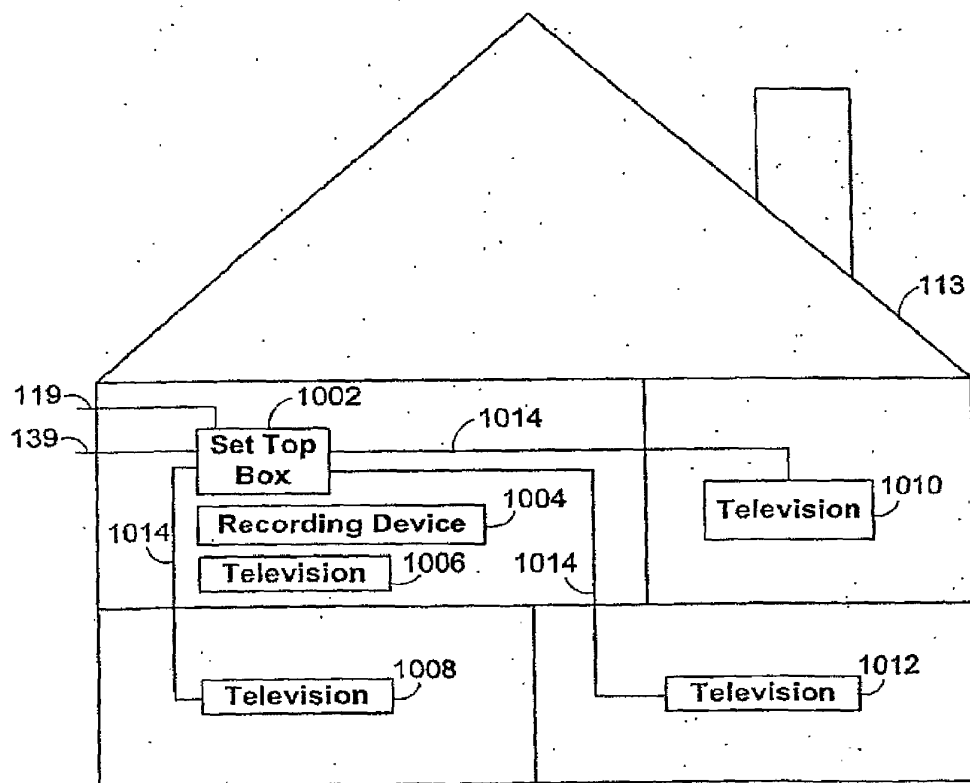


FIG. 10

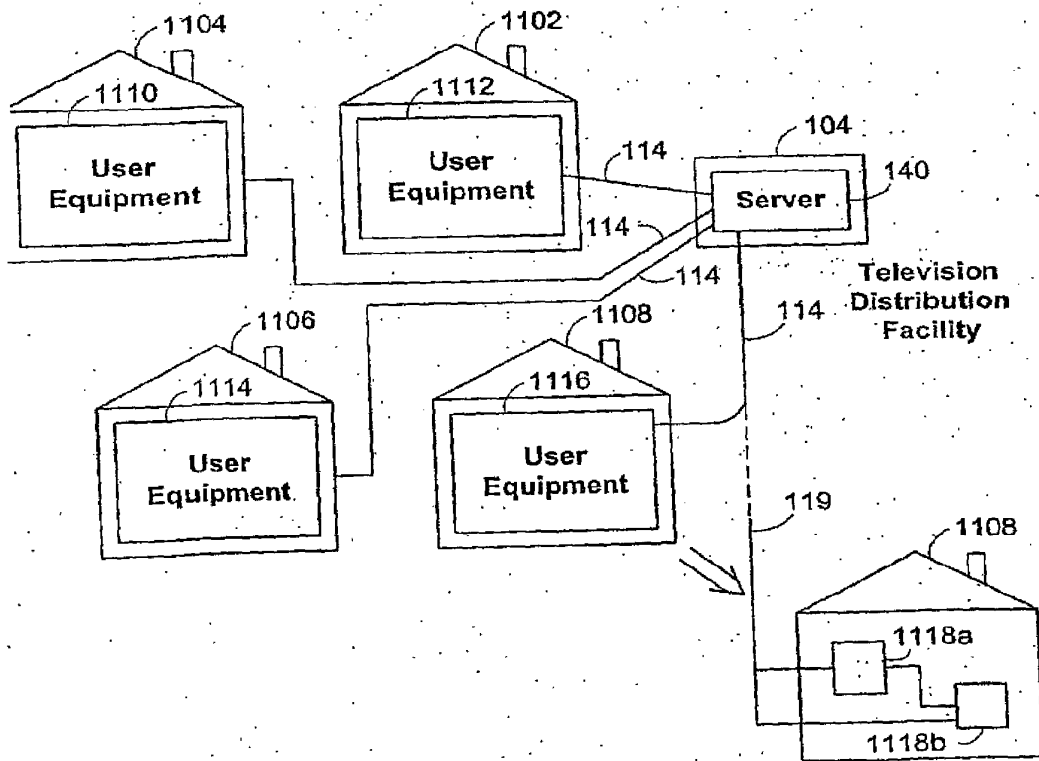


FIG. 11a

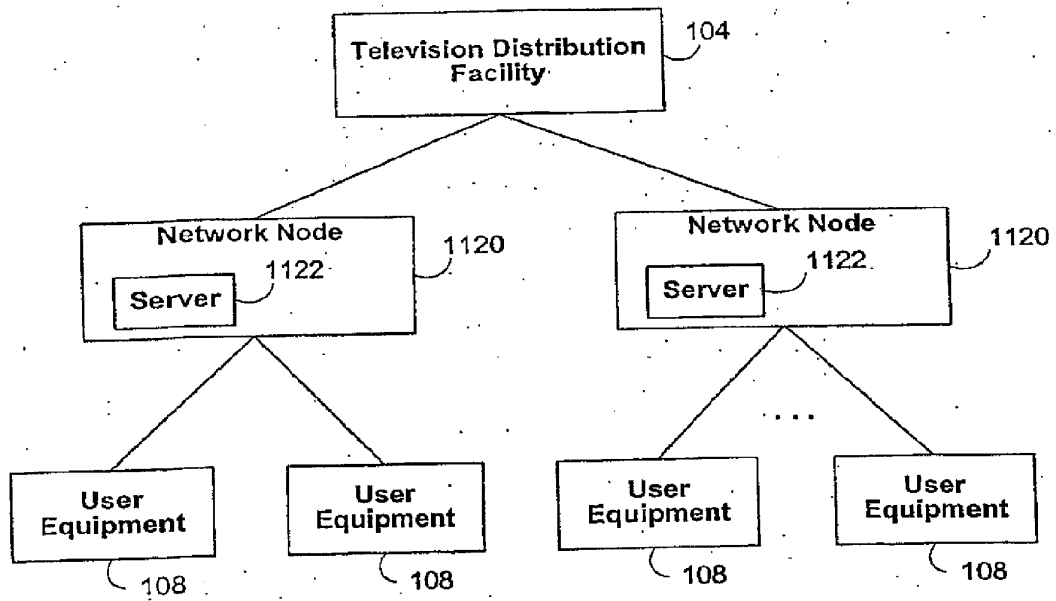


FIG. 11b

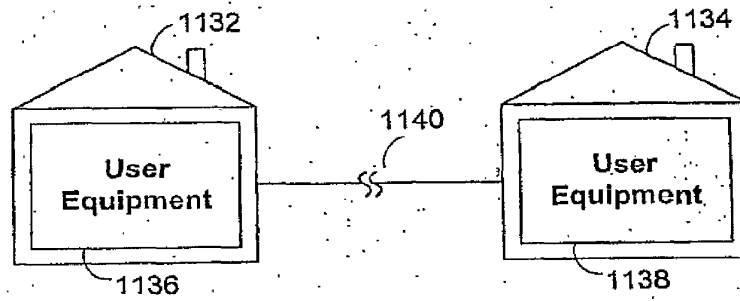


FIG. 11c

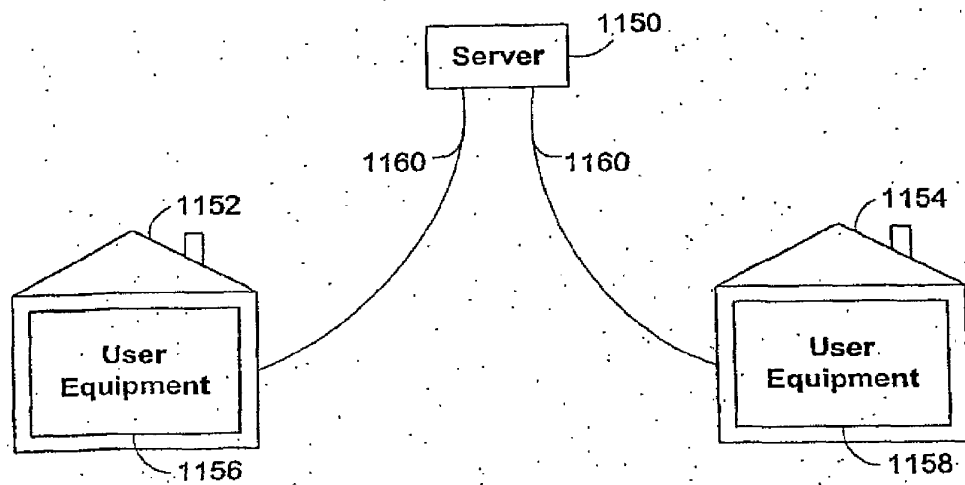


FIG. 11d

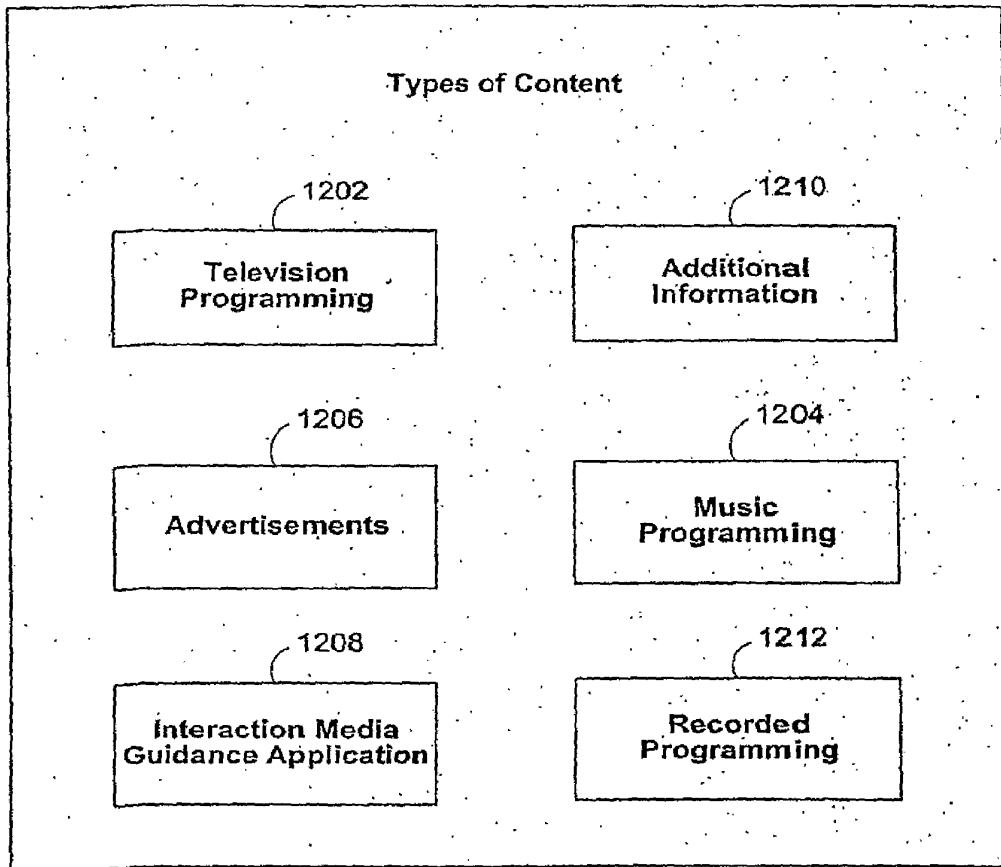


FIG. 12

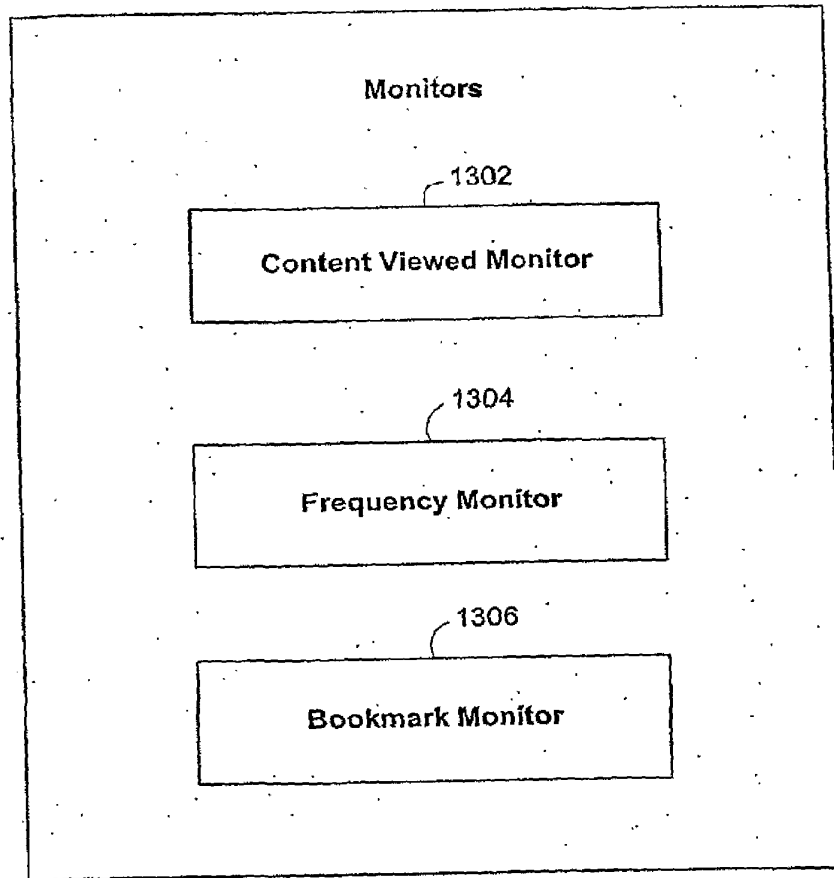


FIG. 13

Enter Viewing History

Title or description of previously viewed content

1402

Look up

1404

Search for a title

1406

Dates viewed:

1408

Seasons viewed:

☐ 1

☐ 3

☐ All

☐ Except

☐ 2

☐ 4

Number of times viewed

1410

Times

1416

User / Device / Household profile

1414

Add to existing profile ☒ **Replace existing profile** ☐

1420 1422

Create new user profile

1418

Browse user profile

1416

Add more user profiles

Affect automatic content displays

1424

Affect automatic recordings

1426

Affect recommendations

1428

Affect searches

1430

Affect visual representation of listings of content

1432

Affect visual representation of displays of content

1434

All of the above

1436

Submit

1438

Clear

1442

Cancel

1440

FIG. 14

1500

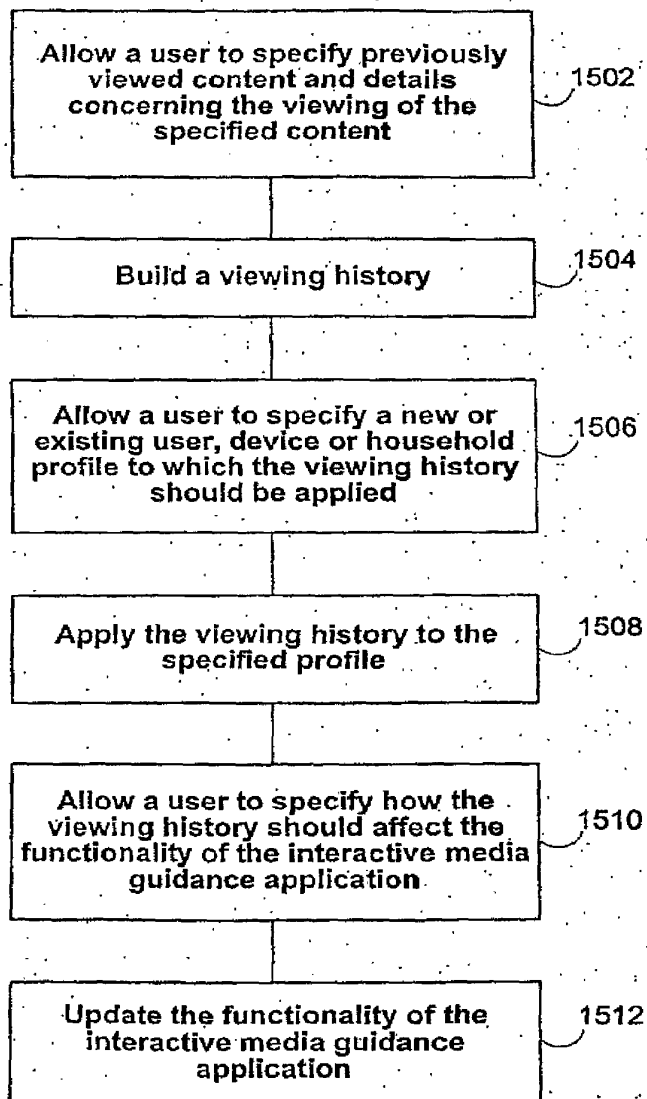
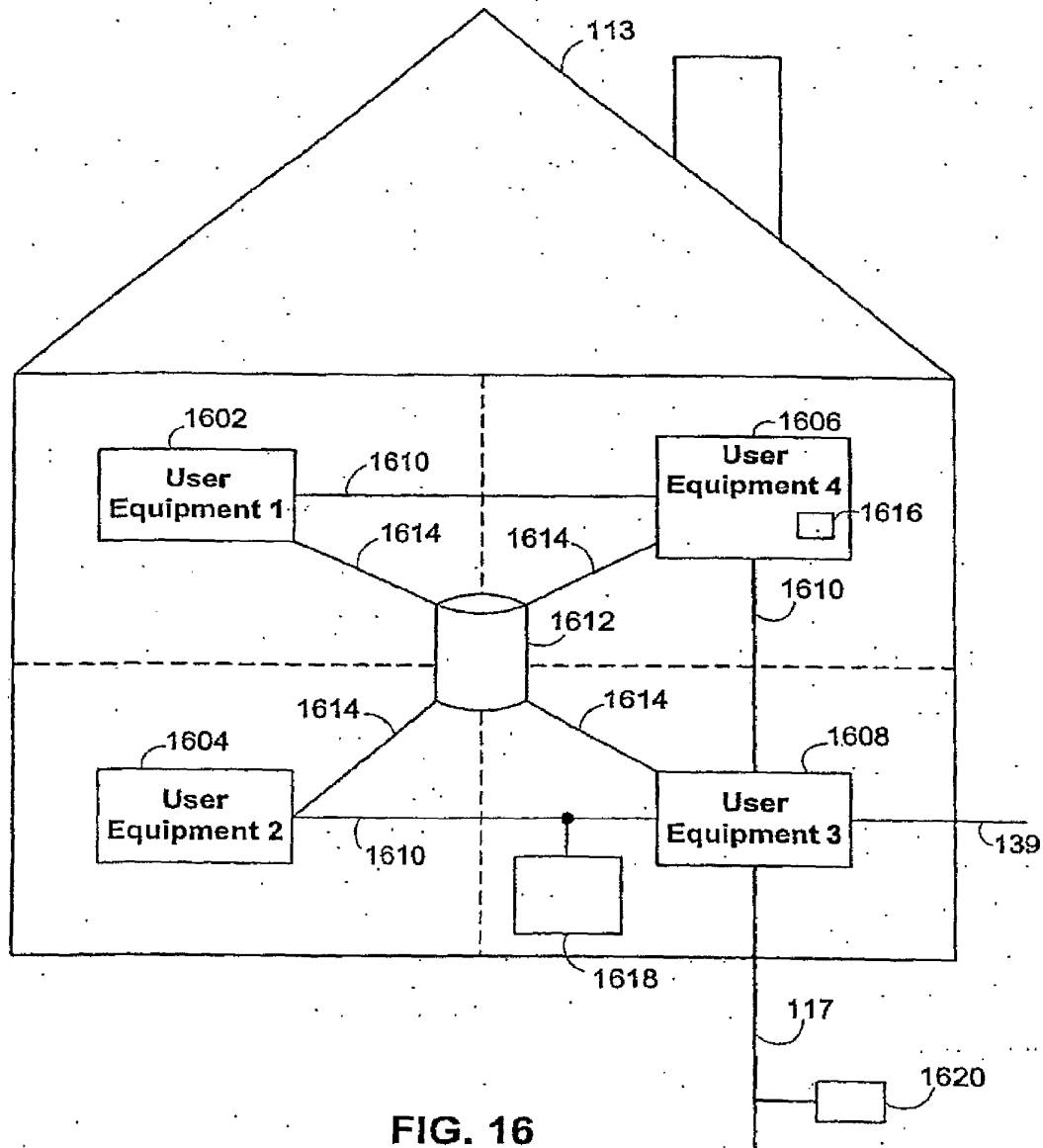


FIG. 15



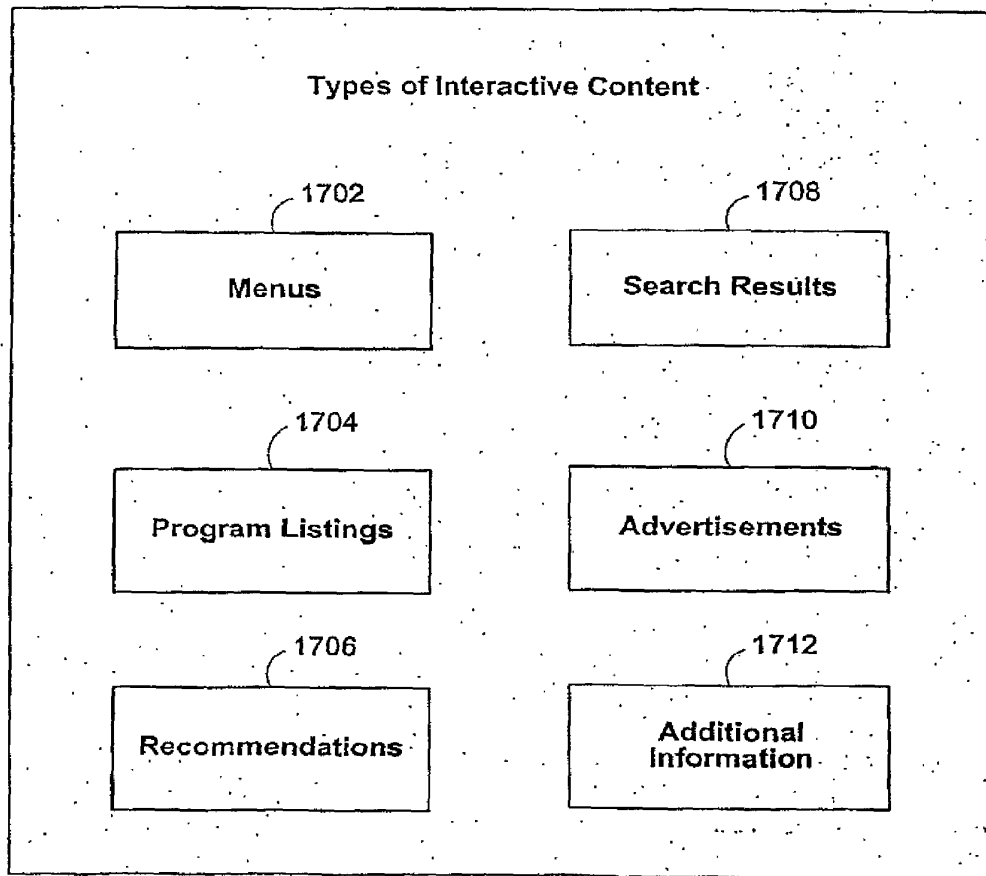


FIG. 17

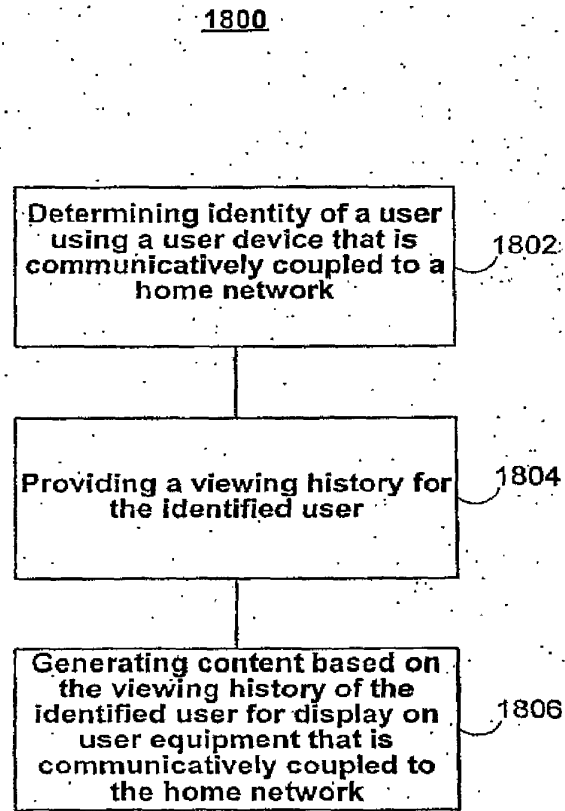


FIG. 18a

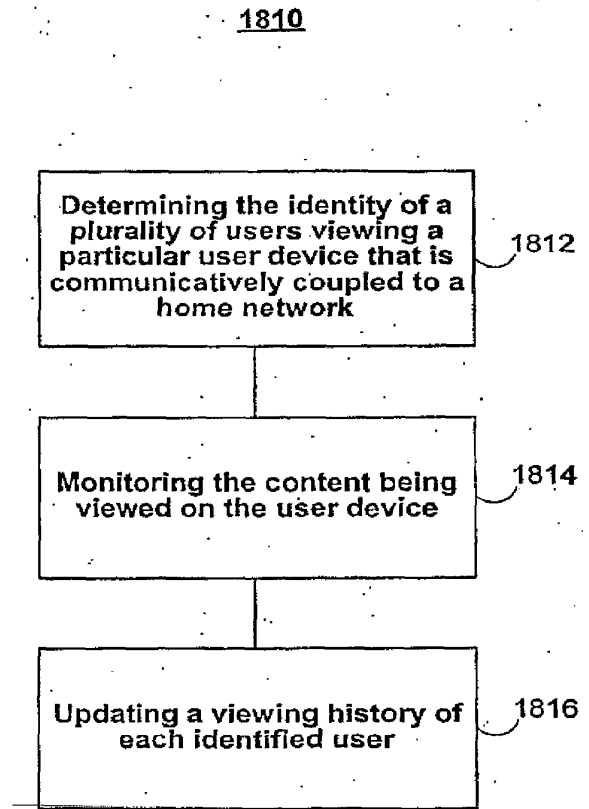


FIG. 18b

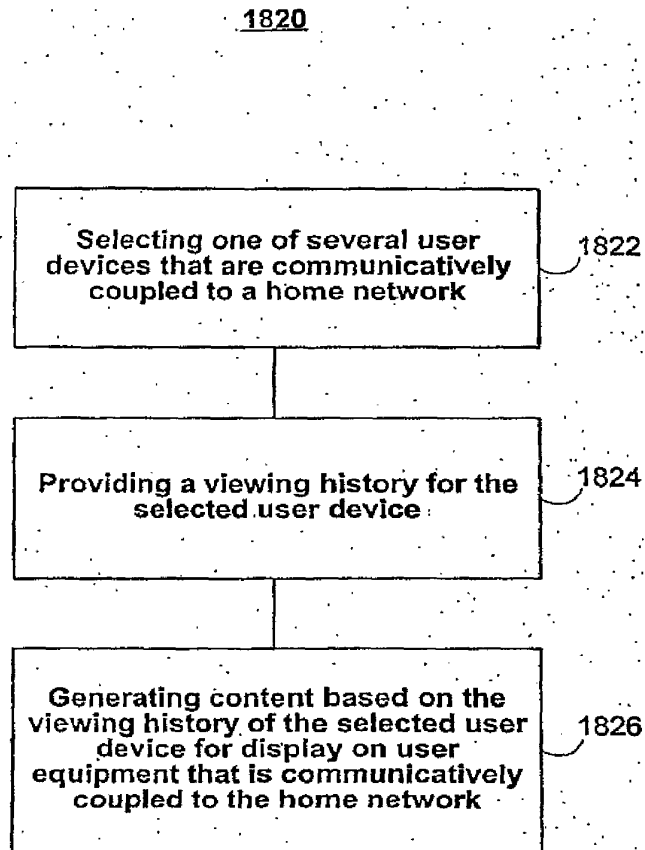


FIG. 18c

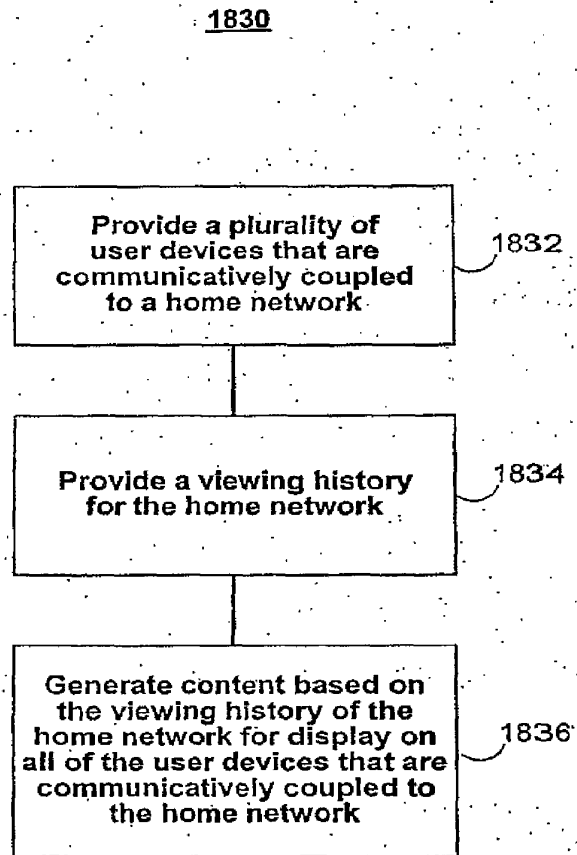


FIG. 18d

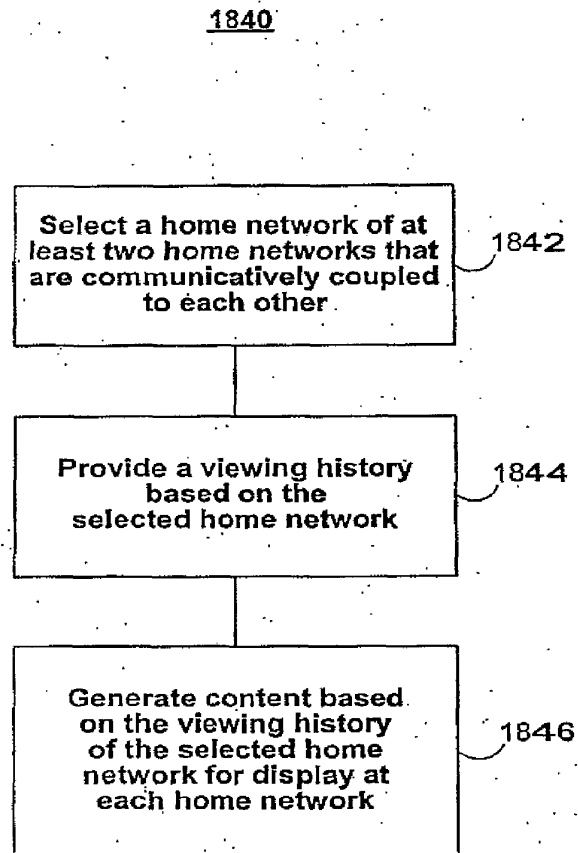


FIG. 18e

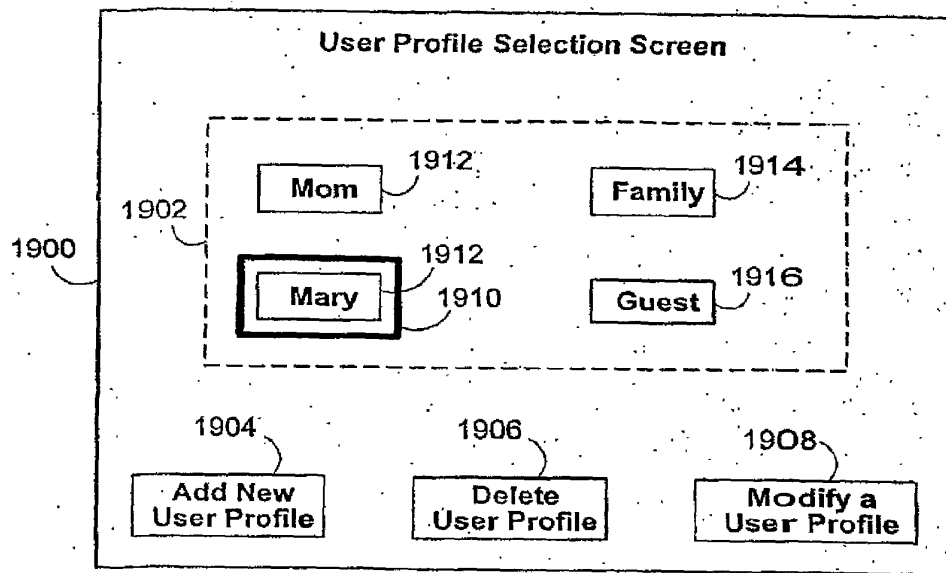


FIG. 19

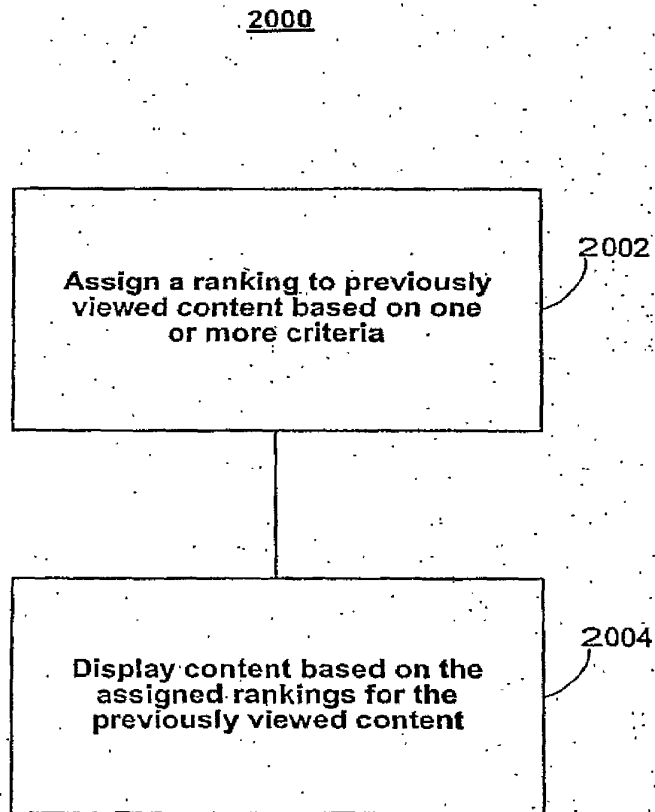


FIG. 20

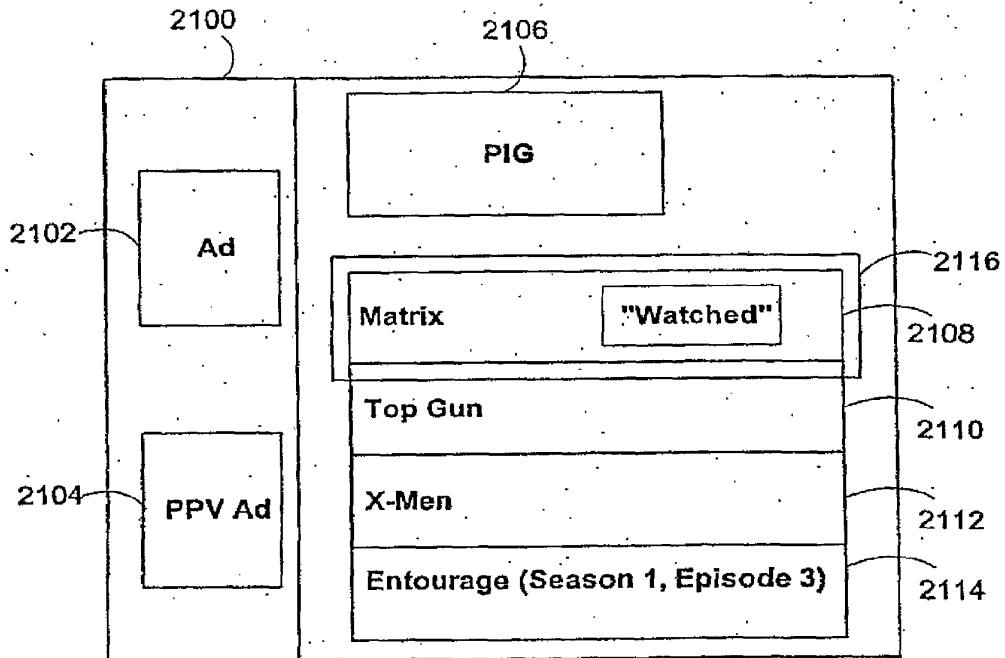


FIG. 21a

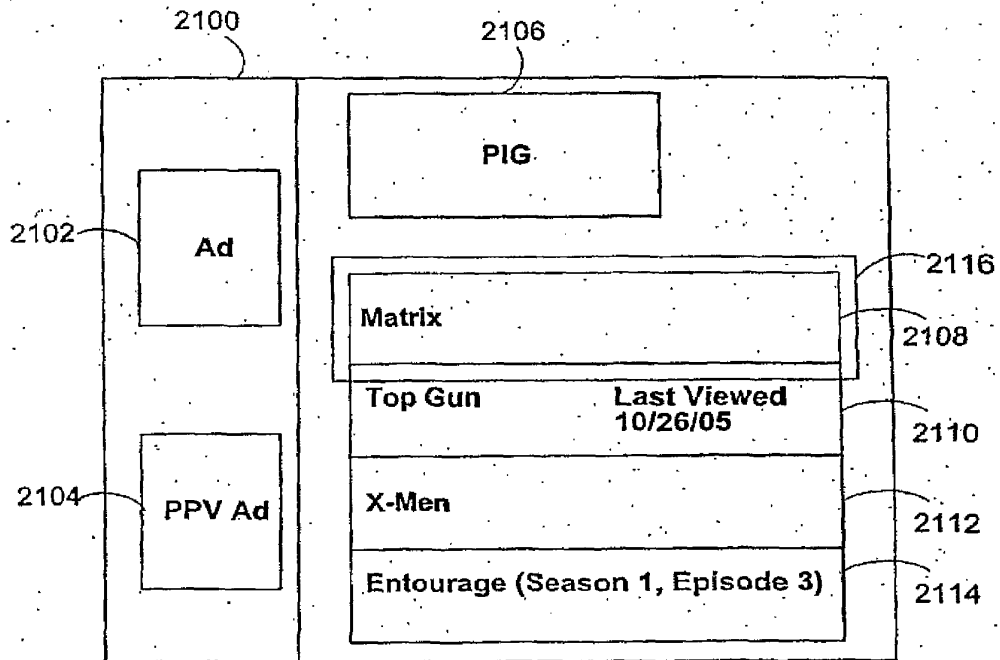


FIG. 21b

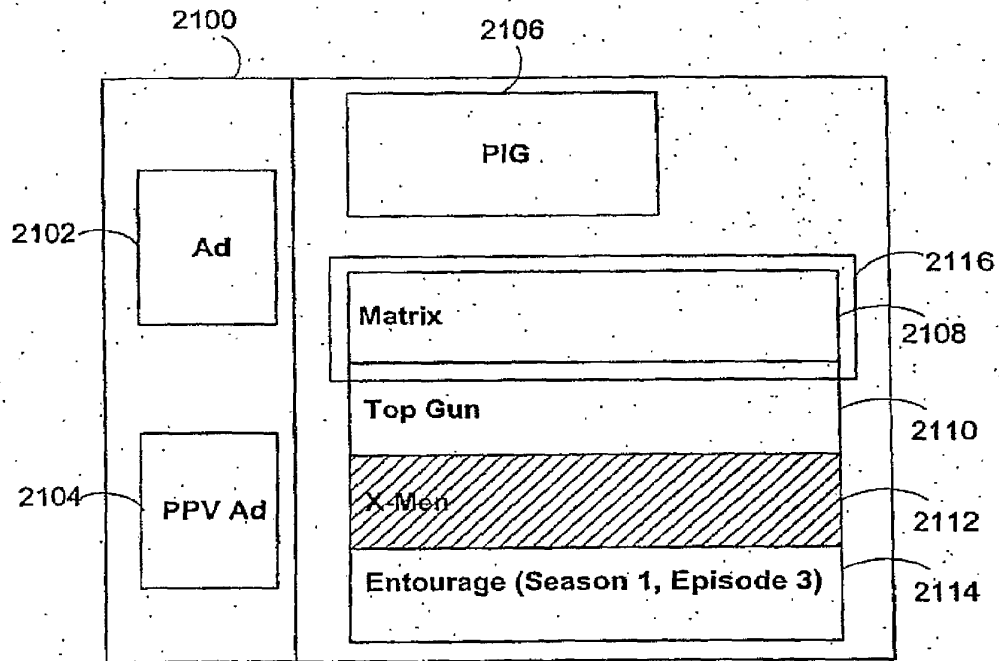


FIG. 21c

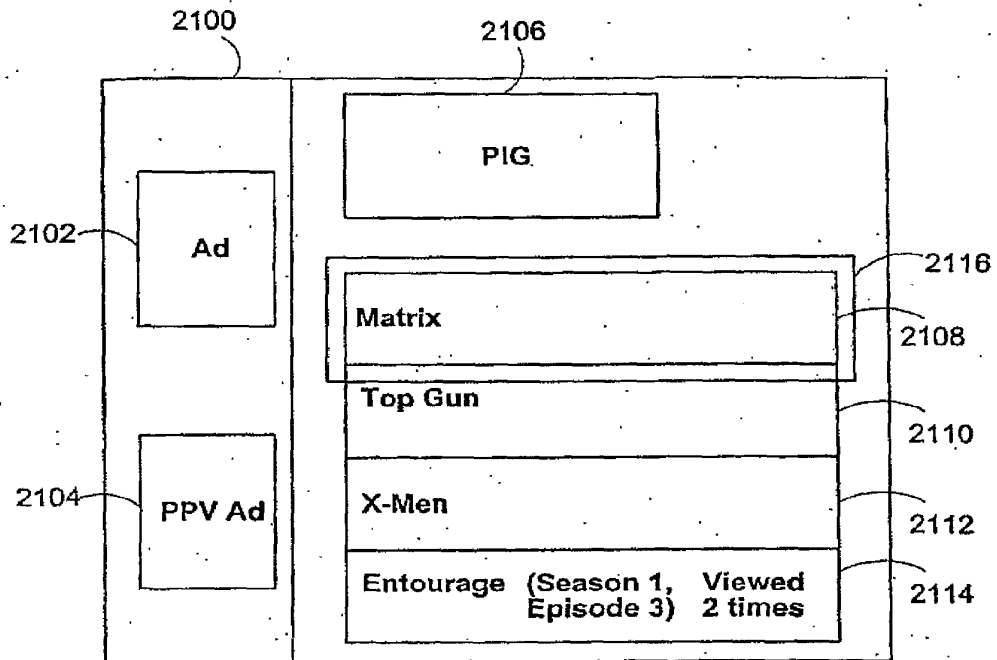


FIG. 21d

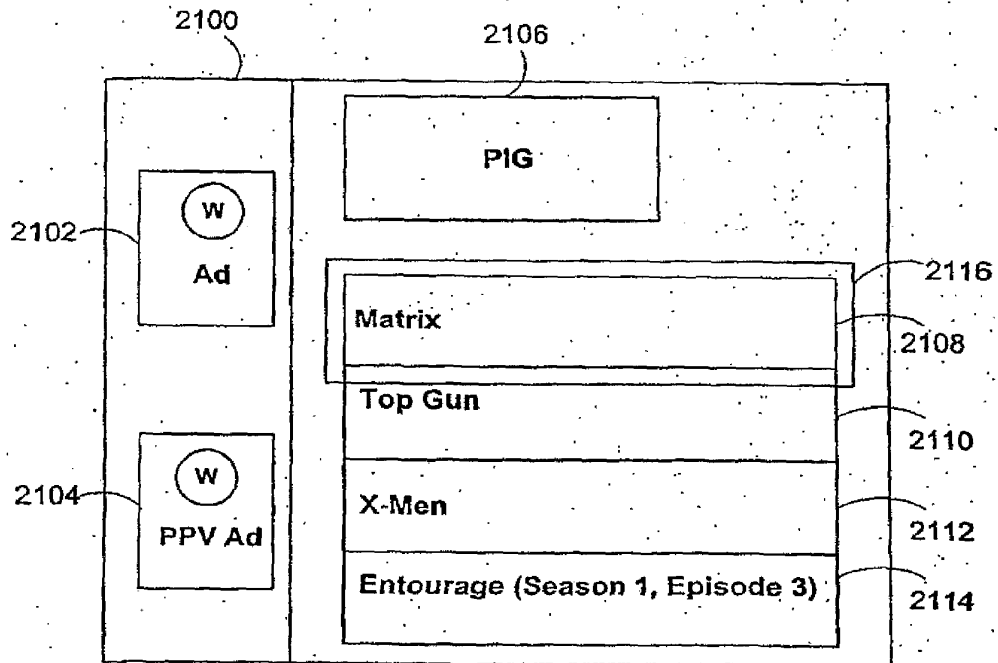


FIG. 21e

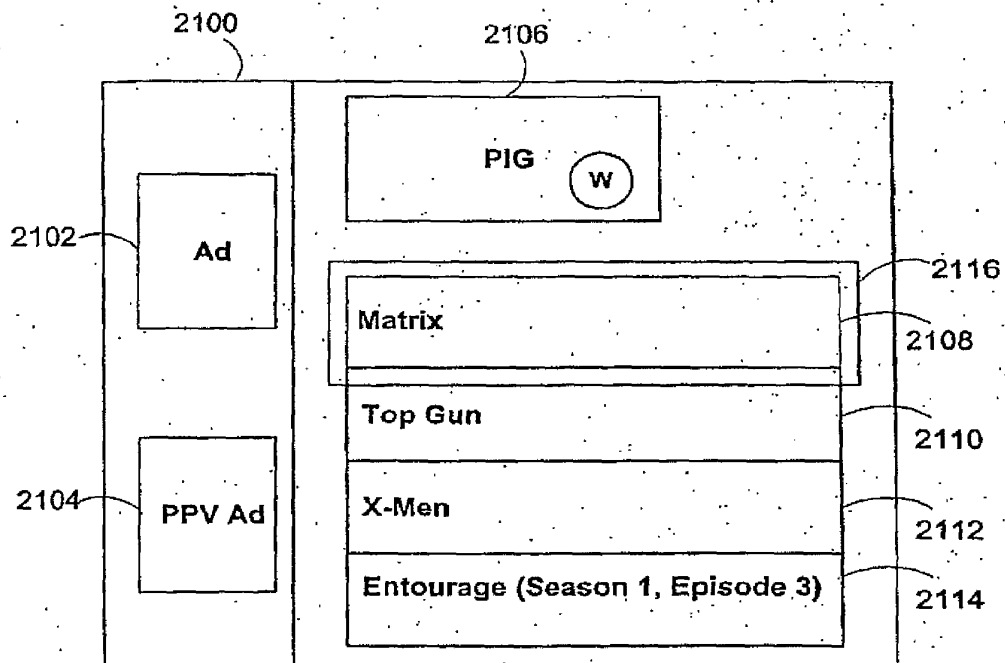


FIG. 21f

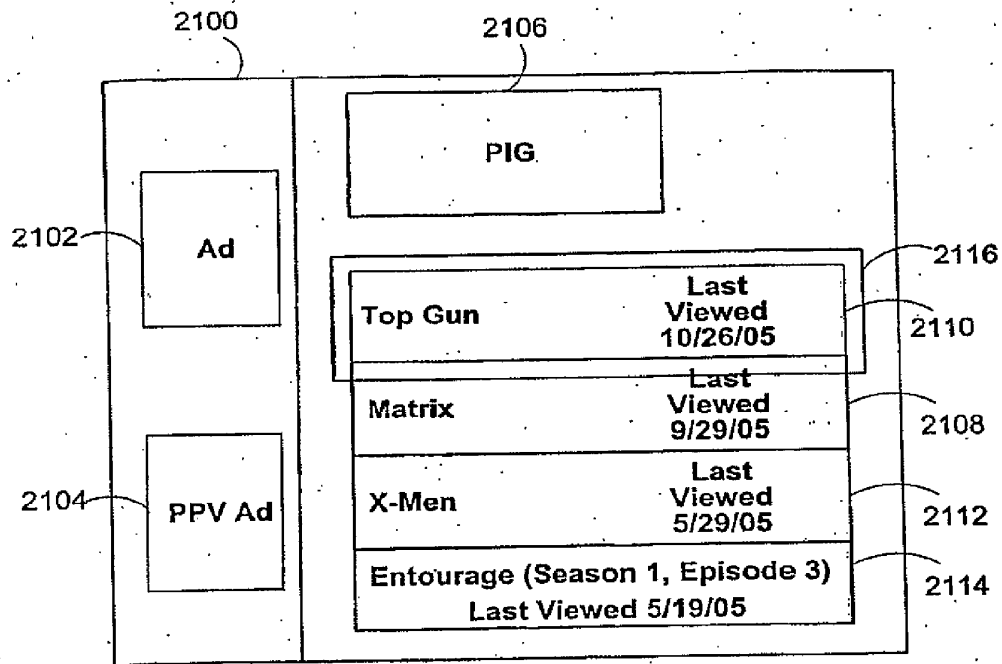


FIG. 21g

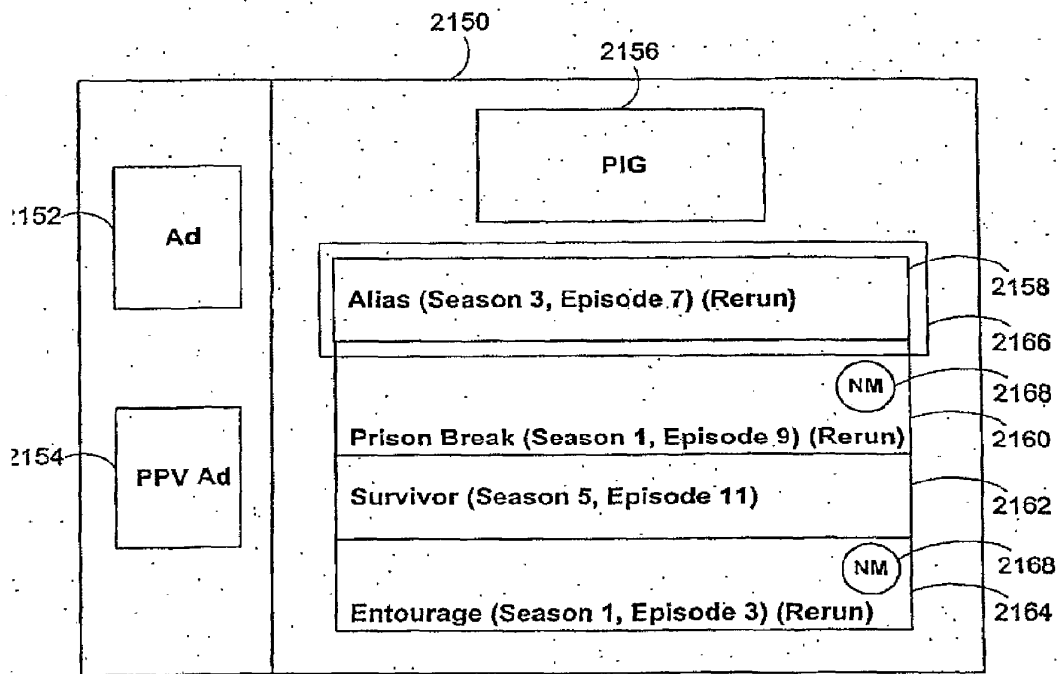


FIG. 21h

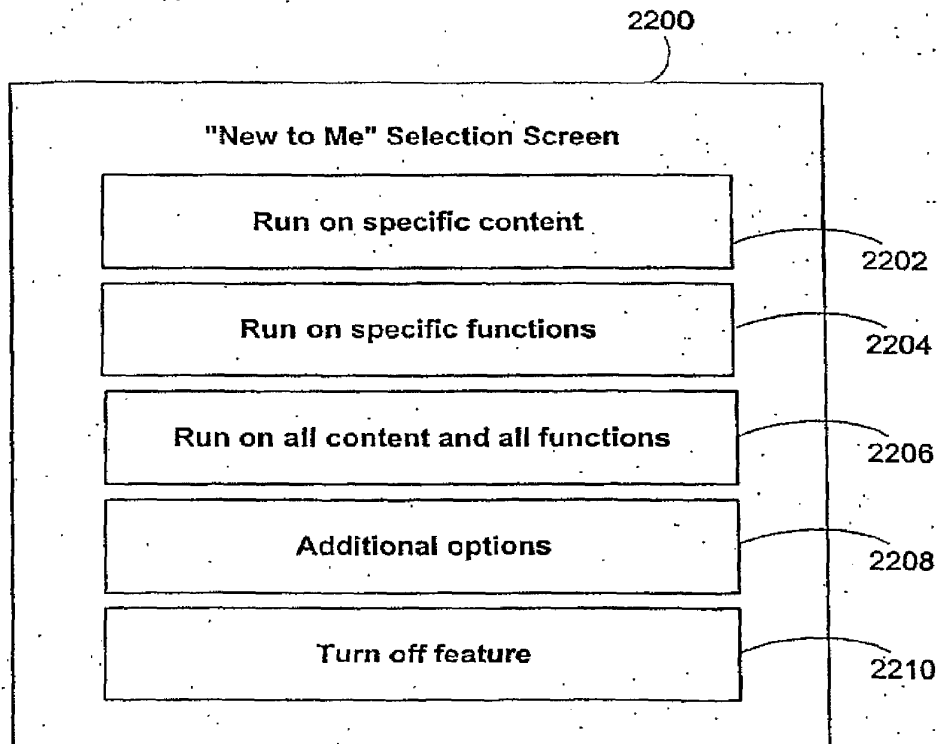


FIG. 22



EUROPEAN SEARCH REPORT

 Application Number
EP 11 15 1835

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 515 549 A1 (SAMSUNG ELECTRONICS CO LTD [KR]) 16 March 2005 (2005-03-16) * abstract * * paragraphs [0010] - [0020], [0024] - [0029], [0032] - [0044] * * figure 4 *	1-14	INV. H04N7/16 H04N5/00
X	WO 2004/054264 A1 (KONINKL PHILIPS ELECTRONICS NV [NL]; GUTTA SRINIVAS [US]) 24 June 2004 (2004-06-24) * abstract * * page 2, line 4 - line 27 * * page 4, line 19 - line 20 * * page 6, line 3 - page 9, line 7 * * figures 2,3a,3b *	1-14	
X	EP 1 538 838 A1 (SONY CORP [JP]) 8 June 2005 (2005-06-08) * abstract * * paragraphs [0009] - [0015], [0022] - [0032], [0043] - [0049], [0060] - [0065], [0090] - [0094], [0099] - [0108] * * figures 14-16 *	1-14	TECHNICAL FIELDS SEARCHED (IPC) H04N
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 April 2011	Examiner Dobbelaere, Dirk
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 1
EPO FORM 1503 (03.02.2014)



EUROPEAN SEARCH REPORT

Application Number
EP 11 15 1835

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2005/193414 A1 (HORVITZ ERIC J [US] ET AL) 1 September 2005 (2005-09-01) * abstract * * figure 2 * * paragraphs [0005], [0006], [0009], [0010], [0028] - [0046] *	1-14	
A	US 2004/098744 A1 (GUTTA SRINIVAS [US]) 20 May 2004 (2004-05-20) * abstract * * figures 1,3,4,6 * * paragraphs [0007], [0023] - [0032] *	1-14	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search The Hague		Date of completion of the search 14 April 2011	Examiner Dobbelaere, Dirk
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

1
EPC FORM 1503/03-02 (P44C01)

EP 2 328 346 A1

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 11 15 1835

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The members are as contained in the European Patent Office EDP file on
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14-04-2011

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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PCT/US2013/055286 02.12.2013

(11) **EP 2 348 724 A2**

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(30) Priority: 22.01.2010 EP 10151474

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(54) **Electronic program guide with video-on-demand functionality**

(57) A method of providing an electronic program guide in an apparatus for receiving and decoding digital television signals. The method comprises providing an electronic program guide screen having at least a first and a second window, wherein the first window displays a grid guide format of time and channel having a plurality of cells in which television program listings are displayed; providing input means for controlling a cursor to select between the first and the second window and to navigate

and provide control functionality within each of the first and second window, wherein, if the first window is selected, the cursor selectively high-lights one of the television program listings displayed in the grid guide; wherein the second window displays Video-On-Demand program listings, wherein, if the second window is selected, the cursor selectively highlights one of the Video-On-Demand program listings and provides means for activating said Video-On-Demand program listing.

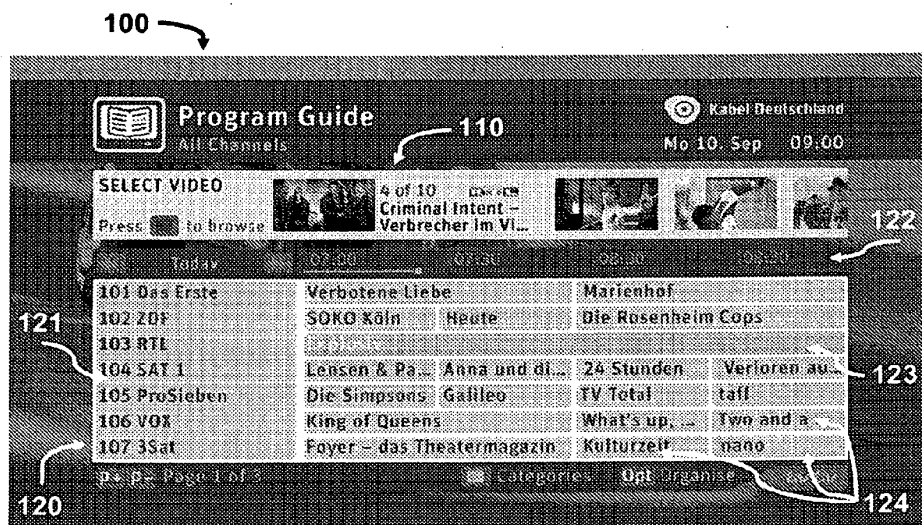


Figure 1a

EP 2 348 724 A2

Description

TECHNICAL FIELD

[0001] The present invention relates generally to methods of providing an electronic program guide (EPG) in an apparatus for receiving and decoding digital television signals, wherein the method comprises providing an electronic program guide screen having at least a first and a second window, wherein the first window displays a grid guide format of time and channel having a plurality of cells in which television program listings are displayed; providing input means for controlling a cursor to select between the first and the second window and to navigate and provide control functionality within each of the first and second window, wherein, if the first window is selected, the cursor selectively highlights one of the television program listings displayed in the grid guide.

BACKGROUND OF THE INVENTION

[0002] Electronic Program Guides (EPGs) are well known tools to ease viewer navigation in an electronic listing of broadcast programs. Particularly, Electronic Program Guides are used to provide an overview to scheduled broadcast television or radio programs. EPGs are typically displayed on a television screen. Additional functionality enables viewers to navigate, select, and discover content by time, title, channel, genre, etc. by use of a remote control, a keyboard, or other input devices such as a phone keypad. An EPG may also be employed to book content for future recording by a digital video recorder or personal video recorder. The on-screen information may be delivered by a dedicated channel or assembled by the receiving equipment from information sent by each program channel, the network operator or other data providers.

[0003] Electronic Program Guides are often run on an integrated receiver/decoder such as a set-top box (STB). An integrated receiver/decoder (IRD) is an electronic device used to pickup a radio-frequency signal and convert digital information transmitted in it. A Consumer IRD, commonly called a set-top box or set-top unit is a device that connects to a television and an external source of signal, turning the signal into content which is then displayed on the television screen.

[0004] Other environments to run an Electronic Program Guide may be Integrated Digital Televisions (IDTV). An IDTV set is a television set with a built in digital tuner, be it for DVB-T, DVB-T2, DVB-S, DVB-S2, DVB-C, DVB-C2, DMB-T/H, IP, ATSC or ISDB. Most of them also allow reception of analogue signals (PAL, SECAM or NTSC). They do away with the need for a STB for converting those signals for reception on a television. Some are integrated with a personal video recorder and / or a means to descramble encrypted programs or data streams (e.g. a Common Interface Plus module).

[0005] Systems which enable users to select and

watch audio/video content on demand are generally referred to as Video-On-Demand (VOD) systems. VOD systems used in the context of a TV set either stream content through a STB, allowing viewing in real time, or download it to a device such as a computer, digital video recorder (or personal video recorder) or portable media player for viewing at any time. Most television providers offer both VOD streaming, such as pay-per-view, whereby a user buys or selects a movie or television program and it begins to play on the television set almost instantaneously, or downloading to a digital video recorder (DVR) rented from the provider, for viewing in the future. VOD contents can also be free of charge or subscription based.

[0006] US 7,188,356 B1 describes a program transmitting/receiving system having a center device and a terminal device connected through a communication device to the center device. The center device has a program information memory, a program information transmitter, a broadcasting device, and a request program transmitter. The terminal device has a program information receiver, a program receiver, an image information generator, a program request signal transmitter, and a request program receiver. The memory stores program information. The program information transmitter transmits the program information to the terminal device. The broadcasting device broadcasts the program to the terminal device in accordance with a schedule, and stores the program. The request program transmitter receives a request signal of the program from the terminal device, and transmits the program corresponding to the request signal to the terminal device. Then, the program information receiver receives the program information. The program receiver receives the program. The image information generator generates image information for a program selection of a user on the basis of the program information. The program request signal transmitter transmits the request signal of the program selected by the user to the center device, if the program selected in accordance with the image information is a past broadcast program. The request program receiver receives the program corresponding to the request signal.

[0007] WHO 20071091781 A1 describes an electronic programming guide (EPG) providing apparatus and method to collectively manage broadcast content using stored EPG information. The EPG providing apparatus includes a storing unit which stores broadcast content and EPG information, an EPG screen configuring unit which configures an EPG screen including information on past, current, and future broadcast content using the EPG information, and a control unit which collectively manages broadcast content provided on the EPG screen based on a user input signal.

[0008] The Electronic Program Guides described above include past times on the time axis to offer so called catch-up events of past broadcast, wherein either the catch-up events are stored automatically on the set-top box such that the viewer can watch the requested pro-

grams some time after they have been broadcasted, or the catch-up events are provided by connecting to a Video-On-Demand catalogue of past broadcast programs offered by the provider. Thus, a disadvantage of these EPGs is that the Video-On-Demand contents are only displayed in the context of a strict time-ordering and in the context of the particular channel where they have been broadcasted.

[0009] US 5,751,282 A describes an interactive television system having a centrally located head end server coupled to service multiple, remotely located set-top boxes. Each set-top box runs an electronic programming guide that provides an on-screen program grid listing program titles in relation to their scheduled viewing times and channel numbers. The viewer is permitted to scroll through the program grid to list titles of past, current, and future programs. A database, resident at the head end server, supplies the program titles and scheduled viewing times of the past, current, and future programs to the electronic programming guide. The head end server transmits real-time video data streams of the available programs to the EPG. A continuous media server, resident at the head end server, stores the video data streams to build a reserve of previously played programs. The media server can also store video preview clips of future programs. When a viewer selects a current program, the real-time video data stream of the current program is displayed by the set-top box. When the viewer selects a past program, the head end server retrieves a stored video data stream of the selected past program and transmits it to the set-top box. When the viewer selects a future program, the head end server retrieves a stored video preview clip of the future program and transmits it to the set-top box.

[0010] It is an object of the present invention to provide an improved electronic program guide.

SUMMARY OF THE INVENTION

[0011] The above object is achieved by a method of providing an electronic program guide in an apparatus for receiving and decoding digital television signals. The method comprises providing an electronic program guide screen having at least a first and a second window, wherein the first window displays a grid guide format of time and channel having a plurality of cells in which television program listings are displayed. The method further comprises providing input means for controlling a cursor to select between the first and the second window and to navigate and provide control functionality within each of the first and second window, wherein, if the first window is selected, the cursor selectively highlights one of the television program listings displayed in the grid guide. According to the present invention, the second window displays Video-On-Demand program listings, wherein, if the second window is selected, the cursor selectively highlights one of the Video-On-Demand program listings and provides means for activating said Vid-

eo-On-Demand program listing.

[0012] Further, the present invention relates to an apparatus for receiving and decoding digital television signals. The apparatus comprises an electronic program guide screen having at least a first and a second window, wherein the first window displays a grid guide format of time and channel having a plurality of cells in which television program listings are displayed. The apparatus further comprises input means for controlling a cursor to select between the first and the second window and to navigate and provide control functionality within each of the first and second window, wherein, if the first window is selected, the cursor selectively highlights one of the television program listings displayed in the grid guide. According to the present invention the second window displays a Video-On-Demand listing, wherein, if the second window is selected, the cursor selectively highlights one of the Video-On-Demand program listings and provides means for activating said Video-On-Demand program listing.

[0013] Further, the present invention relates to one or more computer-readable media having computer readable instructions thereon which, when executed by one or more processors, cause the processors to implement the above-described method.

[0014] The Electronic Program Guide described herein is advantageous as it attracts the viewer's attention by providing an additional window for Video-On-Demand program listings which are highlighted in the EPG. As a consequence, the viewer is offered two information sources on the same screen, one referring to time-dependent broadcast content, one referring to time-independent VOD content. VOD contents may reflect the viewer's broadcast or genre preferences and are not limited to past broadcast programs.

[0015] In addition, said window has the advantage that contents shown therein are independent of the channel or time selected in the EPG grid window. A viewer is offered the functionality of at least two interactive windows with different contents: television program listings and Video-On-Demand listings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] In the following, preferred embodiments of the present invention shall be discussed with reference to the following figures:

Figure 1a shows an electronic program guide screen according to a first embodiment of the present invention.

Figure 1b shows another mode of the electronic program guide screen according to the embodiment shown in Figure 1a.

Figure 2a shows an electronic program guide screen according to a second embodiment of the present

invention.

Figure 2b shows another mode of the electronic program guide screen according to the embodiment shown in Figure 2a.

Figure 3a shows an electronic program guide screen according to the embodiment shown in Figures 1 a and 1 b with a further options window.

Figure 3b shows an electronic program guide screen according to the embodiment shown in Figures 2a and 2b with a further options window.

Figure 4 shows a remote control according to an embodiment of the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0017] According to the embodiments of the present invention described herein, Video-On-Demand content shall be listed and accessed from different Electronic Program Guide screens such as the "Electronic Program Guide listings grid" or the "TV viewing Now and Next banner" to be described herein below.

Electronic Program Guide Listings Grid with Video-On-Demand

[0018] Figures 1a and 1b show a first embodiment of an electronic program guide screen 100 according to the invention. Electronic program guide screen 100 comprises a first window 120 displaying an Electronic Program Guide Listings Grid and a second window 110 displaying a mini showcase of Video-On-Demand content (to be described in more detail below). VOD content may comprise assets, bundles, trailers, tutorials, or other Web VOD services.

[0019] In the embodiment shown in Figures 1a and 1b, the Electronic Program Guide Listings Grid 120 is placed at the bottom of the screen and Video-On-Demand mini showcase 110 is displayed above.

[0020] By default, if the viewer is in a Video-On-Demand service area and has a working back channel then mini showcase 110 displaying Video-On-Demand content is shown within the Electronic Program Guide 100. The content is displayed both within the Electronic Program Guide Listings Grid screen 120 and TV Viewing Now and Next banner (to be described below). If the viewer is not in a Video-On-Demand service area or does not have a working back channel, then Video-On-Demand content is not displayed within the Electronic Program Guide 100.

[0021] In the embodiment shown in Figures 1a and 1b, Electronic Program Guide Listings Grid 120 comprises a horizontal time axis 122 and a vertical TV channel axis 121, although other orientations as well as other axis values are possible. In the embodiment shown in Figures

1 a and 1 b, time axis 122 displays a time period selected by the viewer. However, instead of a specific time interval, a viewer may also choose to only view certain times of certain days. For instance, if a viewer typically only watches TV in the evening, time axis 122 may show the preferred viewing times (e.g. between 8 pm and 10 pm) for today, tomorrow, the day after tomorrow, etc. in the embodiment shown in Figures 1a and 1b, TV channel axis 121 displays a subset of available TV channels. However, instead of showing a list of TV channels, axis 121 may also present a summary list of the viewer's preferred genre types, such as Musicals, Comedy, or Sports events, etc. In addition, other combinations of axis values rather than channel versus time are possible, such as channel versus genre. In the preferred embodiment, EPG listings grid 120 is further subdivided into program cells 124 which display the titles of TV programs corresponding to a time and channel specified by a viewer.

Navigation

[0022] Typically, a viewer navigates within an Electronic Program Guide screen by making use of a remote control, a keyboard, or other input devices such as a phone keypad. For the purpose of this description, remote control shall refer to any input means for controlling a cursor to select portions of the Electronic Program Guide and navigate therein. A remote control 400 to control an Electronic Program Guide according to the embodiments described herein is shown in Figure 4 shall comprise at least the following keys:

- Up, Down, Left, Right
- oak button
- OPT button
- Blue button
- VOD button

[0023] The functionality of said keys in the context of the present invention is described below.

[0024] Moving the cursor between the program cells 124 (by means of the Up, Down, Left, and Right keys) highlights selected items 123. Pressing the OK button can then trigger a further activity, such as scheduling for recording (if the broadcast time is in the future), accessing additional information such as a synopsis, or switching to the according channel. In general, any action that can be performed within a commonly known EPG can be executed within the EPG Listings Grid as well.

[0025] By means of a remote control, a viewer may also navigate to window 110. If the viewer presses a specific key (e.g. the Blue button) on the remote control then the highlight moves into the mini showcase 110, as shown in Figure 1b. The viewer can then move the high-

light back into the Electronic Program Guide Listings Grid 120 by pressing the Down arrow or by pressing the Blue button.

[0026] The items displayed in mini showcase 110 may or may not depend on the channel selected in the Electronic Program Guide Listings Grid 120. If the selected channel offers its own Video-On-Demand offerings, such as for example a Video-On-Demand Shop in Shop, then the promoted items in the mini showcase may be updated by showing the channel's Shop In Shop highlights. Otherwise the promoted items may depend on the category selected in the Electronic Program Guide Listings Grid 120; e.g. Movies, Music, Sports, etc. It is also possible that the promoted items are recommendations based on the viewer's preferences (see section "Recommendation engine" below). Thus, a viewer who likes to watch certain types of broadcast, e.g. Sports, Music, or Comedy, would get Video-On-Demand recommendations from a similar genre. In a similar manner, promoted items may be based on the preferences of other viewers, such as most popular shows, shows which are liked by viewers with comparable preferences etc.

[0027] If the Video-On-Demand button (currently named "Select Video") is pressed when the mini showcase 110 containing e.g. Video-On-Demand highlights is on-screen then the Video-On-Demand application opens and displays the respective showcase carousel where the previously highlighted item 111 in the Video-On-Demand application will be the same Video-On-Demand item highlighted in the Electronic Program Guide Listings Grid screen 120. Video and Audio of last viewed channel will continue in the background.

[0028] Default item 111 in the mini showcase will typically be selected randomly from the items displayed, and may differ each time the Electronic Program Guide Listings Grid 120 is entered. However, default item 111 may as well be correlated with the user's broadcast preferences or with the last show watched by the viewer, see below.

[0029] In a STB, the items in the mini showcase 110 must be cached so that there is no loss of performance because of fetching them as the viewer moves up and down from channel to channel in the Electronic Program Guide Listings Grid 120.

[0030] If the viewer presses and holds the Up or Down arrows on a remote control to navigate channels in the Electronic Program Guide Listings Grid 120, then the mini showcase 110 need only update when the key is released. If the viewer presses the OPT button on a remote control then a sub-menu is opened - see below.

[0031] If the viewer navigates from the mini showcase 110 (or any other area within the Electronic Program Guide 110) into the Video-On-Demand application, a Navigation Tracker described in more detail below may record the viewer's navigation behaviour.

TV Viewing Now & Next Banner and Video-On-Demand

[0032] Figures 2a and 2b show a second embodiment of an electronic program guide screen 200 according to a further aspect of the present invention. Electronic program guide screen 200 comprises a first window 230 displaying a TV Viewing Now & Next banner and a second window 210 displaying a mini showcase of Video-On-Demand content. In the embodiment shown in Figure 2a and 2b, the TV Viewing Now & Next banner 230 is placed at the bottom of the screen and Video-On-Demand mini showcase 210 is displayed above.

[0033] By default, if the viewer is in a Video-On-Demand service area and has a working back channel then mini showcase 210 displaying Video-On-Demand content is shown within the Electronic Program Guide 200. If the viewer is not in a Video-On-Demand service area or does not have a working back channel then Video-On-Demand content is not displayed within the Electronic Program Guide 200.

[0034] In the embodiment shown in Figures 2a and 2b, TV Viewing Now & Next banner 230 comprises a horizontal time axis 232 and a vertical TV channel axis 231 with a single entry, although other orientations as well as other axis values are possible. In the embodiment shown in Figures 2a and 2b, time axis 232 displays a time period in accordance with the broadcast program shown at the presently viewed channel. In the embodiment shown in Figures 2a and 2b, TV channel axis 231 displays the current TV channel. In the preferred embodiment, TV Viewing Now & Next banner 230 is further subdivided into program cells 234 which display the titles of TV programs corresponding to the current time and channel.

[0035] The items displayed in mini showcase 210 may or may not depend on the selected channel. If the selected channel offers its own Video-On-Demand offerings, such as for example a Video-On-Demand Shop in Shop, then the promoted items in the mini showcase may be updated by showing the channel's Shop In Shop highlights. Otherwise the promoted items may depend on a viewer-selected category, e.g. Movies, Music, Sports, etc. It is also possible that the promoted items are recommendations based on the viewer's preferences. Thus, a viewer who likes to watch certain types of broadcast, e.g. Sports, Music, or Comedy, would get Video-On-Demand recommendations from a similar genre. In a similar manner, promoted items may be based on the preferences of other viewers, such as most popular shows, shows which are liked by viewers with or without comparable preferences etc.

[0036] Default item 211 in the mini showcase will typically be selected randomly from the items displayed, and may differ each time the TV Viewing Now & Next Banner 230 is invoked. However, default item 211 may as well be correlated with the user's broadcast preferences or with the last show watched by the viewer.

[0037] If the viewer presses and holds the Up or Down arrows on a remote control to navigate channels in the

TV Viewing Now & Next Banner 230, then the mini showcase 210 need only update when the key is released. If the viewer presses the OPT button on a remote control then a sub-menu is opened - see below. If the viewer presses the Blue button on the remote control then the highlight moves into the mini showcase 210. The viewer can then move the highlight back into the TV Viewing Now & Next Banner 230 by pressing the Down arrow or by pressing the Blue button.

[0038] If the Video-On-Demand button (currently named "Select Video") is pressed when the mini showcase 210 containing e.g. Video-On-Demand highlights is on-screen then the Video-On-Demand application opens and displays respective showcase carousel where the previously highlighted item 211 in the Video-On-Demand application will be the same Video-On-Demand item highlighted in the TV Viewing Now & Next Banner 330. Video and Audio of last viewed channel will continue in the background.

[0039] If the viewer navigates from the mini showcase 310 (or any other area within the Electronic Program Guide 300) into the Video-On-Demand application, a Navigation Tracker described in more detail below may record the viewer's navigation behaviour.

[0040] Mini showcase 110 shall be described in the following in more detail with reference to Figures 1a and 1b

Mini showcase

[0041] The mini showcase 110 displays multiple pictures of the Video-On-Demand items available in landscape format.

[0042] For one of the items (the default item for the highlight) 111 the information which is displayed may comprise the title (truncated by "...") to fit the space available), a Channel icon, an Item number (within items available in format "<x> of <n>", e.g. "4 of 10"; specific texts always depend on selected On Screen language), etc.

[0043] By using the Left and Right arrow keys the viewer can move the showcase right or left causing a different item to be highlighted. The showcase may be circular (i.e. when reaching the last item the first will be the next highlighted), but other listing are possible as well.

[0044] The VOD items can be assets, bundles, trailers, tutorial videos or hyperlinks to Web Video-On-Demand services.

[0045] By highlighting an item and pressing OK:

- If the item is an asset or a bundle the appropriate detailed description page within the Video-On-Demand application is opened. From here the normal Video-On-Demand operations (e.g. Watch / Rent) can be completed.
- If the item is a trailer then the (Video-On-Demand) trailer may be played directly. On completion of the trailer the appropriate detailed description page within the Video-On-Demand application is opened.

- If the item is a tutorial video then the video is played directly. On completion of the tutorial the Electronic Program Guide grid or TV Viewing Now and Next banner is displayed again with the highlight on the tutorial item.
- If the item is a link to a Web Video-On-Demand service then the appropriate web-page should be displayed.

Option Sub-Menu

[0046] Figures 3a and 3b display further features of the preferred embodiment. Upon pressing the OPT key on a remote control, an additional window 350a, 350b is overlaid on the Electronic Program Guide Listings Grid 320 or on the TV Viewing Now & Next Banner 330. The sub-menu shown in Figures 3a and 3b contains two options:

- to navigate the Electronic Program Guide Listings Grid 320 or the TV Viewing Now & Next Banner 330 directly to primetime;
- if the viewer has a Video-On-Demand entitlement, is in a Video-On-Demand service area and has a working back channel, to hide ("Hide VOD") or show ("Show VOD") the Video-On-Demand content (whichever is not currently active).

[0047] Further options are possible and may also be defined by the viewer, e.g. navigating the Electronic Program Guide Listings Grid 320 or the TV Viewing Now & Next Banner 330 directly to the viewer's preferred broadcasting time (e.g. during his or her lunch break), or adding additional windows with an Electronic Program Guide Listings Grid, with an TV Viewing Now & Next Banner, or with a mini showcase.

[0048] If the viewer selects to hide the Video-On-Demand content then the mini showcase 310a, 310b displaying Video-On-Demand content is removed from the Electronic Program Guide screen 300, leaving only Electronic Program Guide Listings Grid 320 or TV Viewing Now and Next Banner 330.

[0049] On selecting "Show VOD", the mini showcase 310a, 310b displaying Video-On-Demand content is shown again as detailed in the sections above. The Hide / Show Video-On-Demand setting is persistent across Electronic Program Guide application sessions.

User Navigation Tracking Tool

[0050] In a further aspect of the present invention, viewing behaviour when browsing between VOD content in the mini showcase and broadcast content in the EPG listings grid or in the TV Viewing Now & Next banner may be tracked and registered. Information on user interest and user navigation may then be used to further improve the suggested items.

[0051] In particular, changing between mini showcase

and broadcasting grid (i.e. EPG listings grid or TV Viewing Now & Next banner) may be recorded together with further information such as date and time, the last viewed program, the times spent in particular subsections etc.

Recommendations engine

[0052] In a still further embodiment of the present invention, VOD contents listed in the mini showcase may be recommendations in response to the viewing behaviour of a user or other users. Such a recommendations engine may be able to provide recommended VOD content tailored to the viewer's broadcast preferences (e.g. thriller or comedy, etc.), to the date and time (e.g. soccer on Saturday afternoons, soap operas on late weekday afternoons, etc.), to the viewer location (e.g. local area weather or traffic reports) or to suggestions by viewers with similar preferences.

[0053] In particular, the VOD contents shown in the mini showcase may vary depending on the highlighted item in the EPG listings grid or in the TV Viewing Now & Next Banner. Likewise, the VOD contents listed in the mini showcase may be selected in response to the list of channels displayed on TV channel axis 121 or to the date and time selected on horizontal time axis 122.

Claims

1. A method of providing an electronic program guide in an apparatus for receiving and decoding digital television signals, the method comprising the steps of:

providing an electronic program guide screen having at least a first and a second window,

wherein the first window displays a grid guide format of time and channel having a plurality of cells in which television program listings are displayed;

providing input means for controlling a cursor to select between the first and the second window and to navigate and provide control functionality within each of the first and second window,

wherein, if the first window is selected, the cursor selectively highlights one of the television program listings displayed in the grid guide;

characterized in that the second window displays video-on-demand program listings,

wherein, if the second window is selected, the cursor selectively highlights one of the

video-on-demand program listings and provides means for activating said video-on-demand program listing.

2. The method according to claim 1 wherein the grid guide displays only one channel.
3. The method according to claims 1 or 2, wherein the apparatus for receiving and decoding digital television signals is a Digital Receiver in particular a Set-Top-Box or an integrated Digital TV.
4. The method according to one of the preceding claims, wherein the input means are capable of controlling a selective hiding of the second window.
5. The method according to one of the preceding claims, wherein the input means is a remote control device.
6. The method according to one of the preceding claims, wherein the video-on-demand program listings are selected from a list of recommended video-on-demand program listings, wherein the list of recommended video-on-demand program listings reflects a viewer's preferences.
7. The method according to one of the preceding claims wherein the second window is only displayed if a video-on-demand service is available.
8. An apparatus for receiving and decoding digital television signals, the apparatus comprising:

an electronic program guide screen having at least a first and a second window,

wherein the first window displays a grid guide format of time and channel having a plurality of cells in which television program listings are displayed;

input means for controlling a cursor to select between the first and the second window and to navigate and provide control functionality within each of the first and second window,

wherein, if the first window is selected, the cursor selectively highlights one of the television program listings displayed in the grid guide;

characterized in that the second window displays a video-on-demand listing,

wherein, if the second window is selected, the cursor selectively highlights one of the

video-on-demand program listings means for activating said video-on-demand program listing.

9. The apparatus according to claim 8 wherein the grid guide displays only one channel. 5
10. The apparatus according to claims 8 or 9, wherein the apparatus is a Digital Receiver in particular a Set-Top-Box or an integrated Digital TV. 10
11. The apparatus according to one of claims 8-10, further comprising input means for selectively hiding the second window. 15
12. The apparatus according to one of claims 8-11, wherein the input means is a remote control device. 20
13. The apparatus according to one of claims 8-12, wherein the video-on-demand program listings are selected from a list of recommended video-on-demand program listings, wherein the list of recommended video-on-demand program listings reflects a viewer's preferences. 25
14. The apparatus according to one of claims 8-13 wherein the second window is only displayed if a video-on-demand service is available. 30
15. One or more computer-readable media having computer readable instructions thereon which, when executed by one or more processors, cause the processors to implement the method according to one of claims 1-7. 35
16. One or more input means suitable to control the input means of the apparatus according to one of claims 8-14. 40

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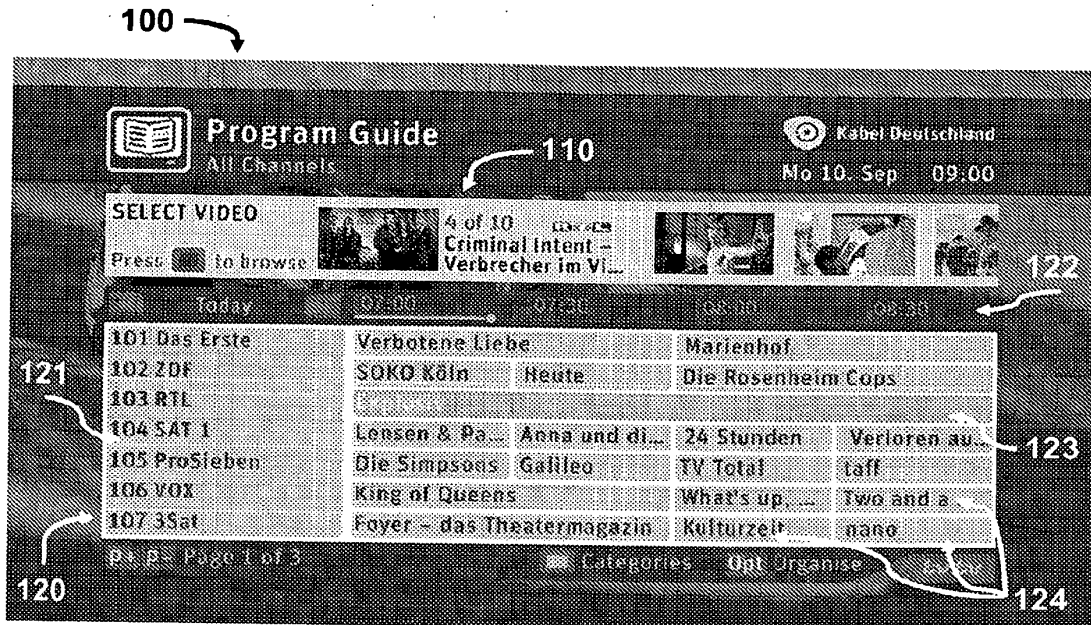


Figure 1a

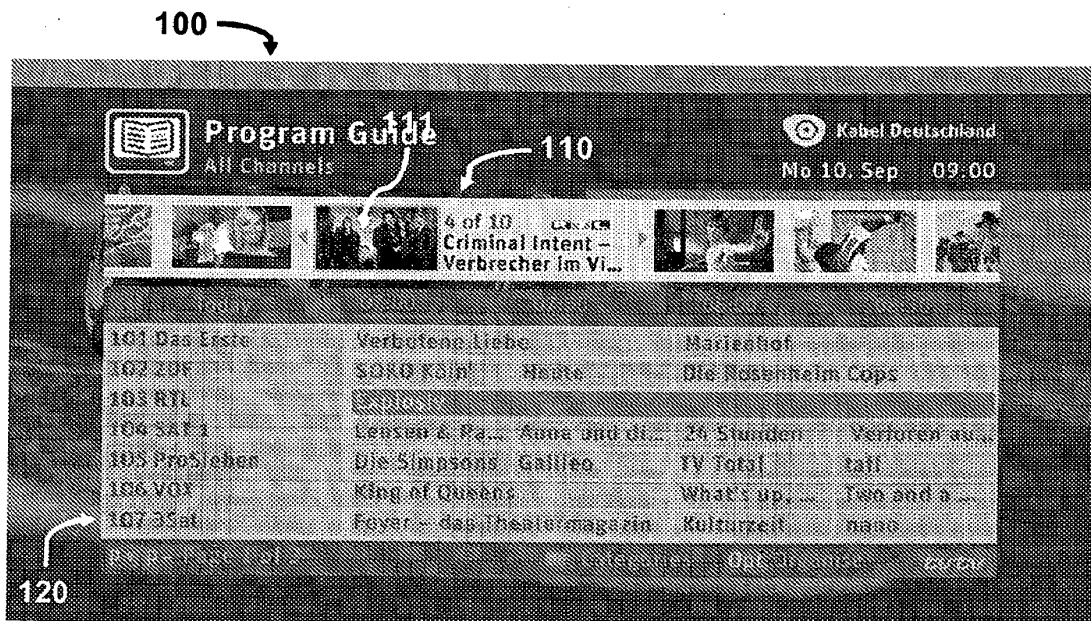


Figure 1b

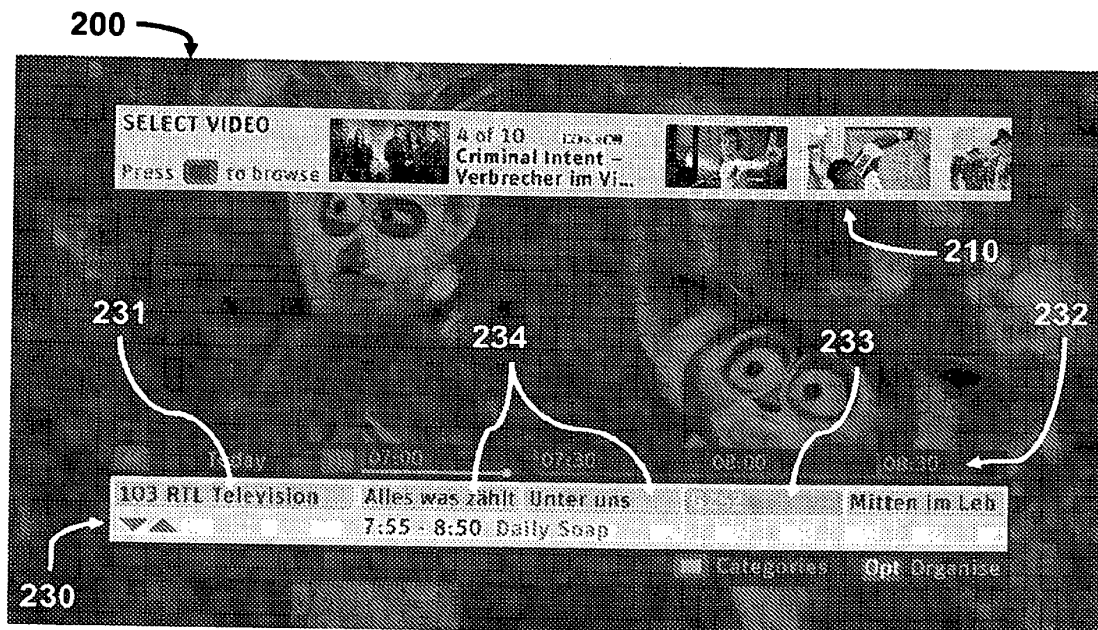


Figure 2a

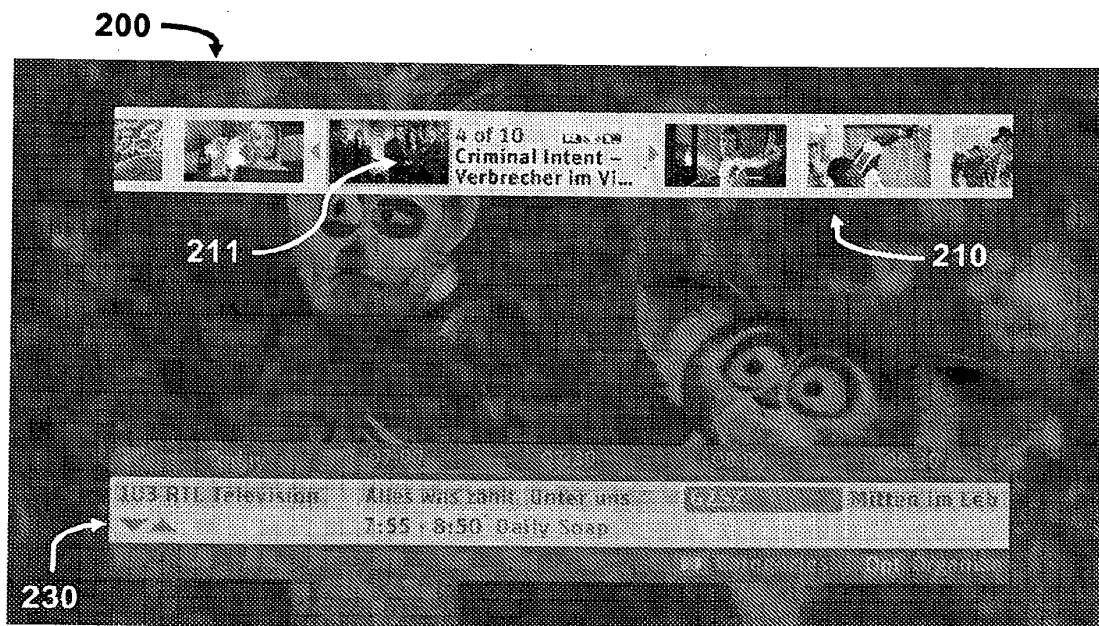


Figure 2b

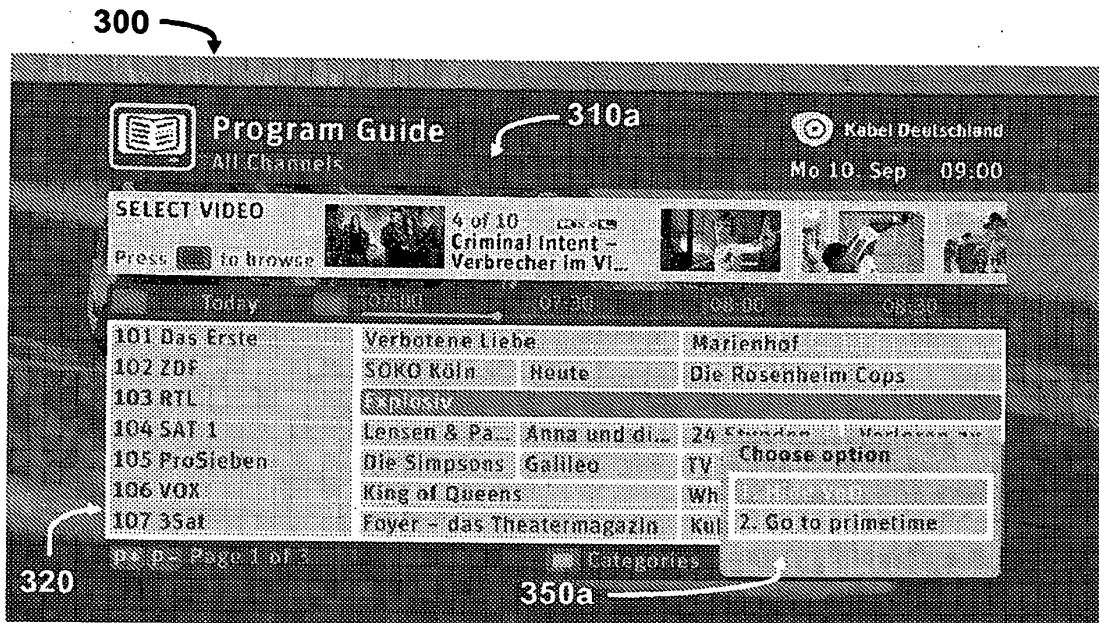


Figure 3a

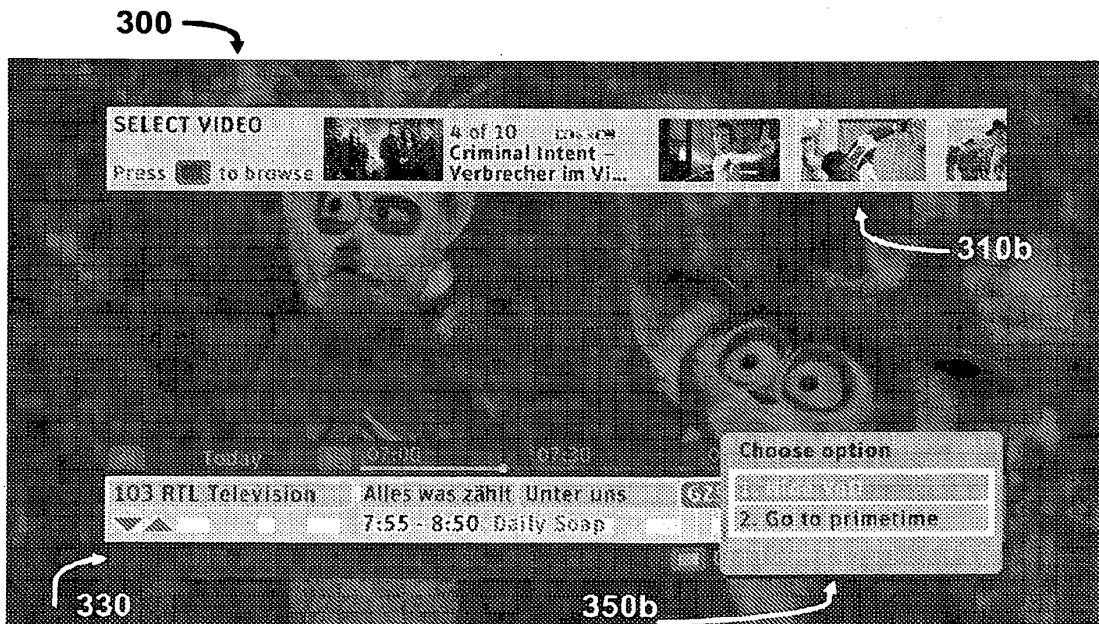


Figure 3b

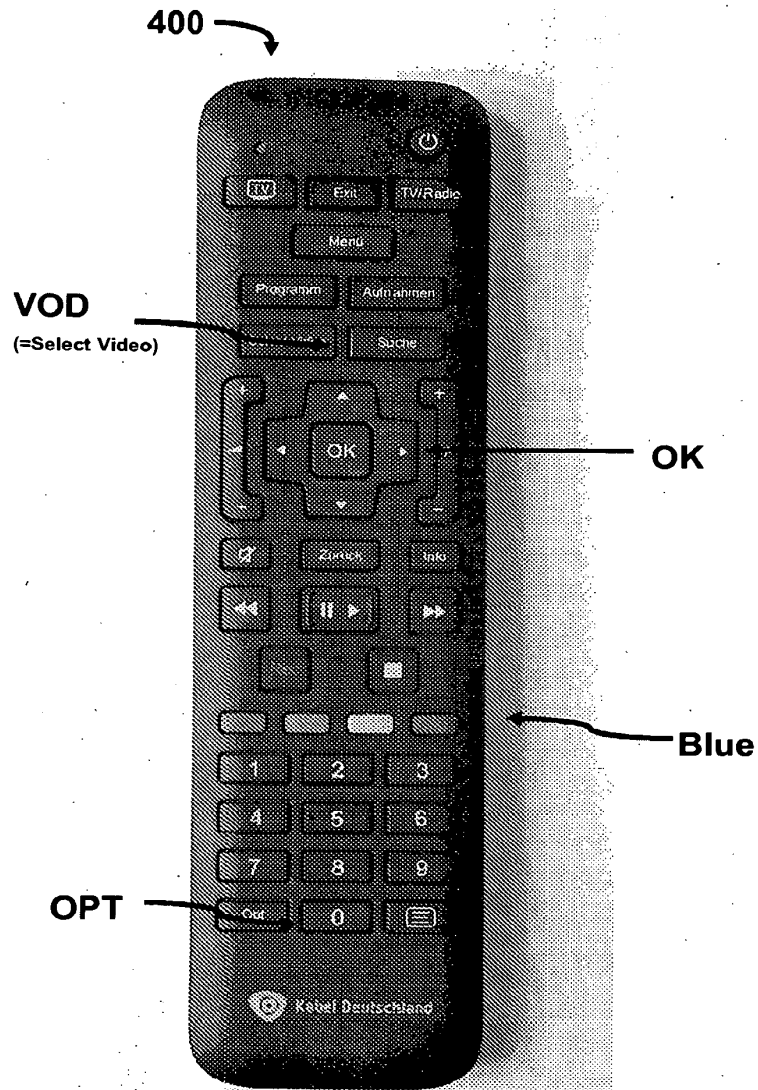


Figure 4

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

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(54) **Display apparatus and method for controlling the display apparatus**

(57) A multifunctional display device includes a processor to control simultaneously display of visual information and monitoring information on a same screen. The monitoring information provides an indication of status of one or more applications executed at a same time the

visual information is displayed, and the visual information corresponds to one of content provider, broadcast signal, or website information.

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of the US provisional application No. 61/391,091, filed on October 8, 2010 and the Korean patent application No. 10-2010-0113792, filed on November 16, 2010, the contents of which are incorporated herein by reference.

BACKGROUND

1. Field

[0002] One or more embodiments described herein related to managing and displaying information on an electronic device.

2. Background

[0003] A display apparatus have been developed which integrate the display of broadcast and internet-related information. Unfortunately, these devices only have a finite amount of memory, which limits their capability. Also, displaying this information requires payment of costly access fees. Improvements are needed to address these and/or other drawbacks.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. 1 shows one embodiment of a broadcasting system.

[0005] FIG. 2 shows another embodiment of a broadcasting system.

[0006] FIG. 3 shows steps for receiving channel information in a display device by accessing a service provider.

[0007] FIG. 4 shows an example of data used in the aforementioned steps.

[0008] FIG. 5 shows an example of a display device.

[0009] FIG. 6 shows another example of a display device.

[0010] FIGS. 7 and 8 show a display device having or coupled to a set-top box.

[0011] FIG. 9 shows a communication procedure performed between a display device and one or more other devices.

[0012] FIG. 10 shows one example of a control module.

[0013] FIG. 11 shows one example of a platform structure for a display device.

[0014] FIG. 12 shows another embodiment of a platform structure.

[0015] FIG. 13 shows steps included in one embodiment of a method for controlling a remote controller of a display device.

[0016] FIG. 14 shows a remote controller for controlling a display device.

[0017] FIG. 15 shows a first example of a user interface for a display device.

[0018] FIG. 16 shows a second example of a user interface for a display device.

[0019] FIG. 17 shows a third example of a user interface for a display device.

[0020] FIG. 18 shows a fourth example of a user interface for a display device.

[0021] FIG. 19 shows a procedure for providing an application monitoring screen on a display device according to any of the aforementioned embodiments or examples.

[0022] FIG. 20 shows one example of a display screen that includes a menu item for enabling a monitoring menu.

[0023] FIGS. 21 and 22 show additional examples of display screens that include menu items for enabling a monitoring menu.

[0024] FIGS. 23 and 24 show examples of display screens that include a transparency setup menu for controlling display of a menu item for a monitoring menu.

[0025] FIG. 25 shows an example of a display screen which allows a position of a menu item to be changed.

[0026] FIG. 26 shows an example of a display screen that includes a menu item for enabling a monitoring menu on a home screen of a smart TV system.

[0027] FIG. 27 shows an example of a screen that includes a monitoring menu displayed on a home screen of a smart TV system.

[0028] FIGS. 28 and 29 show additional examples of display screens that include monitoring menus.

[0029] FIG. 30 shows an example of a display screen that includes a monitoring menu containing billing information.

[0030] FIG. 31 shows an example of a display screen that includes a monitoring menu containing memory use information.

[0031] FIG. 32 shows an example of a display screen that includes a monitoring menu containing billing information.

[0032] FIG. 33 shows an example of a display screen that includes a monitoring menu containing an application execution screen.

[0033] FIGS. 34 to 39 show examples of home screens that may be used to execute various functions of a smart TV system.

[0034] FIGS. 40 to 43 show additional examples of home screens that may be used to execute various functions of a smart TV system.

[0035] FIG. 44 shows one way in which screen switching of a display apparatus may be performed.

[0036] FIG. 45 shows one embodiment of a procedure for automatically enabling a monitoring menu.

[0037] FIG. 46 shows an example of the first level of a monitoring menu.

[0038] FIG. 47 shows an example of a second level of the monitoring menu.

[0039] FIG. 48 shows an example of a third level of a monitoring menu.

[0040] FIG. 49 shows an example of a forcible termination screen.

[0041] FIG. 50 shows another example of a forcible terminal screen

[0042] FIG. 51 shows one embodiment of a forcible termination method.

[0043] FIG. 52 shows one embodiment of a monitoring service method.

[0044] FIG. 53 shows another embodiment of a monitoring service method.

[0045] FIG. 54 is a block diagram illustrating a mobile terminal according to one embodiment of the present invention.

[0046] FIG. 55 is a front perspective view illustrating a mobile terminal according to one embodiment of the present invention.

[0047] FIG. 56 is a rear perspective view illustrating a mobile terminal according to one embodiment of the present invention.

[0048] FIG. 57 is a diagram illustrating a screen of a mobile terminal, in which a monitoring indicator according to one embodiment of the present invention is displayed.

[0049] FIG. 58 is a diagram illustrating a screen of a mobile terminal, in which a monitoring indicator according to another embodiment of the present invention is displayed.

[0050] FIG. 59 is a diagram illustrating a first screen that displays monitoring services according to one embodiment of the present invention;

[0051] FIG. 60 is a diagram illustrating a second screen that displays monitoring services according to one embodiment of the present invention;

[0052] FIG. 61 is a diagram illustrating a third screen that displays monitoring services according to one embodiment of the present invention; and

[0053] FIG. 62 is a diagram illustrating a fourth screen that displays monitoring services according to one embodiment of the present invention.

DETAILED DESCRIPTION

[0054] FIG. 1 shows one embodiment of a broadcasting system which includes a content provider (CP) 10, a service provider (SP) 20, a network provider (NP) 30, and a home network end user (HNED) 40. The HNED 40 corresponds, for example, to a client 100 which is a display device according to one or more of the aforementioned embodiments. The client 100 corresponds to the display device according to one or more of the aforementioned embodiments, wherein examples of the display device include network TV, smart TV, and IPTV.

[0055] The content provider 10 manufactures various contents and provides them. Examples of the content provider 10 include a terrestrial broadcaster, a cable system operator (SO), a multiple system operator (MSO), a satellite broadcaster, and an Internet broadcaster, as illustrated in FIG. 1.

[0056] Also, the content provider 10 may provide various applications in addition to broadcast contents, which will be described in more detail later.

ious applications in addition to broadcast contents, which will be described in more detail later.

[0057] The service provider 20 can provide contents provided by the content provider 10 by service packaging them. For example, the service provider 20 of FIG. 1 can package first terrestrial broadcasting, second terrestrial broadcasting, cable MSO, satellite broadcasting, various kinds of Internet broadcasting, application, etc. and provide the packaged one to a user.

[0058] Also, the service provider 20 may provide a service to the client 100 by using a unicast or multicast mode. The unicast mode is to transmit data between a single transmitter and a single receiver 1:1. In case of the unicast mode, for example, if the receiver requests a server to transmit data, the server can transmit data to the receiver in accordance with the request. The multicast mode is to transmit data to a plurality of receivers of a specific group. For example, the server can transmit data to a plurality of receivers, which are previously registered therewith, at one time. For this multicast registration, IGMP (Internet Group Management Protocol) can be used.

[0059] The network provider 30 may provide a network for providing a service to the client 100. The client 100 may construct a home network end user (HNED) to receive a service.

[0060] In the system of the aforementioned display device, conditional access or content protection can be used to protect contents which are transmitted. For conditional access or content protection, a cable card or downloadable conditional access system (DCAS) can be used.

[0061] In the mean time, the client 100 may provide contents through the network. In this case, the client 100 may be a content provider contrary to the above. The content provider 10 may receive contents from the client 100. In this case, it is advantageous in that bidirectional content service or data service is available.

[0062] FIG. 2 shows another embodiment of a broadcasting system which includes a display device 100. This embodiment is connected with a broadcast network or Internet network. Examples of the display device 100 include network TV, smart TV, and HBBTV.

[0063] The display device 100 includes a broadcast interface 101, a section filter 102, an AIT filter 103, an application data processor 104, a broadcast data processor 111, a media player 106, an Internet protocol processor 107, an Internet interface 108, and a runtime module 109, for example.

[0064] Application information table (AIT) data, a real-time broadcast content, application data, and stream event are received through the broadcast interface 101. In the mean time, the real-time broadcast content may be designated as a linear A/V content.

[0065] The section filter 102 performs section filtering for four kinds of data received through the broadcast interface 101. Then, the section filter 102 transmits AIT data to the AIT filter 103, the linear A/V content to the

broadcast data processor 111, and stream event and application data to the application data processor 104.

[0066] In the mean time, a non-linear A/V content and application data are received through the Internet interface 108. The non-linear A/V content may be content on demand (COD) application, for example.

[0067] The non-linear A/V content is transmitted to the media player 106, and the application data is transmitted to the runtime module 109. The runtime module 109, as illustrated in FIG. 2, includes an application manager and a browser, for example. The application manager controls a lifecycle for an interactive application by using the AIT data. The browser serves to display and process the interactive application.

[0068] FIG. 3 shows steps for receiving channel information in a display device by accessing a service provider. The service provider performs service provider discovery (S301). The display device transmits a service provider (SP) attachment request signal (S302). If SP attachment is finished, the display device receives provisioning information (S303). Moreover, the display device receives a master SI table from the service provider (S304), receives a virtual channel map table (S305), receives a virtual channel description table (S306), and receives a source table (S307).

[0069] Hereinafter, the process steps for receiving channel information will be described in more detail. The service provider discovery may mean that service providers, which provide IPTV related services, discover a service discovery (SD) server that provides information on the service providers.

[0070] For example, three methods for discovering an address list that can receive information (for example, SP discovery information) on the SD server will be provided as follows. First of all, an address previously set by the display device or an address set by a manual operation of the user can be used. Second, a DHCP based SP discovery method can be used. Third, a DNS SRV-based SP discovery method can be used. Also, the display device accesses a server of an address acquired by any one of the above three methods and receives a service provider discovery record that includes information required for service discovery per SP. Then, the display device performs a service search step by using the received service provider discovery record. The above steps can be performed in a push mode or pull mode.

[0071] The display device performs a registration procedure (or service attachment procedure) by accessing the SP attachment server designated by an SP attachment locator of the SP discovery record.

[0072] Moreover, after performing a separate authentication procedure by accessing an SP authentication service server designated by an SP authentication locator, the display device may perform a service authentication procedure. After the service attachment procedure is successfully performed, data transmitted from the server to the display device may be a form of a provisioning information table.

[0073] The display device transmits the data to the service attachment server during the service attachment procedure, wherein the data includes ID and location information of the display device. The service attachment server can define a service subscribed by the display device, based on the received data. Moreover, address information that can acquire service information desired to be received by the display device is provided in the form of the provisioning information table. The address information corresponds to access information of the master SI table. In this case, it is easy to provide a customized service per subscriber.

[0074] The service information includes a master SI table record that manages access information and version on the virtual channel map, a virtual channel map table that provides a package type service list, a virtual channel description table that includes detailed information of each channel, and a source table that includes access information that enables actual access to services.

[0075] FIG. 4 shows an example of data used in the aforementioned steps. The master SI table includes location information that can receive each virtual channel map and version information of each virtual channel map.

[0076] Each virtual channel map is uniquely identified by a virtual channel map identifier, and virtual channel map version represents version information of the virtual channel map. If any one of all tables connected to one another along an arrow starting from the master SI table illustrated in FIG. 4 is changed, version of all upper tables (to reach master SI table) is increased together with increase of the corresponding table. Accordingly, it is advantageous in that the display device can identify change on all SI tables directly by monitoring the master SI table.

[0077] For example, if there is any change of the source table, version of the source table is increased, and version of the virtual channel description table for reference of the source table is also changed. Accordingly, change of a lower table causes change of an upper table, whereby version of the master SI table is finally changed.

[0078] The master SI table may exist per service provider. However, if configuration of the service is varied per location or subscriber (or subscriber group), the service provider is designed to have a plurality of master SI tables, thereby providing a customized service per each unit. In this way, if the service provider is designed, it is possible to efficiently provide a customized service for location of a subscriber and subscription information through the master SI table.

[0079] The virtual channel map table may have one or more virtual channels, and includes location information that can acquire detailed information of the channel without including the detailed information in the virtual channel map. Virtual channel description location of the virtual channel map table indicates location of the virtual channel description table that includes detailed information of the channel.

[0080] The virtual channel description table includes detailed information of the virtual channel, and can access the virtual channel description table by using the virtual channel description location of the virtual channel map table.

[0081] The source table provides access information (for example, IP address, port, AV codec, transport protocol, etc.) per service, wherein the access information is required for actual access to the service.

[0082] The aforementioned master SI table, the virtual channel map table, the virtual channel description table, and the source table are transferred through four flows, which are logically divided from one another, in a push mode or pull mode. In the mean time, the master SI table can be transmitted in a multicast mode for version management, and monitors version change by receiving multicast streaming.

[0083] FIG. 5 shows an example of a display device 700, which includes a network interface 701, a TCP/IP manager 702, a service delivery manager 703, a demultiplexer (Demux) 705, a PSI& (PSIP and/or SI) decoder 704, an audio decoder 706, a video decoder 707, a display A/V and OSD module 708, a service control manager 709, a service discovery manager 710, a metadata manager 712, an SI&Metadata DB 711, a UI manager 714, and a service manager 713.

[0084] The network interface 701 receives packets from a network, and transmits the packets to the network. In other words, the network interface 701 receives services, contents, etc. from the service provider through the network.

[0085] The TCP/IP manager 702 is involved in packets received in the display device 700 and packets transmitted from the display device 700, i.e., packet transfer from the source to the destination. The TCP/IP manager 702 sorts the received packets to correspond to a proper protocol, and outputs the sorted packets to the service delivery manager 705, the service discovery manager 710, the service control manager 709, and the metadata manager 712.

[0086] The service delivery manager 703 takes the role of control of received service data. For example, if the service delivery manager 703 controls real-time streaming data, it can use RTP/RTCP. If the service delivery manager 703 transmits the real-time streaming data by using RTP, it parses the received packets in accordance with RTP and transmits the parsed packets to the demultiplexer 705 or stores the parsed packets in the SI&Metadata DB 711 under the control of the service manager 713. The service delivery manager 703 feeds the received information back to a server, which provides a service, by using RTCP.

[0087] The demultiplexer 705 demultiplexes the received packets to audio, video and PSI (Program Specific Information) data and then transmits the demultiplexed data to the audio decoder 706, the video decoder 707, and the PSI&(PSIP and/or SI) decoder 704, respectively.

[0088] The PSI&(PSIP and/or SI) decoder 704 de-

codes service information such as PSI, for example. Namely, the PSI&(PSIP and/or SI) decoder 704 receives and decodes PSI section, PSIP (Program and Service Information Protocol) section or SI (Service Information) section, which is demultiplexed by the demultiplexer 705.

[0089] Also, the PSI&(PSIP and/or SI) decoder 704 decodes the received sections to make a database for service information, and stores the database for service information in the SI&Metadata DB 711.

[0090] The audio/video decoders 706/707 decode the video data and the audio data, which are received from the demultiplexer 705. The audio data decoded by the audio decoder 706 and the video data decoded by the video decoder 707 are provided to the user through the display 708.

[0091] The UI manager 714 and the service manager 713 manage the whole state of the display device 700, provide a user interface, and manage other managers.

[0092] The UI manager 714 provides a graphic user interface for the user by using an on screen display (OSD), and performs a receiving operation based on a key input from the user. For example, if a key input signal for channel selection is input from the user, UI manager 714 transmits the key input signal to service manager 713.

[0093] The service manager 713 controls managers related to the service, such as the service delivery manager 703, the service discovery manager 710, the service control manager 709, and the metadata manager 712.

[0094] Also, the service manager 713 makes a channel map and selects a channel by using the channel map in accordance with the key input signal received from the UI manager 714. The service manager 713 receives service information of the channel from the PSI&(PSIP and/or SI) decoder 704 and sets audio/video PID (Packet Identifier) of the selected channel in the demultiplexer 705.

[0095] The service discovery manager 710 provides information required to select the service provider that provides services. If a signal related to channel selection is received from the service manager 713, the service discovery manager 710 discovers a corresponding service by using the received information.

[0096] The service control manager 709 takes the role of selection and control of the service. For example, if the user selects a live broadcasting service like the existing broadcasting mode, the service control manager 709 uses IGMP or RTSP. If the user selects a video on demand (VOD) service, the service control manager 709 selects and controls the service by using RTSP. The RTSP protocol can provide a trick mode for real-time streaming. Also, the service control manager 709 can initiate and manage a session through IMC gate by using IMS (IP Multimedia Subsystem) and Session Initiation Protocol (SIP). The above protocols are only exemplary, and other protocols may be used depending on embodiments.

[0097] The metadata manager 712 manages metadata-

ta related to the service and stores the metadata in the SI&Metadata DB 711. The SI&Metadata DB 711 stores the service information decoded by the PSI&(PSIP and/or SI) decoder 704, the metadata managed by the metadata manager 712, and the information required to select the service provider provided by the service discovery manager 710. Also, the SI&Metadata DB 711 may store setup data for the system. The SI&Metadata DB 711 may be implemented by using a NonVolatile RAM (NVRAM) or a flash memory. The IG 750 is a gateway where functions required for access to IMS based IPTV services are gathered.

[0098] FIG. 6 shows another example of a display device 100, which includes a broadcast receiver 105, an external device interface module 135, a memory module 140, a user input interface module 150, a control module 170, a display module 180, an audio output module 185, a power supply module 190, and a camera module (not shown). The broadcast receiver 105 includes a tuner 110, a demodulation module 120, and a network interface module 130. As occasion demands, the broadcast receiver 105 may be designed in such a manner that it includes a tuner 110 and a demodulation module 120 but does not include a network interface module 130.

[0099] On the contrary, the broadcast receiver 105 may be designed in such a manner that it includes a network interface module 130 but does not include a tuner 110 and a demodulation module 120.

[0100] The tuner 110 selects one of RF (radio frequency) broadcast signals received through an antenna, which corresponds to a channel selected by the user or all previously stored channels. Also, the tuner 110 converts the selected RF broadcast signal to an intermediate frequency signal or a baseband video or audio signal.

[0101] For example, if the selected RF broadcast signal is a digital broadcast signal, the tuner 110 converts the selected RF broadcast signal to a digital IF (DIF) signal. If the selected RF broadcast signal is an analog broadcast signal, the tuner 110 converts the selected RF broadcast signal to an analog baseband video or audio signal (CVBS/SIF). In other words, the tuner 110 can process both the digital broadcast signal and the analog broadcast signal. The analog baseband video or audio signal (CVBS/SIF) output from the tuner 110 may directly be input to the control module 170.

[0102] Also, the tuner 110 can receive RF broadcast signal of a single carrier based on an advanced television system committee (ATSC) mode and RF broadcast signal of multiple carriers based on a digital video broadcasting mode (DVB).

[0103] In the mean time, the tuner 110 sequentially selects RF broadcast signals of all broadcast channels stored through a channel memory function from RF broadcast signals received through the antenna, and converts the selected RF broadcast signals to intermediate frequency signals or baseband video or audio signals.

[0104] The demodulation module 120 receives the dig-

ital IF (DIF) signal converted by the tuner 110 and demodulates the received digital IF signal.

[0105] For example, if the digital IF signal output from the tuner 110 is based on the ATSC mode, the demodulation module 120 performs 8-vestigial side band (8-VSB) demodulation, for example. Also, the demodulation module 120 may perform channel decoding. To this end, the demodulation module 120 may include a trellis decoder, a de-interleaver, and a Reed-Solomon decoder to perform trellis decoding, de-interleaving, and Reed-Solomon decoding.

[0106] For example, if the digital IF signal output from the tuner 110 is based on the DVB mode, the demodulation module 120 performs coded orthogonal frequency division modulation (COFDM) demodulation, for example. Also, the demodulation module 120 may perform channel decoding. To this end, the demodulation module 120 may include a convolution decoder, a de-interleaver, and a Reed-Solomon decoder to perform convolution decoding, de-interleaving, and Reed-Solomon decoding.

[0107] The demodulation module 120 can output a stream signal (TS) after performing demodulation and channel decoding. At this time, the stream signal may be a signal where a video signal, an audio signal and a data signal are multiplexed. For example, the stream signal may be MPEG-2 Transport Stream (TS) where a video signal of an MPEG-2 specification and an audio signal of Dolby AC-3 specification are multiplexed. Specifically, the MPEG-2 TS may include a 4 byte header and 184 byte payload.

[0108] The aforementioned demodulation module 120 may be provided separately depending on the ATSC mode and the DVB mode. Namely, an ATSC demodulation module and a DVB demodulation module may be provided separately.

[0109] The stream signal output from the demodulation module 120 may be input to the control module 170. The control module 170 performs demultiplexing, video/audio signal processing, etc. and then outputs video to the display module 180 and audio to the audio output module 185.

[0110] The external device interface module 135 may connect an external device to the display device 100. To this end, external device interface module 135 may include an A/V input/output unit (not shown) or a wireless communication unit (not shown).

[0111] The external device interface module 135 is connected to external devices such as Digital Versatile Disks (DVD), Blu-rays, game devices, cameras, camcorders, computers (e.g., notebook computers), etc. through wire/wireless cables. The external device interface module 135 transmits a video, audio, or data signal externally input through an external device connected thereto, to the control module 170 of the display device 100. Also, the external device interface module 135 outputs the video, audio or data signal processed by the control module 170 to the external device. To this end, the external device interface module 135 may include an

A/V input/output unit (not shown) or a wireless communication unit (not shown).

[0112] The A/V input/output unit of the external input circuit may include a USB terminal, a composite Video Banking Sync (CVBS) terminal, a component terminal, an S-video terminal (analog), a Digital Visual Interface (DVI) terminal, a High Definition Multimedia Interface (HDMI) terminal, an RGB terminal, a D-SUB terminal, etc., to input video and audio signals of the external device to the display device 100.

[0113] The wireless communication unit may perform a short-distance wireless communication with other electronic devices. For example, communication standards such as Bluetooth, Radio Frequency Identification (RFID), infrared Data Association (IrDA), Ultra Wideband (UWB), ZigBee, Digital Living Network Alliance (DLNA), etc. can be used for the short-distance wireless communication, whereby network connection between the display device 100 and other electronic devices can be performed.

[0114] In addition, the external device interface module 135 may be connected to various set-top boxes through at least one of the above-mentioned various terminals to perform input/output operation with the set-top boxes.

[0115] Also, the external device interface module 135 receives an application of a neighboring external device or list of applications and transmits the received application or the list of applications to control module 170 or the memory module 140.

[0116] The network interface module 130 provides interface for connecting the display device 100 with wire/wireless networks including Internet network. The network interface module 130 may include an Ethernet terminal, for example, for wire network connection. Also, for example, Wireless LAN (WLAN)(Wi-Fi), Wireless broadband (Wibro), World Interoperability for Microwave Access (Wimax), High Speed Downlink Packet Access (HSDPA) can be used for the wireless network connection.

[0117] The network interface module 130 transmits or receives data to and from other users or other electronic devices through a network connected thereto or another network linked on the connected network. In particular, the network interface module 130 can transmit some contents data stored in the display device 100 to a user or electronic device selected from other users or electronic devices previously registered with the display device 100.

[0118] In the mean time, the network interface module 130 can access a predetermined web page through a network connected thereto or another network linked on the connected network. In other words, the network interface module 130 can transmit or receive data to and from a corresponding server by accessing the predetermined web page through the corresponding network. In addition, the network interface module 130 can receive contents or data provided by the content provider or the network operator.

[0119] In other words, the network interface module 130 can receive contents such as movies, advertisements, games, VOD, broadcast signals, etc. and related information, which are provided from the content provider or the network provider through the network. Also, the network interface module 130 can receive update information and update files of firmware provided by the network operator. Moreover, the network interface module 130 can transmit data to the Internet or content provider or the network operator.

[0120] Furthermore, the network interface module 130 can selectively receive a desired one of contents open to the public, through the network. Also, the network interface module 130 can transmit or receive contents or data of a list of contents to and from a predetermined server through the network.

[0121] The memory module 140 may store a program for processing and controlling each signal of the control module 170, or may store the processed video, audio or data signal. Also, the memory module 140 may temporarily store the video, audio or data signal input from the external device interface module 135 or the network interface module 130. The memory module 140 may store information on a predetermined broadcast channel through a channel memory function.

[0122] Also, the memory module 140 may store the application or the list of applications input from the external device interface module 135 or the network interface module 130.

[0123] Also, the memory module 140 may store the contents or the list of contents input from the external device interface module 135 or the network interface module 130.

[0124] For example, the memory module 140 may include a storage medium of at least one type of a flash memory type, a hard disk type, a multimedia card micro type, a card type memory (for example, SD or XD memory), RAM and ROM (EEPROM, etc.) The display device 100 can play contents files (moving picture files, still image files, music files, application files, etc.) stored in the memory module 140 to provide the played contents files to the user.

[0125] Although FIG. 6 illustrates that the memory module 140 and the control module 170 are provided separately, the embodiments described herein are not to be limited by the embodiment of FIG. 6. The memory module 140 may be included in the control module 170.

[0126] The user input interface module 150 transmits the signal input by the user to the control module 170 or transmits the signal from the control module 170 to the user. For example, the user input interface module 150 may receive a control signal such as power on/off, channel selection and screen setup from the remote controller 200 or transmit the control signal from the control module 170 to the remote controller 200 in accordance with various communication modes such as RF communication mode and IR communication mode.

[0127] Also, for example, the user input interface mod-

ule 150 may transmit a control signal input by a local key (not shown) such as a power key, a channel key, a volume key, and a setup key to the control module 170.

[0128] Also, for example, the user input interface module 150 may transmit a control signal input by a sensing unit (not shown), which senses gesture of the user, to the control module 170, or may transmit the signal from the control module 170 to the sensing unit. In this case, the sensing unit may include a touch sensor, an audio sensor, a position sensor, an action sensor, etc.

[0129] Also, for synchronization and search of the contents stored in the display device, the user input interface module 150 may receive predetermined synchronization target content, a selection signal of the display device for synchronization, a content keyword, and a synchronization command from the user.

[0130] The control module 170 demultiplexes an input stream and processes the demultiplexed stream through the tuner 110, the demodulation module 120 or the external device interface module 130 to generate and output a signal for a video and audio output.

[0131] The video signal processed by the control module 170 may be input to the display module 180, so that the video signal may be displayed as image corresponding to the video signal. Also, the video signal processed by the control module 170 may be input to the external output device through the external device interface module 135.

[0132] The video signal processed by the control module 170 may be output to the audio output module 185. Also, the video signal processed by the control module 170 may be input to the external output device through the external device interface module 135.

[0133] Although not shown in FIG. 6, the control module 170 may include a demultiplexer and a video processor, which will be described later with reference to FIG. 10. In addition, the control module 170 controls overall operations of the display device 100. For example, the control module 170 may control the tuner 110 to tune RF broadcasting corresponding to the channel selected by the user or the previously stored channel.

[0134] Also, the control module 170 may control the display device 100 through a user command input through the user input interface module 150 or its internal program. In particular, the control module 170 may allow the user to access the network and download a desired application or a list of desired applications into the display device 100.

[0135] For example, the control module 170 controls the tuner 110 to input a signal of a channel selected in accordance with a predetermined channel selection command received through the user input interface module 150, and processes a video, audio or data signal of the selected channel. The control module 170 may allow the channel information selected by the user to be output through the display module 180 or the audio output module 185 together with the processed video or audio signal.

[0136] For another example, the control module 170

may allow a video signal or an audio signal from an external device, for example, camera or camcorder, which is input through the external device interface module 135, to be output through the display module 180 or the audio output module 185 in accordance with an external device video play command received through the user input interface module 150.

[0137] Also, the control module 170 may control the display device 100 through a user command input through the user input interface module 150 or its internal program. In particular, the control module 170 may allow the user to access the network and download a desired content or a list of contents into the display device 100.

[0138] The control module 170 may control the display module 180 to display video. For example, the control module 170 may control the display module 180 to display broadcasting image input through the tuner 110, external input image input through the external device interface module 135, image input through the network interface module, or image stored in the memory module 140. At this time, the image displayed in the display module 180 may be still image or moving image, and may be 2D image or 3D image.

[0139] If the control module 170 enters a contents viewing list, it may control the display module to display contents or a list of contents that can be downloaded in the display device 100 or from the external network.

[0140] Also, control module 170 may play contents. At this time, the contents may be contents stored in the display device 100, received broadcasting contents, or externally input contents. The contents may be at least one of broadcasting image, external input image, audio files, still image, accessed web screen, and document files.

[0141] According to one embodiment, the control module 170 may control the display module 180 to display a home screen in accordance with an input of movement to home screen.

[0142] The home screen may include a plurality of card objects sorted per content source. The card object may include at least one of a card object representing a thumbnail list of a broadcast channel, a card object representing a broadcast guide list, a card object representing a broadcasting reservation list or a broadcasting recording list, and a card object representing a media list within the display device or another device connected with the display device. Also, the card object may further include at least one of a card object representing a list of accessed external devices and a card object representing a list related with calls.

[0143] Also, the home screen may further include an application menu provided with at least one executable application list.

[0144] If there is an input of card object movement, the control module 170 may control the display module 180 to display the corresponding card object through movement or move a card object not displayed in the display module 180 to the display module 180.

[0145] If a predetermined one of a plurality of card ob-

jects in the home screen is selected, the control module 170 may control the display module 180 to display image corresponding to the corresponding card object.

[0146] In the mean time, the control module 170 may control the display module 180 to display received broadcasting image and an object representing corresponding broadcasting image information in the card object displaying broadcasting image. The control module 170 may control the broadcasting image such that the size of the broadcasting image may be fixed by lock.

[0147] The control module 170 may control the display module 180 to display a setup object for at least one of video setup, audio setup, reservation setup, pointer setup of the remote controller, and network setup in the home screen.

[0148] The control module 170 may control the display module 180 to display an object of login, help message, or exit in a part of the home screen.

[0149] The control module 170 may control the display module 180 to display an object representing the number of all card objects or representing the number of card objects displayed in the display module 180 in a part of the home screen.

[0150] If a card object name of a predetermined one of card objects displayed in the display module 180 is selected, the control module 170 may control the display module 180 to display the corresponding card object as the whole screen.

[0151] Also, if an incoming call signal is received in the accessed external device or the display device, the control module 170 may control the display module 180 to focus and display a call related card object of a plurality of card objects or move the call related card object into the display module 180.

[0152] If the control module 170 enters an application viewing list, it may display an application or a list of applications that can be downloaded in the display device 100 or from the external network.

[0153] The control module 170 may control installation or driving of the application downloaded from the external network together with various user interfaces. Also, the control module 170 may control the display module 180 to display image related to the application implemented by selection of the user.

[0154] Although not shown, a channel browsing processor that generates thumbnail image corresponding to a channel signal or external input signal may further be provided.

[0155] The channel browsing processor extracts image from the stream signal (TS) output from the demodulation module 120 or the stream signal output from the external device interface module 135 to generate thumbnail image. The thumbnail image may be input to the control module 170 as it is or encoded. Also, the generated thumbnail image may be encoded in a stream format and then input to the control module 170. Therefore, the control module 170 may display a thumbnail list that includes a plurality of thumbnail images, by using the input

thumbnail image. The thumbnail images of the thumbnail list may be updated in due order or at the same time. Then, the user can simply recognize contents of a plurality of broadcast channels.

[0156] According to one embodiment, for synchronization of contents of the display device, if contents for synchronization and a selection signal of the display device for synchronization are received from the user through the user input interface module 150, the control module 170 transmits the selection signal to a predetermined server through the network interface module 130. If a comparison result of the list of contents is received from the server, the control module 170 transmits the contents corresponding to the comparison result to the server.

[0157] According to another embodiment, if contents for synchronization are received from the predetermined server through the network interface module 130, the control module 170 outputs a list of the received contents through the display module 180. If a synchronization confirmation command for the received contents is input from the user through the user input interface module 150, the control module 170 controls the memory module 140 to update the list of contents of memory module 140.

[0158] Also, if contents for synchronization are received from the predetermined server through the network interface module 130, the control module 170 outputs a notification message to a predetermined zone of the display module 180. If a confirmation command for the received contents is input from the user through the user input interface module 150, the control module 170 controls the display module 180 to output a list of the received contents.

[0159] Also, the control module 170 may control the display module 180 to output the notification message together with image data corresponding to the received contents or information on the number of the received contents.

[0160] The control module 170 may control the memory module 140 such that the list of the received contents may additionally include contents previously stored in the memory module 140. Also, the control module 170 may control the display module to respectively display the received contents and the contents previously stored in the memory module.

[0161] According to another embodiment, if a content search keyword and a selection signal of the display device for search are received from the user through the user input interface module 150, the control module 170 transmits the received search information to a predetermined server through the network interface module 130 and receives the search result from the server through the network interface module 130.

[0162] The display module 180 converts the video, data and OSD signals processed by the control module 170 or the video and data signals received from the external device interface module 135 to R, G, B signals, respectively, to generate driving signals.

[0163] Examples of the display module 180 may include PDP, LCD, OLED, flexible display, and 3D display. A touch screen may be used as the display module 180, whereby the display module may be used as an input module as well as an output module.

[0164] According to one embodiment, the display module 180 may output a user interface that includes contents or a list of contents for synchronization, which are stored in the memory module 140 for synchronization and search of contents, a contents synchronization menu, a synchronization notification message, and a contents search menu.

[0165] The audio output module 185 receives the signal audio-processed by the control module 170, for example, stereo signal, 3.1 channel signal or 5.1 channel signal, and outputs the received signal as sound. Various types of speakers may be used as the audio output module 185.

[0166] To sense gesture of the user, the display device 100 may further include a sensing unit (not shown) that includes at least one of a touch sensor, an audio sensor, a position sensor, and an action sensor, as described above. The signal sensed by the sensing unit may be transmitted to the control module 170 through the user input interface module 150.

[0167] The display device 100 may further include a camera module (not shown) that takes a user. Image information taken by the camera module may be input to the control module 170.

[0168] The control module 170 may sense gesture of the user by using the image taken from the camera module (not shown) and the signal sensed from the sensing unit, respectively or in combination.

[0169] The power supply module 190 supplies the corresponding power to the whole portion of the display device 100. In particular, the power supply module 190 can supply the power to the control module 170 that can be implemented in the form of a system on chip (SOC), the display module 180 for image display, and the audio output module 185 for audio output.

[0170] To this end, the power supply module 190 may further include a converter (not shown) that converts alternating current to direct current. In the mean time, if the display module 180 is implemented as a liquid crystal panel that includes a plurality of back light lamps, for example, for luminance variable or dimming driving, the power supply module 190 may further include an inverter (not shown) that enables PWN operation.

[0171] The remote controller 200 transmits a user input to the user input interface module 150. To this end, the remote controller 200 can use Bluetooth, Radio Frequency (RF) communication, infrared (IR) communication, Ultra Wideband (UWB), ZigBee, etc. Also, the remote controller 200 can receive the video, audio or data signal output from the user input interface module 150 to display the received signal or output audio or vibration.

[0172] The aforementioned display device 100 may be a fixed type digital broadcast receiver that can receive at

least one of digital broadcasting of ATSC mode (8-VSB mode), digital broadcasting of DVB-T mode (COFDM mode), and digital broadcasting of ISDB-T mode (BST-OFDM mode).

[0173] The block diagram illustrated in FIG. 2 corresponds to but one of a plurality of embodiments. The respective elements of the block diagram may be incorporated, added or omitted depending on options of the display device 100 which is actually implemented. In other words, two or more elements may be incorporated into one element, or one element may be divided into two or more elements, as occasion demands.

[0174] Unlike the embodiment in FIG. 6, the display device 100 may receive and play video contents through the network interface module 130 or the external device interface module 135 without the tuner 110 and the demodulation module 120 illustrated in FIG. 6.

[0175] The display device 100 is an example of a video processor that performs signal processing of video stored therein or input video. Another examples of the video signal processor include a set-top box that excludes the display module 180 and the audio output module 185 illustrated in FIG. 6, the aforementioned DVD player, a blu-ray player, a game device, and a computer. Hereinafter, the set-top box will be described with reference to FIG. 7 and FIG. 8.

[0176] FIGS. 7 and 8 show a display device having or coupled to a set-top box. Referring to FIG. 7, a set-top box 250 and a displayer 300 can transmit or receive data through a wire or wireless cable.

[0177] The set-top box 250 includes a network interface module 255, a memory module 258, a signal processor 260, a user input interface module 263, and an external device interface module 265.

[0178] The network interface module 255 provides an interface for connection with wire/wireless network including Internet network. Also, the network interface module 255 transmits or receives data to and from other users or other electronic devices through a network connected thereto or another network linked on the connected network.

[0179] The memory module 258 may store a program for processing and controlling each signal of the signal processor 260, or may temporarily store the video, audio or data signal input from the external device interface module 265 or the network interface module 255. Also, the memory module 258 may store a platform illustrated in FIG. 11 and FIG. 12 which will be described later.

[0180] The signal processor 260 performs signal processing of an input signal. For example, the signal processor 260 may demultiplex or decode the input video signal, or may demultiplex or decode the input audio signal. To this end, the signal processor 260 may further include a video decoder or an audio decoder. The video signal or audio signal subjected to signal processing can be transmitted to the displayer 300 through the external device interface module 265.

[0181] The user input interface module 263 transmits

the signal input by the user to the signal processor 260 or transmits the signal from the signal processor 260 to the user. For example, the user input interface module 263 may receive various control signals such as power on/off, action input and setup input, which are input by a local key (not shown) or a remote controller 200, to transmit the control signals to the signal processor 260.

[0182] The external device interface module 265 provides an interface for transmitting or receiving data to and from an external device connected thereto through a wire or wireless cable. In particular, the external device interface module 265 provides an interface for transmitting or receiving data to and from the displayer 300. In addition, the external device interface module 265 may provide an interface for transmitting or receiving data to and from external devices such as game devices, cameras, camcorders, computers (e.g., notebook computers), etc.

[0183] In the mean time, the set-top box 250 may further include a media input module (not shown) for playing separate media. An example of the media input module includes a blu-ray input module (not shown). In other words, the set-top box 250 may include a blu-ray player. Media of the input blu-ray disk are subjected to signal processing such as demultiplexing or decoding by the signal processor 260 and then transmitted to the displayer 300 through the external device interface module 265, whereby the media are displayed in the displayer 300.

[0184] The displayer 300 includes a tuner 270, an external device interface module 273, a demodulation module 275, a memory module 278, a control module 280, a user input interface module 283, a display module 290, and an audio output module 295.

[0185] Since the tuner 270, the demodulation module 275, the memory module 278, the user input interface module 283, the display module 290, and the audio output module 295 correspond to the tuner 110, the demodulation module 120, the memory module 140, the user input interface module 150, the display module 180, and the audio output module 185, which are illustrated in FIG. 6, their description will be omitted.

[0186] The external device interface module 273 provides an interface for transmitting or receiving data to and from an external device connected thereto through a wire or wireless cable. In particular, the external device interface module 273 provides an interface for transmitting or receiving data to and from the set-top box 250.

[0187] Accordingly, the video signal or audio signal input through the set-top box 250 is output to the display module 180 or the audio output module 185 through the control module 170.

[0188] Referring to FIG. 8, the set-top box 250 and the displayer 300 are similar to those illustrated in FIG. 7 but are different from those illustrated in FIG. 7 in that the tuner 270 and the demodulation module 275 are located in the set-top box 250 not the displayer 300. Hereinafter, the set-top box 250 and the displayer 300 of FIG. 8 will be described based on the difference from FIG. 7.

[0189] The signal processor 260 performs signal processing of a broadcast signal received through tuner 270 and demodulation module 275. Also, the user input interface module 263 receives an input signal of channel selection, channel storage, etc.

[0190] FIG. 9 shows a communication procedure performed between a display device and one or more other devices. As illustrated in FIG. 9, display device 100 can perform communication with a broadcasting station 210, a network server 220, or an external device 230.

[0191] The display device 100 receives a broadcast signal that includes a video signal transmitted from the broadcasting station 210. The display device 100 processes the video signal included in the broadcast signal and audio or data signal to be appropriately output from the display device 100. The display device 100 outputs video or audio based on the processed signal.

[0192] In the mean time, the display device 100 can perform communication with the network server. The network server 220 can transmit and receive a signal to and from the display device 100 through a random network. For example, the network server 220 may be a portable terminal that can be connected with the display device 100 through a wire or wireless base station. Also, the network server 220 may be a device that can provide contents to the display device 200 through Internet network. The content provider can provide contents to the display device by using the network server.

[0193] The display device 100 can perform communication with the external device 230. The external device 230 can directly transmit and receive a signal to and from the display device 100 through a wire or wireless cable. For example, the external device 230 may be a media memory device or a media player, which is used by the user. In other words, the external device 230 corresponds to a camera, a DVD player, a blu-ray player, or a personal computer.

[0194] The broadcasting station 210, the network server 220 or the external device 230 can transmit a signal, which includes a video signal, to the display device 100. The display device 100 can display video based on the video signal included in the input signal. Also, the display device 100 can transmit the signal, which is transmitted from the broadcasting station 210 or the network server 220 to the display device 100, to the external device 230. Also, the display device 100 can transmit the signal, which is transmitted from the external device 230 to the display device 100, to the broadcasting station 210 or the network server 220. In other words, the display device 100 serves to directly play and transmit the contents included in the signal transmitted from the broadcasting station 210, the network server 220 and the external device 230.

[0195] FIG. 10 shows one example of a control module which, for example, may be included in FIG. 6. The control module 170 includes a demultiplexer 310, a video processor 320, an OSD generator 340, a mixer 350, a frame rate converter 355, and a formatter 360. The con-

trol module 170 may further include an audio processor (not shown) and a data processor (not shown).

[0196] The demultiplexer 310 demultiplexes input streams. For example, if MPEG-2 TS is input, the demultiplexer 310 demultiplexes the MPEG-2 TS and splits the demultiplexed MPEG-2 TS into a video signal, an audio signal and a data signal. In this case, the stream signal input to the demultiplexer 310 may be the stream signal output from the tuner 110, the demodulation module 120, or the external device interface module 135.

[0197] The video processor 320 can process the demultiplexed video signal. To this end, the video processor 320 includes a video decoder 325 and a scaler 335.

[0198] The video decoder 325 decodes the demultiplexed video signal, the scaler 335 performs scaling to output resolution of the decoded video signal through the display module 180.

[0199] The video decoder 325 may include decoders having various specifications. For example, if the demultiplexed video signal is an encoded video signal of the MPEG-2 specification, it may be decoded by an MPEG-2 decoder.

[0200] Also, for example, if the demultiplexed video signal is an encoded video signal of the H.264 specification based on a Digital Multimedia Broadcasting (DMB) mode or DVB-H mode, it may be decoded by an H.264 decoder.

[0201] The video signal decoded by video processor 320 is input to mixer 350.

[0202] The OSD generator 340 generates an OSD signal in accordance with input of the user or by itself. For example, the OSD generator 340 may generate a signal for displaying various kinds of information on the screen of the display module 180 in the form of graphic or text based on the control signal from the user input interface module 150. The generated OSD signal may include various data such as a user interface screen of the display device 100, a screen of various menus, widget, and icon.

[0203] For example, the OSD generator 340 may generate a signal for displaying broadcast information based on EPG or caption of broadcast video.

[0204] The mixer 350 mixes the OSD signal generated by the OSD generator 340 with the decoded video signal processed by the video processor 220. The mixed signal is provided to the formatter 360. As the decoded broadcast video signal or the external input signal is mixed with the OSD signal, the OSD may be overlaid on the broadcast video or the external input video.

[0205] The frame rate converter (FRC) 355 converts a frame rate of the input video. For example, the frame rate converter 355 converts a frame rate of 60Hz to a frame rate of 120Hz or 240Hz. If the frame rate converter 355 converts the frame rate of 60Hz to the frame rate of 120Hz, a first frame may be inserted between another first frame and the second frame, or a third frame predicted from the first frame and the second frame may be inserted between the first frame and the second frame. If the frame rate converter 355 converts the frame rate

of 60Hz to the frame rate of 240Hz, three same frames may be inserted between another first frame and the second frame, or the third frame predicted from the first frame and the second frame may be inserted between the first frame and the second frame. In the mean time, the input frame rate may be maintained without separate conversion.

[0206] The formatter 360 receives an output signal of the frame rate converter 355, changes a format of the signal to conform to the display module 180, and then outputs the changed format. For example, the formatter 360 may output R, G, B data signals. The R, G, B data signals may be output by low voltage differential signaling (LVDS) or mini-LVDS.

[0207] In the mean time, the audio processor (not shown) in the control module 170 may perform audio processing of the demultiplexed audio signal. To this end, the audio processor may include various decoders.

[0208] If the demultiplexed audio signal is an encoded audio signal, the audio processor in the control module 170 may decode the encoded audio signal. For example, the demultiplexed audio signal may be decoded by an MPEG-2 decoder, MPEG-4 decoder, AAC decoder, or AC-3 decoder.

[0209] Also, the audio processor in the control module 170 can process base, treble and sound volume control.

[0210] The data processor (not shown) in the control module 170 can perform data processing of the demultiplexed data signal. If the demultiplexed data signal is an encoded data signal, the data processor in the control module 170 may decode the encoded data signal. The encoded data signal may be electronic program guide (EPG) information that includes broadcast information such as start time and end time of a broadcast program broadcasted from each channel. For example, the EPG information may be ATSC-Program and System information protocol (ATSC-PSIP) information in case of the ATSC mode, and may include DVB-Service Information (DVB-SI) in case of the DVB mode.

[0211] The ATSC-PSIP information or the DVB-SI information may be information included in the aforementioned stream, i.e., a header (4 byte) of the MPEG-2 TS.

[0212] In the mean time, since the block diagram of the control module 170 illustrated in FIG. 10 is for one embodiment, other modules may be added to the respective elements of the block diagram in accordance with the needs of those skilled in the art, or some of the modules or elements illustrated in FIG. 10 may be omitted.

[0213] FIG. 11 shows one example of a platform structure for a display device, and FIG. 12 shows another embodiment of a platform structure. A platform of any one of the display devices according to one or more embodiments may include OS based software to perform the aforementioned various operations.

[0214] Referring to FIG. 11, a platform of any one of the display devices according to one or more embodiments is a split-type platform and can be designed in such a manner that it is split into a legacy system platform

400 and a smart system platform 405. An OS kernel 410 may be used in common for the legacy system platform 400 and the smart system platform 405.

[0215] The legacy system platform 400 includes a driver 420 on the OS kernel 410, a middleware 430, and an application layer 450.

[0216] The smart system platform 405 includes a library 435 on the OS kernel 410, a framework 440, and an application layer 455.

[0217] The OS kernel 410 is a core of the operating system, and can perform at least one of driving of a hardware driver, security of hardware and processor in the display device, efficient management of system resources, memory management, interface for hardware based on hardware abstraction, multi-process, and schedule management based on multi-process when the display device is driven. In the mean time, the OS kernel 410 may further perform power management.

[0218] The hardware driver in the OS kernel 410, for example, may include a display driver, a Wi-Fi driver, a Bluetooth driver, a USB driver, an audio driver, a power manager, a binder driver, and a memory driver.

[0219] Also, the hardware driver in the OS kernel 410 may further include a character device driver, a block device driver, and a network device driver as drivers for hardware devices therein. The block device driver may need a buffer equivalent to unit size in accordance with data transmission of a specific block unit. The character device driver may not need a buffer due to data transmission in a basic data unit, i.e., character unit.

[0220] As described above, the OS kernel 410 can be implemented as the kernel based on various operating systems such as unix (linux) based operating system and window based operating system. Also, the OS kernel 410 is an opened OS kernel, and can be used generally by other electronic devices.

[0221] The driver 420 is located between the OS kernel 410 and the middleware 430, and drives the device for operation of the application layer 450 together with the middleware 430. For example, the driver 420 may include drivers such as a micom in the display device, a display module, a graphic processing unit (GPU), a frame rate converter (FRC), a general purpose input/output pin (GPIO), HDMI, system decoder or demultiplexer (SDEC), video decoder (VDEC), audio decoder (ADEC), a personal video recorder (PVR), and an inter-integrated circuit (I2C). These drivers interact with the hardware driver in the OS kernel 410.

[0222] Also, the driver 420 may further include a driver of a remote controller 200, especially a spatial remote controller which will be described later. The driver of the spatial remote controller may be provided in the OS kernel 410 or the middleware 430 in addition to the driver 420.

[0223] The middleware 430 is located between the OS kernel 410 and the application layer 450, and serves as a medium that allows data to be exchanged between hardware and software. In this case, a standardized in-

terface can be provided, various environments can be supported, and mutual interaction between tasks of different systems can be performed.

[0224] Examples of the middleware 430 in the legacy system platform 400 include data broadcasting related middleware, i.e., multimedia and hypermedia information coding experts group (MHEG) middleware and advanced common application platform (ACAP) middleware, broadcast information related middleware, i.e., PSIP middleware and SI middleware, and peripherals communication related middleware, i.e., DLNA middleware.

[0225] The application layer 450 on the middleware 430, namely the application layer 450 in the legacy system platform 400 may include a user interface application on various menus in the display device. The application layer 450 on the middleware 430 can be edited by selection of the user, and can be updated through the network. This application layer 450 enables the user to input a desired menu of various user interfaces in accordance with input of the remote controller during viewing broadcasting image.

[0226] Also, the application layer 450 in the legacy system platform 400 may further include at least one of TV guide application, Bluetooth application, reservation application, digital video recorder (DVR) application, hot key application.

[0227] In the mean time, the library 435 in the smart system platform 405 is located between the OS kernel 410 and the framework 440, and can form the base of the framework 440. For example, the library 435 includes security library, web engine library and media library, wherein the security library includes secure socket layer (SSL), the web engine library includes WebKit, libc (c library), and video and audio formats, and the media library includes media framework. The library 435 can be made based on C or C++, and can be exposed to a developer through the framework 440.

[0228] The library 435 may include a runtime 437 that includes a core java library and a virtual machine (VM). The runtime 437 forms the base of the framework 440 together with the library 435.

[0229] The virtual machine (VM) may be a virtual machine that enables a plurality of instances, i.e., multi-tasking. The virtual machine (VM) may be allocated in accordance with each application in the application layer 455. At this time, for schedule adjustment and interconnection between the plurality of instances, the binder driver (not shown) in the OS kernel 410 may be driven.

[0230] The binder driver and runtime 437 can connect java based application with C based library.

[0231] The binder driver and the runtime 437 can correspond to middleware of the legacy system.

[0232] The framework 440 in the smart system platform 405 includes a program based on the application in the application layer 455. The framework 440 is compatible with any one of the applications and enables reuse, movement or exchanges of components. The framework 440 may include a support program, and a program that

compiles other software elements. For example, the framework 440 may include a resource manager, an activity manager related to activities of the application, a notification manager, and a content provider for briefing of information shared between the applications. The framework 440 can be made based on JAVA.

[0233] The application layer 455 on the framework 440 includes various programs that can be driven and displayed in the display device 100. For example, the application layer 455 may include core application that includes at least one of email, short message service (SMS), calendar, map, and browser. This application layer 455 can be made based on JAVA.

[0234] Also, the application layer 455 can be divided into application 465 that can be stored in the display device 100 and cannot be deleted by the user and application 475 that can be downloaded through the external device or network and can freely be installed or deleted by the user.

[0235] Internet phone service, video on demand (VOD) service, web album service, social networking service (SNS), location based service (LBS), map service, web search service and application search service may be performed by network access through the application in the application layer 455. Also, various functions such as games and schedule management may be performed through the application in the application layer 455.

[0236] Referring to FIG. 12, a platform of any one of the display devices according to one or more embodiments is an integrated-type platform and includes an OS kernel 510, a driver 520, a middleware 530, a framework 540, and an application layer 550.

[0237] The platform of FIG. 12 is different from that of FIG. 11 in that the library 435 illustrated in FIG. 11 is omitted and the application layer 550 is an integrated layer. The driver 520 and the framework 540 correspond to those of FIG. 11.

[0238] The platform of FIG. 12 can be designed such that the library 435 illustrated in FIG. 11 is incorporated into the middleware 530 illustrated in FIG. 12. In other words, the middleware 530 includes legacy system middleware and display system middleware. The legacy system middleware may include data broadcasting related middleware, i.e., multimedia and hypermedia information coding experts group (MHEG) middleware and advanced common application platform (ACAP) middleware, broadcast information related middleware, i.e., PSIP middleware and SI middleware, and peripherals communication related middleware, i.e., DLNA middleware.

[0239] The display system middleware may include security library, web engine library and media library, wherein the security library includes secure socket layer (SSL), the web engine library includes WebKit, libc, and the media library includes media framework. The display system middleware may further include runtime described above.

[0240] The application layer 550 in the legacy system

may include menu application, TV guide application, and reservation application while the application layer 55 in the display system may include email, short message service (SMS), calendar, map, and browser.

[0241] The application layer 550 may be divided into application 565 that can be stored in the display device 100 and cannot be deleted by the user and application 575 that can be downloaded through the external device or network and can freely be installed or deleted by the user.

[0242] Based on the aforementioned platforms of FIG. 11 and FIG. 12, various API(Application Programming Interface) and SDK(Software Development Kit) can be opened for an application development. In the future or present time. Moreover, API can be implemented by calling the function that provides a connection to specific subroutine for implementation in a program.

[0243] For example, Those API and SDK can be opened by a source involved with hardware driver in OS kernel 410 such as display driver, Wi-fi driver, Bluetooth driver, USB driver, Audio driver, and so on. According to another embodiment, those API and SDK can be opened by a related source in a driver 420 such as a micom in the display device, a display module, a graphic processing unit (GPU), a frame rate converter (FRC), system decoder or demultiplexer (SDEC), video decoder (VDEC), audio decoder (ADEC), a spatial remote controller and so on.

[0244] According to another embodiment, the API and SDK can be opened by a related source such as PSIP involved with broadcasting information, SI middleware or DLNA middleware.

[0245] A developer skilled in the art can develop at least one of application that is used for display device 100 control or ran in display device 100 based on the aforementioned platforms of FIG. 11 and FIG. 12 by using those various open API.

[0246] The aforementioned platforms of FIG. 11 and FIG. 12 can be used generally for various electronic devices as well as the display device. In the mean time, the platforms of FIG. 11 and FIG. 12 may be stored or loaded in the memory module 140 or the control module 170 illustrated in FIG. 6 or a separate processor (not shown). Also, the platforms of FIG. 11 and FIG. 12 may be stored or loaded in the SI&Metadata DB 711, the UI manager 714 or the service manager 713 illustrated in FIG. 7. Also, a separate application processor (not shown) for implementing application may further be provided.

[0247] FIG. 13 shows steps included in one embodiment of a method for controlling a remote controller of a display device. As illustrated in FIG. 13(a), a pointer 205 corresponding to the remote controller 200 is displayed in the display module 180.

[0248] The user can move or rotate the remote controller 200 in up and down direction and left and right direction (FIG. 13(b)) and in front and rear direction (FIG. 13(c)). The pointer 205 displayed in the display module 180 of the display device corresponds to movement of

the remote controller 200. Since the remote controller 200 moves to the corresponding pointer 205 in accordance with movement on 3D space as shown, it may be referred to as a spatial remote controller.

[0249] FIG. 13(b) illustrates that, if the user moves the remote controller 200 to the left, the pointer 205 displayed in the display module 180 of the display device moves to the left correspondingly.

[0250] Information on movement of the remote controller 200, which is sensed by a sensor of the remote controller 200, is transmitted to the display device. The display device can obtain a coordinate of the pointer 205 from the information on movement of the remote controller 200. The display device can display the pointer 205 to correspond to the above coordinate.

[0251] FIG. 13(c) illustrates that the user moves the remote controller 200 to be far away from the display module 180 in a state that the user pushes a specific button of the remote controller 200. In this case, a zone selected in the display module 180 corresponding to the pointer 205 is displayed through zoom-in.

[0252] On the contrary, if the user moves the remote controller 200 to be close to the display module 180, the zone selected in the display module 180 corresponding to the pointer 205 is displayed through zoom-out. If the remote controller 200 becomes far away from the display module 180, the selected zone may be subjected to zoom-out. If remote controller 200 becomes close to the display module 180, the selected zone may be subjected to zoom-in.

[0253] In a state that the specific button of the remote controller 200 is pushed, up and down movement and left and right movement may not be recognized. In other words, if the remote controller 200 moves to be far away from or close to the display module 180, front and rear movement may be recognized only without recognition of up and down movement and left and right movement. In a state that the specific button of the remote controller 200 is not pushed, the pointer 205 is only moved in accordance with up and down movement and left and right movement of the remote controller 200.

[0254] Movement speed or movement direction of the pointer 205 may correspond to that of the remote controller 200. In this specification, the pointer means an object displayed in the display module 180 to correspond to action of the remote controller 200. Accordingly, in addition to an arrow shape illustrated by the pointer 205, various shaped objects may be provided. For example, examples of the pointer may include dot, cursor, prompt, and thick outline. The pointer may be displayed to correspond to any one point of a horizontal axis and a vertical axis on the display module 180, or may be displayed to correspond to a plurality of points such as line and surface.

[0255] FIG. 14 shows a remote controller 200 for controlling a display device. The remote controller 200 includes a wireless communication module 225, a use input module 235, a sensor module 240, an output module

250, a power supply module 260, a memory module 270, and a control module 280.

[0256] The wireless communication module 225 transmits and receives a signal to and from any one of the aforementioned display devices.

[0257] In this embodiment, the remote controller 200 may include RF module 221 that can transmit and receive a signal to and from the display device 100 in accordance with the RF communication standard. The remote controller 200 may further include IR module 223 that can transmit and receive a signal to and from the display device 100 in accordance with the IR communication standard.

[0258] In this embodiment, the remote controller 200 transmits a signal, which includes information on its movement, to the display device 100 through the RF module 221.

[0259] Also, the remote controller 200 can receive the signal transmitted from the display device 100 through the RF module 221. Also, the remote controller 200 can transmit a command on power on/off, channel change and volume change to the display device 100 through the IR module 223.

[0260] The user input module 235 can include a key pad, a button, a touch pad, or a touch screen. The user can input the command related to the display device 100 to the remote controller 200 by manipulating the user input module 235. If the user input module 235 includes a hard key button, the user can input the command related to the display device 100 to the remote controller 200 through a push action of the hard key button.

[0261] If the user input module 235 includes a touch screen, the user can input the command related to the display device 100 to the remote controller 200 by touching a soft key of the touch screen. Also, the user input module 235 may include various kinds of user input units may be used including but not limited to a scroll key and jog key.

[0262] The sensor module 240 may include a gyro sensor 241 or an acceleration sensor 243. The gyro sensor 241 can sense the information on movement of the remote controller 200. For example, the gyro sensor 241 can sense the information on movement of the remote controller 200 based on x, y and z axes. The acceleration sensor 243 can sense information on movement speed of the remote controller 200. In the mean time, the sensor module 240 may further include a distance sensor that senses the distance between the display module 180 and the remote controller 200.

[0263] The output module 250 can output the video or audio signal corresponding to the manipulation of the user input module 235 or the signal transmitted from the display device 100. The user can recognize whether the user input module 235 has been manipulated or whether the display device 100 has been controlled, through the output module 250.

[0264] For example, if the user input module 235 is manipulated or if the output module 250 transmits and

receives a signal to and from the display device 100 through the wireless communication module 225, the output module 250 may include an LED module 251 for lighting, a vibration module 253 that generates vibration, a sound output module 255 that outputs sound, or a display module 257 that outputs image.

[0265] The power supply module 260 supplies the power to the remote controller 200. If the remote controller 200 does not move for a predetermined time, the power supply module 260 can save the power by stopping power supply. The power supply module 260 can resume power supply if a predetermined key provided in the remote controller 200 is manipulated.

[0266] The memory module 270 may store various kinds of programs and application data required for control or operation of the remote controller 200. If the remote controller 200 transmits and receives a signal to and from the display device 100 through the RF module 221, the remote controller 200 and the display device 100 transmit and receive the signal to and from each other through a predetermined frequency band. The control module 280 of the remote control module 200 can store information on the frequency band, which can be transmitted and received to and from the display device 100 paired with the remote controller 200, and can refer to the stored information.

[0267] The control module 280 controls all matters related to control of the remote controller 200. The control module 280 can transmit the signal corresponding to predetermined key manipulation of the user input module 235 or the signal corresponding to movement of the remote controller 200, which is sensed by the sensor module 240, to the display device through the wireless communication module 225.

[0268] FIG. 15 shows a first example of a user interface for a display device, FIG. 16 shows a second example of a user interface for a display device, FIG. 17 shows a third example of a user interface for a display device, and FIG. 18 shows a fourth example of a user interface for a display device.

[0269] In FIG. 15, the list of applications on the network is displayed in the display module 180. In other words, the user can search and download various applications by directly accessing the corresponding content server or network server.

[0270] In FIG. 15(a), a list 610 of various applications in the accessed server is displayed in the display module 180. The list 610 of applications may include icon representing each application and brief information on each application. In the mean time, since the display device enables full browsing, it can display the icon or brief information received from the server through zoom-in. In this case, the user can easily identify the list of applications. This will be described later.

[0271] In FIG. 15(b), any one 620 of the list 610 of applications is selected using the pointer 205 of the remote controller 200. In this case, the corresponding application can be downloaded conveniently.

[0272] FIG. 16 illustrates that the list of applications in the display device is displayed in the display module 180. First of all, in FIG. 16(a), if the user views the list of applications by manipulating the remote controller 200, the list 660 of applications stored in the display device may be displayed in the display module 180. Although the icons representing each application are only shown in the drawing, the embodiments described herein are not limited to the icons. The list of applications may include brief information on each application as in FIG. 15, whereby the user can easily identify the list of applications.

[0273] In FIG. 16(b), any one 670 of the corresponding list 660 of applications is selected using the pointer 205 of the remote controller 200. In this case, the corresponding application can be implemented conveniently.

[0274] In order to select a predetermined item, the pointer 205 moves in accordance with movement of the user by using the remote controller 200 in FIG. 15 and FIG. 16. Also, various examples for selecting a predetermined item may be provided. For example, a cursor displayed on the screen by combination of a directional key and a confirmation key, which are arranged in a local key (not shown) or the remote controller 200, may be used to select a predetermined item.

[0275] For another example, if the remote controller 200 includes a touch pad, the pointer 205 is moved on the display module 180 by touch action of the touch pad. In this way, a predetermined item may be selected.

[0276] FIG. 17 illustrates that a web screen is displayed in the display module of the display device. In FIG. 17(a), a predetermined web screen 710 that includes a search window 720 is displayed in the display module 180. The user can input a predetermined text in the search window 720 by using a key pad (not shown) displayed on the screen, a text key (not shown) provided in a local key (not shown), or a text key (not shown) provided in the remote controller.

[0277] FIG. 17(b) illustrates that a search result screen 730 according to a search keyword input to the search window is displayed in the display screen 180. Since the display device according to this embodiment enables full browsing, the user can easily identify the web screen.

[0278] FIG. 18 illustrates that a web screen is displayed in the display portion of the display device. In FIG. 18(a), a mail service screen 810 having an ID input window 820 and a password input window 825 is displayed in the display module 180. The user can input a predetermined text in the ID input window 820 and the password input window 825 by using a key pad (not shown) displayed on the screen, a text key (not shown) provided in a local key (not shown), or a text key (not shown) provided in the remote controller. Accordingly, the user can log in the corresponding mail service.

[0279] In FIG. 18(b), a screen 830 after log in mail service is displayed in the display module 180. For example, 'read mail' item, 'write mail' item, 'sent box' item, 'received box' item, and 'recycle bin' item may be displayed in the display module. Also, the 'received box' item may be di-

vided into 'sender' item and 'title' item. In this way, the received mails may be arranged and displayed in the display module 180.

[0280] Since the display device enables full browsing when the screen for mail service is displayed, the user can use the mail service conveniently.

[0281] FIG. 19 shows a procedure for providing an application monitoring screen on a display device according to any of the aforementioned embodiments or examples. According to one embodiment, a user can execute one or more applications in the display apparatus at the same time (S1901). Also, the executed applications are in the execution status while sharing the memory of the display apparatus. The applications may be executed on the display screen at the same time by screen split. Alternatively, the applications may be executed in such a manner that any one application is executed on the entire screen and the other applications are executed on a background.

[0282] Next, the display apparatus receives a signal for enabling a monitoring menu from the user (S1902). The signal for enabling the monitoring menu may include a remote controller or a hot-key input of the display apparatus. Also, the signal may include a selection signal of a predetermined menu item included in the display screen. At this time, the user can use various input means such as a spatial remote controller, an infrared remote controller, and a remote controller provided with a keyboard and a touch pad.

[0283] If the signal is received, the display apparatus displays the monitoring menu on the screen.

[0284] According to one embodiment, the monitoring menu may be displayed on a predetermined zone of the display screen currently used by the user in the form of window, or may be displayed on the entire screen to enhance readability. Also, the monitoring menu may be displayed in an opaque color so as not to disturb use of an application used before the signal for enabling the monitoring menu is input.

[0285] According to one embodiment, the monitoring menu may include various kinds of information such as billing information, memory use information and information on the number of use times and then may be provided to the user, as described in detail with reference to FIG. 30 to FIG. 32.

[0286] Next, the user selects whether to end what application based on the information on the monitoring menu (S1903).

[0287] The user can select one or more applications, or can select a signal to end all applications currently in service.

[0288] The selected signal can be input through a remote controller or various input means of the display apparatus.

[0289] If the selected signal is received, the display apparatus ends execution of the selected applications (S1904). If a problem such as loss of information or disconnection occurs due to the end of the applications, a message indicating that the problem will occur is displayed to warn the user of the problem.

played to warn the user of the problem.

[0290] Next, if the end of the applications is finished, the monitoring menu is updated.

[0291] According to one embodiment, the billing information, the memory use information and the information on the number of use times are again measured in a state that the selected applications are ended, whereby the monitoring menu is updated.

[0292] The user can further end another application with reference to the updated monitoring menu or disable the monitoring menu. Also, according to another embodiment, the display apparatus can disable the monitoring menu at the same time when the end of the selected applications is finished.

[0293] A module for displaying the monitoring menu in the display apparatus can be stored in the display apparatus and then provided to the user when a manufacturer of the display apparatus manufactures the module for displaying the monitoring menu.

[0294] Also, according to one embodiment, the module for displaying monitoring menu may not be stored in the initial display apparatus. Namely, the display apparatus may install the module for displaying the monitoring menu by accessing a predetermined web site and downloading data for displaying the monitoring menu.

[0295] FIG. 20 shows one example of a display screen that includes a menu item for enabling a monitoring menu. According to one embodiment, a menu item 2001 for enabling the monitoring menu may be displayed on a predetermined zone of the display screen in the form of icon so as not to disturb the display screen of contents currently in service in the display apparatus.

[0296] The contents can include various contents, such as movie contents, music contents, real-time broadcasting contents, web page contents and game contents, which can be used in the display apparatus. Also, the menu item for enabling the monitoring menu may be displayed while an execution screen of a predetermined application is being displayed in the display apparatus.

[0297] Also, the icon may be set in such a manner that it is not always displayed but displayed if a pointer is located at a random position designated by the user.

[0298] The icon may include image or text representing the menu item for enabling the monitoring menu. Also, color or transparency of the menu item 2001 may be changed depending on user setup, as described in detail with reference to FIG. 21 to FIG. 24.

[0299] FIGS. 21 and 22 show additional examples of display screens that include menu items for enabling a monitoring menu. In this menu, menu items 2101 and 2202 can be displayed on a predetermined zone of the display screen in the form of icon. Also, the icon may be displayed in various colors depending on the execution status of contents or applications currently in service in the display apparatus.

[0300] For example, it is supposed that the color is varied depending on the memory usage. In this case, if memory capacity currently remaining in the display ap-

paratus is sufficient, the icon may be displayed in green color. If the remaining memory capacity corresponds to half of the total memory capacity, the icon may be displayed in yellow color. Also, as the remaining memory capacity is small, if the application or contents currently in service may forcibly be ended the icon may be displayed in red color.

[0301] The user can conveniently identify the status of the current memory through only the color of the icon.

[0302] Also, the green, yellow, or red is only exemplary, and more various colors may be displayed depending on memory use level. If the remaining memory capacity is reduced, the icon may be displayed in color that can easily be recognized by the user. In other words, if the remaining memory capacity corresponds to half of the total memory capacity, the icon is displayed as illustrated in FIG. 21 (2101). If the remaining memory capacity is small, the icon is displayed in darker color as illustrated in FIG. 22 (2201).

[0303] Also, if the remaining memory capacity is too small, the icon may be flickered to assist recognition of the user.

[0304] In addition to the memory use, if user fee is overcharged due to use of contents or applications in the display apparatus, or if overload is predicted due to increase of data processed by a processor of the display apparatus, the icon may be displayed variably in color, which can easily be recognized by the user, as the user fee is increased or the data are increased.

[0305] FIGS. 23 and 24 show examples of display screens that include a transparency setup menu for controlling display of a menu item for a monitoring menu. Transparency of the icon can be varied depending on user setup or the screen currently displayed in a display module of the display apparatus. For example, if the user calls a menu for controlling transparency of the icon through hot-key input of the remote controller or selection of a predetermined menu item, a transparency control menu can be displayed as illustrated in FIG. 23 and FIG. 24.

[0306] The transparency control menu may include respective number menu items 2302, 2303, 2304 and 2305 representing transparency. If the user selects a predetermined number, the transparency control menu is set in such a manner that the icon is displayed with transparency corresponding to the selected number.

[0307] In other words, for example, if the user selects a number '1' 2302 from the transparency control menu, the icon may be displayed in opaque color as illustrated in FIG. 23 (2301), or if the user selects a number '4' (2305), the icon may be displayed in clearer color than that of FIG. 23, as illustrated in FIG. 24 (2401), whereby the user can identify the display screen overlapped with the icon.

[0308] Also, the display apparatus may control transparency of the icon variably depending on the screen displayed in its display module without displaying the transparency control menu.

[0309] In other words, for example, if caption of contents currently in service in the display apparatus is displayed on a zone where the icon is located, the icon may be displayed with high transparency. If such contents are not displayed on the zone where the icon is located, the icon may be displayed with low transparency.

[0310] Furthermore, as described with reference to FIG. 21 and FIG. 22, if the remaining memory capacity of the display apparatus becomes small and user fees are overcharged, transparency of the icon may be lowered, whereby the user can easily recognize the icon.

[0311] FIG. 25 shows an example of a display screen which allows a position of a menu item to be changed. According to one embodiment, the user can move a menu item 2501 for enabling the monitoring menu through the user input device.

[0312] For example, the user can move the position of the menu item through a drag and drop action of a pointer 2502. In other words, after clicking the menu item through the pointer 2502, the user can move the pointer to a desired position through a drag action and fix the menu item to the desired position through a drop action.

[0313] Also, unlike shown, the user can set a mode for moving the menu item through a predetermined menu item or hot-key input, and can move the menu item to a desired position through a directional key.

[0314] As a result, since the user can locate the menu item to the desired position, the user can conveniently use predetermined contents through the display apparatus even in a state that the menu item is displayed.

[0315] FIG. 26 shows an example of a display screen that includes a menu item for enabling a monitoring menu on a home screen of a smart TV system. The home screen of the smart TV is displayed to use functions of the smart TV, and a menu item 2601 for enabling the monitoring menu is displayed in the form of icon. The home screen of the smart TV will be described later in detail with reference to FIG. 34.

[0316] Also, one or more applications can be executed in the display apparatus, and a menu item 2601 for enabling the monitoring menu can be displayed with the screen for the applications.

[0317] The menu item can be displayed in the form of icon that includes text or image. Also, a pointer 2602 can be moved through various input means such as a remote controller to input a selection signal of the menu item for enabling the monitoring menu.

[0318] FIG. 27 shows an example of a screen that includes a monitoring menu displayed on a home screen of a smart TV system. If a selection signal of the menu item 2701 for enabling the monitoring menu is input on the display screen of FIG. 26, a monitoring menu 2703 is displayed.

[0319] The monitoring menu 2703 includes billing information, memory use information and information on the number of use times, which will be described later in detail with reference to FIG. 30 to FIG. 32.

[0320] The monitoring menu 2703 can be displayed

on a predetermined zone of the display screen currently used by the user in the form of window as shown.

[0321] According to one embodiment, the monitoring menu 2703 may be displayed on the entire screen to enhance readability unlike shown in FIG. 27. Moreover, the monitoring menu 2703 can be displayed in opaque color so as not to disturb use of application or content used before the signal for enabling the monitoring menu is input.

[0322] The user can end execution of a predetermined application by selecting an application end menu item from the monitoring menu, and can select the application item to move to the execution screen of the selected application. The selected item will be described with reference to FIG. 30 to FIG. 32.

[0323] FIGS. 28 and 29 show additional examples of display screens that include monitoring menus. As shown, a monitoring menu 2804 indicates execution information of application or content currently in service in the display apparatus can be displayed by miniaturization so as not to disturb the screen of another application or content displayed in the display apparatus.

[0324] In other words, as illustrated in FIG. 28, the number 2801 of applications currently in service in the display apparatus, the number 2802 of contents currently in service, and graph or number 2803 on memory use information of the display apparatus can be displayed on a predetermined zone of the display screen.

[0325] According to one embodiment, items included in the monitoring menu can be edited. In other words, as illustrated in FIG. 29 (2901), the monitoring menu can be set to include name of contents or applications currently in service.

[0326] Also, like the menu item for enabling the monitoring menu, transparency or color of the monitoring menu can be varied. In this case, even though the user uses predetermined contents or applications of the display apparatus, the user can easily identify execution information of the applications or contents through the miniaturized monitoring menu.

[0327] FIG. 30 shows an example of a display screen that includes a monitoring menu containing billing information. The monitoring menu can include a tab 3001 for displaying billing information. If the tab for displaying the billing information is selected, it can include reference information for billing such as access time and traffic capacity.

[0328] Referring to FIG. 30, if fee is calculated depending on access time (3002), the tab can include a list of applications or contents currently in service, information 3004, 3005 and 3006 on use time and remaining free of charge time, so as to identify billing information.

[0329] Also, if fee is calculated depending on traffic capacity (3003), the tab can include a list of applications or contents currently in service, information on used traffic capacity and remaining free of charge traffic capacity.

[0330] According to one embodiment, the display apparatus can display the list of applications and contents,

which include name and icon of the applications and contents. Also, the tab can include end menu items for each of applications and contents 3008, 3009 and 3010, and can include an end menu item 3007 for ending all of the applications and contents currently in service.

[0331] Also, the access time information or the traffic capacity information can be displayed in the form of number of graph. If the access time or the traffic capacity exceeds a predetermined value, the color of the applications and contents can be varied to another color, whereby the user can easily recognize the applications and contents.

[0332] Also, if fee is calculated depending on another reference unlike shown, a tab for displaying the billing information together with reference information for billing can be displayed.

[0333] Also, the user can select name or icon of the applications and contents included in the list of applications or contents from the monitoring menu and switch the current screen to the execution screen of the selected applications and contents, as described later in detail with reference to FIG. 44.

[0334] In this case, the user can easily identify the billing information so that user fees may not be overcharged.

[0335] FIG. 31 shows an example of a display screen that includes a monitoring menu containing memory use information. The monitoring menu can include a tab 3101 for displaying memory information. If the tab for displaying the memory information is selected, the user can identify total memory capacity 3102 of the display apparatus and memory occupancy information 3103 of each of applications and contents.

[0336] According to one embodiment, the total memory capacity 3102 can include information on total memory capacity of the display apparatus, memory capacity currently in service, and remaining memory capacity.

[0337] In this case, since the user can identify redundancy capacity of the memory, the user can prevent forcible end or data loss from occurring in executing the applications and contents. Also, the memory occupancy information 3103 of each of the applications and contents can include a list of applications and contents currently in service, and information on memory capacity used by each of the applications and contents 3106.

[0338] According to one embodiment, the display apparatus can display the list of applications and contents, which includes name and icon of the applications and contents. Moreover, the display apparatus can display the list of applications and contents in the order of applications and contents having larger memory usage.

[0339] Also, the display apparatus can include information on memory capacity used by each of the applications and contents, and can display the used memory capacity in the form of number or graph.

[0340] Also, the display apparatus can include an end menu item 3105 for ending applications and contents for each of applications and contents, and can include an end menu item 3104 for ending all of the applications and

contents currently in service.

[0341] Also, the user can select name or icon of the applications and contents included in the list of applications or contents from the monitoring menu and switch the current screen to the execution screen of the selected applications and contents, as described later in detail with reference to FIG. 44.

[0342] In this case, the user can decide to end what application and contents to efficiently manage the memory by referring to the information on remaining memory capacity in the total memory capacity.

[0343] FIG. 32 shows an example of a display screen that includes a monitoring menu containing billing information. The monitoring menu can include a tab 3201 for displaying item information. The tab for displaying item information can display the item information together with information that can identify use item of each of applications and contents 3203.

[0344] According to one embodiment, if use of items is limited to a predetermined number of items as shown, the display apparatus can include a list of applications and contents, the number of total items, the number of used items, and the number of remaining items. The information on the number of items can be displayed in the form of number or graph.

[0345] According to one embodiment, the display apparatus can display the list of applications and contents together with name and icon of the applications, and can include an end menu item 3204 for ending applications and contents for each of applications and contents and an end menu item 3202 for ending all of the applications and contents currently in service.

[0346] Also, if the remaining items are reduced to reach a predetermined number of items or less, the display apparatus can display the color of applications and contents in another color, whereby the user can easily recognize the color of the applications and contents.

[0347] Also, unlike shown, if a use limit reference is another reference not item, such as a predetermined point or coin, the display apparatus can display the corresponding information together with information on the use limit reference.

[0348] Also, the user can select name or icon of the applications and contents included in the list of applications or contents from the monitoring menu and switch the current screen to the execution screen of the selected applications and contents, as described later in detail with reference to FIG. 44.

[0349] FIG. 33 shows an example of a display screen that includes a monitoring menu containing an application execution screen. In this embodiment, a selection signal of name or icon of the applications or contents included in the monitoring menu of FIG. 27 to FIG. 32 is input from the monitoring menu, whereby the current screen can be switched to a use screen 3302 of the applications or contents.

[0350] In other words, if the user selects name or icon of application, which can use a web site, from the mon-

itoring menu through the user input device, the screen for using the selected application can be displayed as illustrated in FIG. 33.

[0351] Also, the switched screen can continue to provide execution information to the user by miniaturizing the monitoring menu 3301.

[0352] In this case, the user can easily switch to the execution screen of the applications or contents from the monitoring menu, and can exactly select application and contents for ending by identifying the status of the applications or contents displayed by name or icon only, in detail, from the monitoring menu.

[0353] FIG. 44 shows one way in which screen switching of a display apparatus may be performed. As illustrated in FIG. 44(a), if predetermined contents or applications are displayed from the display apparatus, the menu item for enabling the monitoring menu can be displayed on a predetermined zone of the display module of the display apparatus.

[0354] Also, in the display screen illustrated in FIG. 44 (a), if a selection signal of the menu item is received from the user, the display apparatus can display the screen illustrated in FIG. 44(b) to display the monitoring menu in detail.

[0355] Also, in the display screen illustrated in FIG. 44 (b), if the user inputs a selection signal of name or icon of predetermined contents or applications included in the monitoring menu, the display apparatus can display the display screen of the selected applications or contents as illustrated in FIG. 44(c) to allow the user to use the selected applications or contents.

[0356] In other words, since the user can easily identify execution information on each of the applications or contents on the display screen, the user can control the execution condition of the display apparatus more easily.

[0357] FIGS. 34 to 39 show examples of home screens that may be used to execute various functions of a smart TV system. The home screen(s) can include cards 3401, 3402, 3403 and 3404 related to applications or contents that can be used in the smart TV, and a launcher bar 3405 that includes icons 3406, 3407 and 3408 of the applications or contents. The launcher bar 3405 may be located above the cards as shown, or may be located below the cards or at the left or right of the cards.

[0358] Also, a predetermined icon included in the launcher bar can be displayed as image that can predict name or action of the applications.

[0359] Also, if a selection signal of the icon is received from the user, the cards 3401, 3402, 3403 and 3404 can be displayed to include predetermined information on applications or contents corresponding to the selected icon. Also, if a selection signal of any one of the cards is input from the user, the application corresponding to the selected card can be executed as the entire screen.

[0360] Referring to FIG. 34, it is noted from the card 3401 that terrestrial broadcast contents are displayed. Also, it is noted that the card 3402 is related to calendar application that enables schedule management. It is not-

ed that the card 3403 is related to application that can play music through the display apparatus. In other words, the user can identify and execute the applications of the smart TV through the icon or the cards.

[0361] Furthermore, the card 3404 can allow information on the applications or contents of the smart TV, which is not displayed on the home screen, to be displayed, whereby the user can predict the contents or applications of the smart TV through the information. For example, as illustrated in FIG. 34, a part of the card 3404 is displayed at the right end of the display screen, whereby the user can identify information on the application or contents corresponding to the card existing at the right part of the display screen.

[0362] In other words, if the user scrolls the cards to the right side through the user interface module in a state that the home screen 3400 of FIG. 34 is displayed, although a home screen 3600 of FIG. 36 is displayed, even before the user directly performs the above scroll operation, the card 3404 of the application 'NETFLIX' is partially displayed at the right part on the home screen of FIG. 34. Accordingly, the user can predict that the entire card 3601 of the application 'NETFLIX' is displayed if the user scrolls the cards to the right side.

[0363] Also, a part 3501 of the card is displayed at the left side as illustrated in the home screen 3500 of FIG. 35, whereby the user can predict an application card 3701 of a home screen 3700 of FIG. 37.

[0364] Also, in addition to the left side or right side, a part of widgets card is displayed at upper sides 3901, 3902 and 3903 or lower sides 3801, 3802 and 3803 of the card, whereby the user can predict the corresponding application card by scrolling the card to the upper side or lower side on the home screen.

[0365] Also, unlike shown in FIG. 34 to FIG. 39, a part of each of the cards is displayed at the upper side, lower side, right side and left side at the same time, whereby the user can predict what card will be displayed if the user scrolls the cards to the upper side, lower side, right side and left side.

[0366] FIGS. 40 to 43 show additional examples of home screens that may be used to execute various functions of a smart TV system. In the same manner as FIG. 34 to FIG. 39, after a part of the icons displayed on the home screen is displayed, if the user scrolls the icon list, the user can predict what icon will be displayed.

[0367] The icon can be displayed as image data that can predict name or action of the application, not text. Accordingly, even though a part of the icon is displayed, the user can predict the application corresponding to the icon.

[0368] In other words, if a home screen 4000 is displayed as illustrated in FIG. 40, a part 4001 of the icon is displayed at the right side of the icon list, whereby the user can predict the corresponding icon by scrolling the icon list to the right side.

[0369] Also, if a home screen 4100 is displayed as illustrated in FIG. 41, the user can predict the correspond-

ing icon by scrolling the icon list to the left side. If a home screen 4200 is displayed as illustrated in FIG. 42, the user can predict the corresponding icon by scrolling the icon list to the upper side. If a home screen 4300 is displayed as illustrated in FIG. 43, the user can predict the corresponding icon by scrolling the icon list to the lower side. In this way, the user can predict the corresponding icons through partial icons 4101, 4102 and 4103 displayed on each home screen.

[0370] Also, unlike shown in FIG. 40 to FIG. 43, a part of each icon may be displayed at the upper side, lower side, left side and right side at the same time like FIG. 34 to FIG. 39.

[0371] Accordingly, the user can predict the corresponding icon located at the scroll position before directly scrolling the icon list, whereby convenience in use of the display apparatus can be improved.

[0372] As described above, the network TV for processing data for a monitoring service according to one embodiment includes a broadcast interface receiving broadcast data through a broadcast network, wherein the broadcast data include audio data and video data, a demultiplexer demultiplexing the audio data and the video data of the received broadcast data, an audio decoder decoding the demultiplexed audio data, a video decoder decoding the demultiplexed video data, an Internet interface receiving at least one or more contents through an Internet network, a first controller controlling the received contents to be executed in a background type, a collector collecting state information on the at least one or more contents executed in the background type, a generator generating a monitoring indicator corresponding to the collected state information, a second controller controlling the display module to display the decoded video data in a first zone of the network TV and display the generated monitoring indicator in a second zone of the network TV, and a speaker outputting the decoded audio data.

[0373] The network TV according to one embodiment can be designed by considering the modules illustrated in FIG. 2 or FIG. 5. Hereinafter, the network TV will be described in more detail with reference to FIG. 2 or FIG. 5. However, it is to be understood that modules other than those illustrated in FIG. 2 or FIG. 5 may be included.

[0374] The broadcast interface corresponds to the reference numeral 101 of FIG. 2 or the reference numeral 701 of FIG. 5. The demultiplexer corresponds to the reference numeral 705 of FIG. 5, the audio decoder corresponds to the reference numeral 706 of FIG. 5, and the video decoder corresponds to the reference numeral 707 of FIG. 5. Moreover, the demultiplexer, the audio decoder, and the video decoder can be designed in such a manner that their functions are performed by the broadcast data processor 111 of FIG. 2.

[0375] The Internet interface corresponds to the reference numeral 108 of FIG. 2 or the reference numeral 701 of FIG. 5. The first controller, the collector, the generator, the second controller are designed in such a manner that their functions are performed by the second runtime mod-

ule 109 of FIG. 2 or the service manager 713 of FIG. 5. In the mean time, the display module and the speaker correspond to the reference numeral 708 of FIG. 5.

[0376] Also, the monitoring indicator, for example, corresponds to the reference numeral 2001 of FIG. 20, the reference numeral 1201 of FIG. 21, the reference numeral 2201 of FIG. 22, the reference numeral 2301 of FIG. 23, the reference numeral 2401 of FIG. 24, the reference numeral 2501 of FIG. 25, the reference numeral 2601 of FIG. 26, etc. Moreover, the state information of the content includes at least one or more of information illustrated in FIG. 30 to FIG. 32.

[0377] According to another embodiment, if the displayed monitoring indicator is selected, the second controller displays the collected state information (for example, the state information includes current state information for each content). If the a specific content is selected from the displayed state information, the second controller stops execution of the background for the specific content, stops display of the decoded video data, and displays the specific content in the first zone of the network TV.

[0378] According to still another embodiment, the second controller is designed to determine whether the collected state information corresponds to what level of a plurality of levels and to display the generated monitoring indicator in the second zone of the network TV differentially depending on the level of the collected state information.

[0379] Moreover, the network TV according to still another embodiment is designed to further include a user interface that receives a signal for selecting a level of transparency of the monitoring indicator, and the second controller displays the generated monitoring indicator in the second zone of the network TV based on the selected level of transparency.

[0380] Also, the monitoring indicator according to still another embodiment is designed to include at least one or more of a first tab displaying the memory use state caused by at least one or more contents currently in service as the background, a second tab displaying an item use state caused by at least one or more contents currently in service as the background, and a third tab displaying a use state of a charged content of at least one or more contents currently in service as the background.

[0381] Also, according to still another embodiment, the second controller is designed to determine whether the collected state information corresponds to a warning range and to display the generated monitoring indicator in the second zone of the network TV only if the collected state information corresponds to the warning range. This second controller will be described in more detail with reference to FIG. 45.

[0382] The network TV according to still another embodiment further includes a user interface that receives a signal for selecting a reference category for automatic forcible end, and the second controller is designed to first and forcibly end a specific content currently in service as

the background based on the selected reference category if the collected state information corresponds to a danger range. The reference category corresponds to memory use capacity or initial access time, for example. This will be described in more detail with reference to FIG. 49 to FIG. 51.

[0383] In the mean time, the content used in this specification includes at least one or more of application and web page. As the case may be, the content may further include other data that can be ordinarily defined by those skilled in the art.

[0384] FIG. 45 shows one embodiment of a procedure for automatically enabling a monitoring menu. If the aforementioned monitoring indicator is always enabled, it may be a little interference on a general broadcast screen of the user. Accordingly, in order to solve this problem, as illustrated in (a) of FIG. 45, the network TV 4500 according to one embodiment maintains a zone 4501 where the monitoring indicator is displayed, at off state.

[0385] However, a network TV 4550 is designed in such a manner that a monitoring indicator 4551 is automatically enabled as illustrated in FIG. 45(b) only if a specific event occurs while the collector is collecting the state information on the content currently in service as the background. Moreover, the specific event means that the use time of the charged content remains about 30 minutes or error may occur in general broadcasting of the network TV due to excessive memory capacity of the content operated as the background.

[0386] Accordingly, the network TV according to the embodiment is advantageous in that the user can receive only a danger state on the content such as application while viewing a general broadcast screen.

[0387] FIG. 46 shows an example of the first level of a monitoring menu, FIG. 47 shows an example of a second level of the monitoring menu, and FIG. 48 shows an example of a third level of a monitoring menu.

[0388] Considering the state information of the contents currently in service as the background, if the possibility of overload that may occur in the memory or the CPU of the network TV reaches 50% to 70%, or if the use time of the charged content remains 30 minutes or one hour, as illustrated in FIG. 46, the network TV 4600 according to one embodiment displays the monitoring indicator 4601 indicating first level warning.

[0389] Moreover, considering the state information of the contents currently in service as the background, if the possibility of overload that may occur in the memory or the CPU of the network TV reaches 70% to 90%, or if the use time of the charged content remains 10 minutes or 30 minutes, as illustrated in FIG. 47, the network TV 4700 according to one embodiment displays the monitoring indicator 4701 indicating second level warning. In this case, the second level warning message 4701 is displayed using a highlight scheme more emphasized than the warning message 4601 of FIG. 46 or a size greater than that of the warning message 4601 of FIG. 46.

[0390] Also, considering the state information of the contents currently in service as the background, if the possibility of overload that may occur in the memory or the CPU of the network TV reaches 90% or more, or if the use time of the charged content remains 10 minutes or less, as illustrated in FIG. 48, the network TV 4800 according to one embodiment displays the monitoring indicator 4801 indicating third level warning. In this case, the third level warning message 4801 is displayed using a highlight scheme more emphasized than the warning message 4701 of FIG. 47 or a size greater than that of the warning message 4701 of FIG. 47.

[0391] FIG. 49 shows an example of a forcible termination screen. The network TV 4900 according to one embodiment performs a control operation to generate a message 4910 indicating that a specific content will forcibly be ended automatically, in a popup type, independently from or dependently on the embodiments illustrated in FIG. 45 to FIG. 48. Accordingly, according to this embodiment, throughput of the network TV can be prevented from being deteriorated by various contents or functions operated as the background.

[0392] FIG. 50 shows another example of another automatic forcible terminal screen. Unlike FIG. 49, the network TV 5000 illustrated in FIG. 50 performs a control operation to generate a message 5010 inquiring whether to forcibly end a specific content, in a popup type. This network TV 5000 is designed considering that the specific content scheduled for forcible end may be different from a content to be ended by the user.

[0393] FIG. 51 shows one embodiment of a forcible termination method. As illustrated in FIG. 49 or FIG. 50, if overload is predicted due to the content currently in service as the background, the network TV according to one embodiment may be designed to forcibly end a random content. However, for convenience of the user, as illustrated in FIG. 51, the network TV 5100 according to one embodiment displays a menu screen 5120 for setting a reference category of forcible end.

[0394] As illustrated in FIG. 51, the reference category of forcible end may be memory use capacity or initial access time. Accordingly, it is advantageous in that the contents are automatically ended in accordance with the reference desired by the user.

[0395] In more detail, if the memory use capacity is set based on the reference of forcible end and too many contents are operated as the background, the contents are forcibly ended automatically in the order of greater memory use capacity.

[0396] If the initial access time is set based on the reference of forcible end and too many contents are operated as the background, the contents are forcibly ended automatically in the order of earlier execution time.

[0397] As described above, programs or modules related to the monitoring service based on the monitoring indicator according to one embodiment may be designed in such a manner that the programs or modules are included in the network TV during initial manufacture of the

network TV or the programs or modules are included in the network TV after manufacture of the network TV. This will be described with reference to FIG. 52 and FIG. 53.

[0398] FIG. 52 shows one embodiment of a monitoring service method. As illustrated in FIG. 52, the control method includes receiving broadcast data through a broadcast network, wherein the broadcast data include audio data and video data (S5201). The control method includes demultiplexing the audio data and the video data of the received broadcast data (S5202), and decoding the demultiplexed audio data (S5203). The control method includes decoding the demultiplexed video data (S5204).

[0399] The control method includes receiving at least one or more contents through an Internet network (S5205). The control method includes controlling the received contents to be executed in a background type (S5206). The control method includes collecting state information on the at least one or more contents executed in the background type (S5207).

[0400] The control method includes generating a monitoring indicator corresponding to the collected state information (S5208). The control method includes displaying the decoded video data in the first zone of the network TV and at the same time displaying the generated monitoring indicator in the second zone of the network TV (S5209).

[0401] Also, according to one embodiment, if the displayed monitoring indicator is selected, the control method includes displaying the collected state information. If a specific content is selected from the displayed state information, the control method includes stopping execution of the background for the specific content, stopping display of the decoded video data, and displaying the specific content in the first zone of the network TV. This embodiment can be understood in more detail from FIG. 44.

[0402] The step S5209 includes determining whether the collected state information corresponds to a warning range and displaying the generated monitoring indicator in the second zone of the network TV only if the collected state information corresponds to the warning range. This embodiment can be understood in more detail with reference to FIG. 45.

[0403] The step S5209 includes determining whether the collected state information corresponds to what level of a plurality of levels and displays the generated monitoring indicator in the second zone of the network TV differentially depending on the level of the collected state information. This embodiment can be understood in more detail with reference to FIG. 46 to FIG. 48.

[0404] Moreover, although not illustrated in FIG. 52, according to another embodiment, the control method further includes receiving a signal for selecting a reference category for automatic forcible end, and first and forcibly ending a specific content currently in service as the background based on the selected reference category if the collected state information corresponds to a

danger range. The reference category corresponds to memory use capacity or initial access time, for example. This embodiment can be understood in more detail with reference to FIG. 49 to FIG. 51.

[0405] The step S5209 further includes receiving a signal for selecting a level of transparency of the monitoring indicator, and displaying the generated monitoring indicator in the second zone of the network TV based on the selected level of transparency. This embodiment can be understood in more detail with reference to FIG. 23 and FIG. 24. The content includes at least one or more of application and web page.

[0406] FIG. 53 shows another embodiment of a monitoring service method. The method includes downloading an application for execution of the aforementioned monitoring indicator (S5301). The method includes collecting state information on at least one or more contents executed in a background type (S5302). In this case, the content is received through the Internet network.

[0407] The method includes generating a monitoring indicator corresponding to the collected state information (S5303), displaying the generated monitoring indicator in the second zone of the network TV, wherein the second zone is different from the first zone where video data of broadcast data are displayed (S5304). Also, if the displayed monitoring indicator is selected, the method includes displaying the collected state information (S5305). The state information includes current state information for each content.

[0408] If a specific content is selected from the displayed state information, the method includes stopping execution of the background for the specific content, and displaying the specific content in the first zone of the network TV (S5307).

[0409] Although the description has been made for the respective drawings, a new embodiment can be implemented by combination of the embodiments described with reference to the drawings. Design of a recording medium that can be read from a computer that includes programs for implementing the methods disclosed herein, including those illustrated in FIG. 52 and FIG. 53 are provided.

[0410] FIG. 54 is a block diagram illustrating a mobile terminal according to one embodiment of the present invention. Hereinafter, a block diagram of a mobile terminal according to one embodiment of the present invention will be described with reference to FIG. 54.

[0411] As illustrated in FIG. 54, a mobile terminal 5400 according to one embodiment of the present invention includes a wireless communication module 5410, an audio/video (A/V) input module 5420, a user input module 5430, a sensing module 5440, an output module 5450, a memory module 5460, an interface module 5470, a controller 5480, and a power supply module 5490. The modules illustrated in FIG. 54 are not necessarily required. Accordingly, a mobile terminal provided with modules more than or less than those illustrated in FIG. 54 may be achieved.

[0412] Hereinafter, the aforementioned modules will be described in due order.

[0413] The wireless communication module 5410 can include one or more modules that enable wireless communication between the mobile terminal 5400 and the wireless communication system or between the mobile terminal 5400 and the network where the mobile terminal 5400 is located. For example, the wireless communication module 5410 can include a broadcast receiving module 5411, a mobile communication module 5412, a wireless Internet module 5413, a short range communication module 5414, and a location information module 5415.

[0414] The broadcast receiving module 5411 receives a broadcast signal and/or broadcast information from an external broadcast management server through a broadcast channel.

[0415] The broadcast channel can include a satellite channel and a terrestrial channel.

[0416] The broadcast management server may mean either a server that generates and transmits a broadcast signal and/or broadcast information, or a server that receives a previously generated broadcast signal and/or broadcast information and transmits it to the terminal. The broadcast signal can include a data broadcast signal combined with a TV broadcast signal or radio broadcast signal as well as the TV broadcast signal, the radio broadcast signal and the data broadcast signal.

[0417] The broadcast information may mean information related to a broadcast channel, a broadcast program or a broadcast service provider. The broadcast information may be provided through a mobile communication network. In this case, the broadcast information can be received by the mobile communication module 5412.

[0418] The broadcast information can exist in various forms. For example, the broadcast information can exist in the form of EPG (Electronic Program Guide) of DMB (Digital Multimedia Broadcasting) or ESG (Electronic Service Guide) of DVB-H (Digital Video Broadcast-Handheld).

[0419] The broadcast receiving module 5411 can receive a digital broadcast signal by using a digital broadcast system such as DMB-T (Digital Multimedia Broadcasting-Terrestrial), DMB-S (Digital Multimedia Broadcasting-Satellite), MediaFLO (Media Forward Link Only), DVB-H (Digital Video Broadcast-Handheld), and ISDB-T (Integrated Services Digital Broadcast-Terrestrial). The broadcast receiving module 5411 may be configured to conform to another broadcast system as well as the aforementioned digital broadcast systems.

[0420] The broadcast signal and/or the broadcast information received through the broadcast receiving module 5411 can be stored in the memory module 5460.

[0421] The mobile communication module 5412 transmits and receives a radio signal to and from at least one of a base station, an external terminal and a server on the mobile communication network. The radio signal can include an audio call signal, a video call signal, or various data based on transmission and reception of text/multi-

media messages.

[0422] The wireless Internet module 5413 means a module for wireless Internet access, and may be stored inside or outside the mobile terminal 5400. WLAN(Wireless LAN)(Wi-Fi), Wibro(Wireless broadband), Wimax (World Interoperability for Microwave Access), HSDPA (High Speed Downlink Packet Access), etc. can be used for wireless Internet technology.

[0423] The short range communication module 5414 means a module for short range communication. Bluetooth, RFID(Radio Frequency Identification), infrared Data Association (IrDA), UWB(Ultra Wideband), ZigBee, etc. can be used for short range communication.

[0424] The location information module 5415 is a module for acquiring the location of the mobile terminal, and its example includes a GPS (Global Position System) module.

[0425] Referring to FIG. 54, the A/V(Audio/Video) input module 5420 is intended for input of audio signal or video signal, and its examples includes a camera 5421 and a mike 5422. The camera 5421 processes a picture image frame such as a still image or moving picture image obtained by an image sensor in a video call mode or camera mode. The processed picture image frame can be displayed in the display module 5451.

[0426] The picture image frame processed by the camera 5421 may be stored in the memory module 5460 or may be transmitted to the outside through the wireless communication module 5410. Two or more cameras 5421 may be provided depending on the use condition.

[0427] The mike 5422 receives an external audio signal through a microphone in a call mode or recording mode, a voice recognition mode, etc., and processes the received signal to electric audio data. The processed audio data can be output to the base station for wireless communication through the wireless communication module 5412 in the call mode. Various noise removal algorithms can be configured for the mike 5422 to remove noise occurring when the mike receives the external audio signal.

[0428] The user input module 5430 generates input data for allowing the user to control the operation of the terminal. The user input module 5430 can include a key pad dome switch, touch pad (static pressure/power failure), a jog wheel, and a jog switch.

[0429] The sensing module 5440 senses the current state of the mobile terminal 5400, such as the switching state of the mobile terminal 5400, the location of the mobile terminal 5400, information as to whether the user has contacted the mobile terminal, a direction of the mobile terminal, and acceleration/deceleration of the mobile terminal, and generates a sensing signal for controlling the operation of the mobile terminal 5400. For example, if the mobile terminal 5400 is a slide phone type, the sensing module 5440 can sense whether the slide phone has been opened or closed. Also, the sensing module 5440 may sense whether the power supply module 5490 has supplied the power or whether the interface module

5470 has been coupled to the external device. In the mean time, the sensing module 5440 can include a proximity sensor 5441.

[0430] The output module 5450 is intended to generate the output related to light sense, hearing sense, or tactile sense, and its examples include a display module 5451, an audio output module 5452, an alarm module 5453, and a haptic module 5454.

[0431] The display module 5451 displays (outputs) information processed by the mobile terminal 5400. For example, if the mobile terminal 5400 is in the call mode, the display module 5451 displays UI(User Interface) or GUI(Graphic User Interface) related to call. If the mobile terminal is in the video call mode or camera mode, the display module 5451 displays the taken image or/and the received image, or UI and GUI.

[0432] The display module 5451 can include at least one of a liquid crystal display (LCD), a thin film transistor-liquid crystal display (TFT LCD), an organic light-emitting diode (OLED), a flexible display, and a 3D display.

[0433] Some of the displays can be configured in a transparent type or a light-transmitting type, through which the outside can be viewed. This type display can be referred to as a transparent display, and its example includes a TOLED (Transparent OLED). The display module can be configured in a rear structure or a light-transmitting structure. According to this structure, the user can view an object located at the rear of a body of the terminal through a zone occupied by the display module 5451 of the body of the terminal.

[0434] Two or more display modules 5451 can exist depending on the structure of the mobile terminal 5400. For example, the mobile terminal 5400 may be provided with a plurality of display modules arranged to be spaced apart from one another or arranged to form a single body on one surface. Alternatively, the mobile terminal 5400 may be provided with a plurality of display modules arranged on different surfaces.

[0435] If the display module 5451 and a sensor (hereinafter, referred to as 'touch sensor') sensing a touch action configure a mutual layer structure (hereinafter, referred to as 'touch screen'), the display module 5451 may be used as an input device in addition to the output device. Examples of the touch sensor include a touch film, a touch sheet, and a touch pad.

[0436] The touch sensor can be configured to convert pressure applied to a specific zone of the display module 5451 or electrostatic capacity occurring in a specific zone of the display module 5451 to an electric input signal. The touch sensor can be configured to detect even the pressure during touch as well as the touched location and the touched area.

[0437] If there is the touch pressure on the touch sensor, signal(s) corresponding to the touch pressure are transmitted to a touch controller. The touch controller processes the signal(s) and then transmits data corresponding to the processed signals to the controller 5480. As a result, the controller 5480 can identify the touched

zone of the display module 5451.

[0438] Referring to FIG. 54, the proximity sensor 5441 can be arranged in an inner zone of the mobile terminal covered by the touch screen or near the touch screen. The proximity sensor 5441 means a sensor that senses the presence of an object approaching a predetermined detection surface or an object existing near the touch screen without mechanical contact by using a force of electric field or infrared rays. The proximity sensor has a lifespan longer than that of a contact sensor and is used more widely than the contact sensor.

[0439] Examples of the proximity sensor include a light-transmitting photoelectric sensor, a direct reflective type photoelectric sensor, a mirror reflective photoelectric sensor, a high frequency oscillating proximity sensor, an electrostatic capacity type proximity sensor, a magnetic type proximity sensor, and an infrared proximity sensor. If the touch screen is the electrostatic type, the proximity sensor is configured to detect proximity of the pointer by using change of the electric field based on proximity of the pointer. In this case, the touch screen (touch sensor) may be regarded as the proximity sensor.

[0440] Hereinafter, for convenience of description, if it is recognized that the pointer is approaching the touch screen without contacting the touch screen, it is referred to as "proximity touch". If the pointer is actually contacted on the touch screen, it is referred to as "contact touch". If the location where the pointer is approaching on the touch screen means the location where the pointer vertically corresponds to the touch screen when the pointer is approaching on the touch screen.

[0441] The proximity sensor senses a proximity touch operation and proximity touch patterns (for example, proximity touch distance, proximity touch direction, proximity touch speed, proximity touch time, proximity touch location, proximity touch motion state, etc.). Information corresponding to the sensed proximity touch operation and the proximity touch patterns can be output on the touch screen.

[0442] The audio output module 5452 can output audio data received from the wireless communication module 5410 or stored in the memory module 5460 in a call signal reception mode, a call mode, a recording mode, an audio recognition mode, a broadcast receiving mode, etc. The audio output module 5452 may output an audio signal related to functions (for example, call signal receiving sound, message receiving sound, etc.) performed by the mobile terminal 5400. This audio output module 5452 may include a receiver, a speaker, and a buzzer.

[0443] The alarm module 5453 outputs a signal for notifying event occurrence of the mobile terminal 5400. Examples of the event occurring in the mobile terminal 5400 include call signal reception, message reception, key signal input, and touch input. The alarm module 5453 may output a signal for notifying event occurrence in the form of oscillation other than a video signal or audio signal. Since the video signal or audio signal may be output through the display module 5451 or the audio output mod-

ule 5452, the display module 5451 and the audio output module 5452 may be regarded as parts of the alarm module 5453.

[0444] The haptic module 5454 generates various tactile effects that can be felt by the user. An example of the tactile effect generated by the haptic module 5454 includes oscillation. Strength and patterns of oscillation generated by the haptic module 5454 can be controlled. For example, the haptic module 5454 may output different kinds of oscillation in combination or in due order.

[0445] The haptic module 5454 can generate various tactile effects such as arrangement of pins that perform a vertical movement to a contact skin surface, a jet force or suction force of the air through a jet hole or suction hole, skimming along the skin surface, contact of electrode, effect of a stimulus such as static electricity, and effect of reproduction of cooling or heating based on an element that can absorb or generate heat.

[0446] The haptic module 5454 can transfer a tactile effect through direct contact and allow the user to feel a tactile effect through a sensory organ such as finger or arm. Two or more haptic modules 5454 may be provided depending on the structure of the mobile terminal 5400.

[0447] The memory module 5460 can store a program for the operation of the controller 5480, and may temporarily input/output data (for example, phone book, message, still image, moving picture, etc.). The memory module 5460 can store data on oscillation and audio of various patterns output during touch input on the touch screen.

[0448] The memory module 5460 can include at least one type of a flash memory type, a hard disk type, a multimedia card micro type, a card type memory (for example, SD or XD memory), a Random Access Memory (RAM), a Static Random Access Memory (SRAM), a Read-Only Memory (ROM), EEPROM (Electrically Erasable Programmable Read-Only Memory), PROM (Programmable Read-Only Memory), a magnetic memory, a magnetic disk, and an optical disk. The mobile terminal 5400 may be operated in connection with a web storage that performs a storage function of the memory module 5460 on the Internet.

[0449] The interface module 5470 serves as a path with all external devices connected to the mobile terminal 5400. The interface module 5470 receives data from the external device or is supplied with the power from the external device, and then transmits the data or the power to each module of the mobile terminal 5400 or allows the data in the mobile terminal 100 to be transmitted to the external device. For example, the interface module 5470 may include a wire/wireless headset port, an external charger port, a wire/wireless data port, a memory card port, a port for connecting a device provided with an identification module, an audio input/output (I/O) port, a video I/O port, and an earphone port.

[0450] The identification module is a chip that stores various kind of information for authenticating the use authority of the mobile terminal 5400, and can include a User Identity Module (UIM), a Subscriber Identity Module

(SIM), and a Universal Subscriber Identity Module (USIM). The device (hereinafter, referred to as 'identification device') provided with the identification module can be manufactured in the form of a smart card. Accordingly, the identification device can be connected with the mobile terminal 5400 through the port.

[0451] When the mobile terminal 5000 is connected with an external cradle, the interface module may serve as a path through the power from the cradle is supplied to the mobile terminal 5400, or may serve as a path through which various command signals input from the cradle by the user are transmitted to the mobile terminal. The various command signals or the power input from the cradle may be operated as a signal for recognizing that the mobile terminal has been exactly mounted on the cradle.

[0452] The controller 5480 generally controls the overall operation of the mobile terminal. For example, the controller 5480 performs control and processing related to voice communication, data communication, and video communication. The controller 5480 may include a multimedia module 5481 for playing multimedia. The multimedia module 5481 may be provided in the controller 5480, or may be provided separately from the controller 5480.

[0453] The controller 5480 can perform pattern recognition processing for recognizing writing input or drawing input performed on the touch screen as text and image, respectively.

[0454] The power supply module 5490 supplies the power required for the operation of each module through the external power and internal power applied under the control of the controller 5480.

[0455] Various embodiments described herein can be implemented in a recording medium by a computer or similar device using various means, for example, software, hardware, or their combination.

[0456] If the embodiments are implemented by hardware, the embodiments can be implemented by at least one of application specific integrated circuits (ASICs), digital signal processors (DSPs), digital signal processing devices (DSPDs), programmable logic devices (PLDs), field programmable gate arrays (FPGAs), processors, controllers, micro-controllers, microprocessors, and an electric unit for performing other functions. In some case, the embodiments described herein can be implemented by the controller 5480.

[0457] If the embodiments are implemented by software, the embodiments including the procedures and functions described herein can be implemented by separate software modules. Each of the software modules can perform one or more functions or operations described herein. For example, a software code can be implemented by a software application written in a proper program language. The software code can be stored in the memory module 5460, and may be executed by the controller 5480.

[0458] FIG. 55 is a front perspective view illustrating a

mobile terminal according to one embodiment of the present invention. Hereinafter, the front perspective view of the mobile terminal according to one embodiment of the present invention will be described with reference to FIG. 55.

[0459] As illustrated in FIG. 55, the mobile terminal 5400 includes a bar type terminal body. However, it is to be understood that the present invention is not limited to the bar type terminal body and various modifications can be made in the terminal body of the mobile terminal of the present invention. For example, the terminal body of the mobile terminal 5400 according to the present invention can be applied to various structures such as a slide type, a folder type, a swing type, and a swivel type, in which where two or more bodies are coupled to each other in relative movement.

[0460] The terminal body includes a case (casing, housing, cover, etc.) constituting appearance. In this embodiment, the case can be divided into a front case 5401 and a rear case 5402. Various electronic parts are built in a space formed between the front case 5401 and the rear case 5402. At least one intermediate case may additionally be arranged between the front case 5401 and the rear case 5402.

[0461] The cases may be formed by injection molding of a synthetic resin, or may be formed to have a metal material such as stainless steel (STS) or Ti.

[0462] The display module 5451, the audio output module 5452, the camera 5421, the user input modules 5430/5431, 5432, the mike 5422, and the interface 5470 can be arranged in the terminal body, mainly the front case 5401.

[0463] The display module 5451 occupies most of a main surface of the front case 5401. The audio output module 5451 and the camera 5421 are arranged at a region adjacent to one of both ends of the display module 5451, and the user input module 5431 and the mike 5422 are arranged at a region adjacent to the end of the display module 5451. The user input module 5432 and the interface module 5470 can be arranged at sides of the front case 5401 and the rear case 5402.

[0464] The user input module 5430 is manipulated to receive a command for controlling the operation of the mobile terminal 5400, and can include a plurality of manipulation units 5431 and 5432. The manipulation units 5431 and 5432 may be referred to as a manipulation portion, and can be used for all manners only if the user can manipulate them with a tactile feeling (tactile manner).

[0465] Contents input by the first and second manipulation units 5431 and 5432 can be set variously. For example, the first manipulation unit 5431 can receive a command such as start, end, scroll, etc., and the second manipulation unit 5432 can receive a command such as size control of the audio output from the audio output module 5452 or conversion of the display module 5451 to a touch recognition mode.

[0466] FIG. 56 is a rear perspective view illustrating a

mobile terminal according to one embodiment of the present invention. Hereinafter, the rear perspective view of the mobile terminal according to one embodiment of the present invention will be described with reference to FIG. 56.

[0467] FIG. 56 is a rear perspective view of the mobile terminal illustrated in FIG. 55.

[0468] As illustrated in FIG. 56, the rear surface of the terminal body, that is, the rear case 5402 can additionally be provided with a camera 5421'. The camera 5421' has a picture-taking direction substantially contrary to that of the camera 5421 (see FIG. 55), and could be a camera having pixels different from those of the camera 5421.

[0469] For example, it is preferable that the camera 5421 takes a face of the user during video communication and thus has low pixels to transmit the taken face to the other user without any problem, and the camera 5421' has high pixels as it takes a general subject and is not likely to immediately transmit the taken subject to the user. The cameras 5421 and 5421' may be provided in the terminal body rotatably or to enable pop-up.

[0470] A flash 5423 and a mirror 5424 are additionally arranged to adjoin the camera 5421'. The flash 5423 emits light towards the subject if the camera 5421' takes the subject. The mirror 5424 allows the user to look his (her) face if the user desires to take himself(herself) (self picture-taking) using the camera 5421'.

[0471] An audio output module 5452' may be arranged on the rear surface of the terminal body. The audio output module 5452' may implement a stereo function together with the audio output module 5452 (see FIG. 55), and may be used to implement a speaker phone mode during communication.

[0472] In addition to an antenna for communication, an antenna 5416 for receiving a broadcast signal may additionally arranged at a side of the terminal body. The antenna 5416 constituting a part of the broadcast receiving module 5411 (see FIG. 54) may be arranged to be ejected from the terminal body.

[0473] The terminal body is provided with the power supply module 5490 that supplies the power to the mobile terminal 5400. The power supply module 5490 may be built in the terminal body, or may be configured detachably from the outside of the terminal body.

[0474] The rear case 5402 may additionally be provided with a touch pad 5435 for sensing touch. The touch pad 5435 may be configured in a light-transmitting type like the display module 5451. In this case, if the display module 5451 is configured to output visual information from both sides, the visual information may be recognized even through the touch pad 5435. The information output from both sides may be controlled by the touch pad 5435. Unlike this, the touch pad 5435 may additionally be provided with a display, whereby the touch screen may be arranged on the rear case 5402.

[0475] FIG. 57 is a diagram illustrating a screen of a mobile terminal, in which a monitoring indicator according to one embodiment of the present invention is displayed.

Hereinafter, the screen of the mobile terminal, in which a monitoring indicator according to one embodiment of the present invention is displayed, will be described with reference to FIG. 57.

[0476] The description of the same reference numerals as those of FIG. 55 will be omitted in FIG. 57.

[0477] As illustrated in FIG. 57, the display module 5451 is designed to output a monitoring indicator 5701 together with applications that can be used by the user. Since the same description as that made with reference to FIG. 1 to FIG. 53 can be applied to the monitoring indicator 5701, the repeated description will be omitted. Accordingly, it is advantageous in that the user can more easily identify the current state of the mobile terminal which the user uses currently.

[0478] FIG. 58 is a diagram illustrating a screen of a mobile terminal, in which a monitoring indicator according to another embodiment of the present invention is displayed. Hereinafter, the screen of the mobile terminal, in which a monitoring indicator according to another embodiment of the present invention is displayed, will be described with reference to FIG. 58.

[0479] The description of the same reference numerals as those of FIG. 55 will be omitted in FIG. 58.

[0480] As illustrated in FIG. 58, the display module 5451 is designed to output a monitoring indicator 5801 together with applications that can be used by the user. As compared with FIG. 57, the monitoring indicator 5801 is characterized in that the number of applications currently in service, the number of contents currently in service, and the memory use state are displayed in more detail.

[0481] Moreover, since the same description as that made with reference to FIG. 1 to FIG. 53 can be applied to the monitoring indicator 5801, the repeated description will be omitted. Accordingly, it is advantageous in that the user can identify and access the applications and contents currently in service, and the memory state more easily.

[0482] FIG. 59 is a diagram illustrating a first screen that displays monitoring services according to one embodiment of the present invention, FIG. 60 is a diagram illustrating a second screen that displays monitoring services according to one embodiment of the present invention, FIG. 61 is a diagram illustrating a third screen that displays monitoring services according to one embodiment of the present invention, and FIG. 62 is a diagram illustrating a fourth screen that displays monitoring services according to one embodiment of the present invention. Hereinafter, a process of a monitoring service according to one embodiment of the present invention will be described with reference to FIG. 59 to FIG. 62.

[0483] First of all, as illustrated in FIG. 59, a multifunctional display device 5900 (for example, network TV) according to one embodiment of the present invention serves to identify a first zone 5910 displaying a menu screen from a second zone 5920 displaying a black screen. In particular, the multifunctional display device

can be designed such that its function is performed by the aforementioned OSD generator.

[0484] Moreover, the first zone 5910 displaying a menu screen includes a plurality of items that can be selected. For example, the first zone 5910 includes a first item 5911 related to applications, a second item 5912 related to search, and a third item 5913 related to TV settings.

[0485] If the first item 5911 is selected, the screen illustrated in FIG. 59 is switched to the screen illustrated in FIG. 60. In other words, as illustrated in FIG. 60, a multifunctional display device 6000 according to one embodiment of the present invention serves to identify a first zone 6010 displaying applications from a second zone 6020 displaying a black screen. In particular, the multifunctional display device can be designed such that its function is performed by the aforementioned OSD generator.

[0486] Also, the first zone 6010 that displays applications includes a plurality of items that can be selected. For example, the first zone 6010 includes a first item 6011 related to monitoring services, a second item 6012 related to an application list, and a third item 6013 related to application management. In particular, the first item 6011 corresponds to the aforementioned monitoring indicator, and if the first item 6011 is selected, detailed information related to application currently in service is displayed.

[0487] If the first item 6011 is selected, the screen illustrated in FIG. 60 is switched to the screen illustrated in FIG. 61. In other words, as illustrated in FIG. 61, a multifunctional display device 6100 according to one embodiment of the present invention serves to identify a first zone 6110 displaying monitoring services from a second zone 6120 displaying a black screen. In particular, the multifunctional display device can be designed such that its function is performed by the aforementioned OSD generator.

[0488] Also, the first zone 6110 that displays monitoring services includes a plurality of items that can be selected. For example, the first zone 6110 includes status information 6111 of a first application which is running, and status information 6112 of a second application which is running. The status information includes information on a total of hours for which application is executed, and information on capacity of a memory which is used.

[0489] If the first item 6111 is selected, the screen illustrated in FIG. 61 is switched to the screen illustrated in FIG. 62. In other words, as illustrated in FIG. 62, a multifunctional display device 6200 according to one embodiment of the present invention serves to identify a first zone 6210 identifying whether to stop a specific application from a second zone 6220 displaying a black screen. In particular, the multifunctional display device can be designed such that its function is performed by the aforementioned OSD generator.

[0490] Accordingly, if "YES" is selected from the first zone 6210 to stop a specific application, the specific application currently in service is automatically stopped.

The aforementioned description in respect of FIG. 59 to FIG. 62 may be achieved with reference to FIG. 1 to FIG. 58. In this case, it is advantageous in that the user can more quickly identify and stop the application currently in service.

[0491] Various modifications can be made in the aforementioned embodiments applied to the network TV and the method for controlling the network TV. For such various modifications, all or some of the embodiments may selectively be configured in combination.

[0492] The method for controlling the network TV according to one or more embodiments described herein can be implemented in a recording medium, which can be read by a processor provided in the network TV, as a code that can be read by the processor. The recording medium that can be read by the processor includes all kinds of recording media in which data that can be read by the processor are stored.

[0493] Examples of the recording medium include ROM, RAM, CD-ROM, magnetic tape, floppy disk, and optical data memory. Also, another example of the recording medium may be implemented in a type of carrier wave such as transmission through Internet. Also, the recording medium that can be read by the processor may be distributed in a computer system connected thereto through the network, whereby codes that can be read by the processor can be stored and implemented in a distributive mode.

[0494] One or more embodiments described herein relate to a method for processing data for monitoring service in a network TV and the network TV.

[0495] One or more embodiments also provide a network TV and a method for controlling the network TV, which can improve convenience in use of a user.

[0496] One or more other embodiments provide a network TV and a method for controlling the network TV, which can provide various user interfaces.

[0497] One or more other embodiments provide a solution for allowing a user to use various applications of a network TV under a proper consumption condition or optimized use condition.

[0498] One or more other embodiments provide a network TV and a method for controlling the network TV, in which even though a plurality of applications are executed in the network TV, a user can reduce unwanted consumption by identifying execution information on each application, and as the use condition that can allow the user to use the network TV under the optimized system is provided to the user, convenience of the user can be improved.

[0499] In accordance with one embodiment, a method for controlling a network TV for processing data for a monitoring service comprises receiving broadcast data through a broadcast network, the broadcast data including audio data and video data, demultiplexing the audio data and the video data of the received broadcast data, decoding the demultiplexed audio data, decoding the demultiplexed video data, receiving at least one or more

contents through an Internet network, controlling the received contents to be executed in a background type, collecting state information on the at least one or more contents executed in the background type, generating a monitoring indicator corresponding to the collected state information, and displaying the generated monitoring indicator in a second zone of the network TV while displaying the decoded video data in a first zone of the network TV.

[0500] In accordance with one embodiment,, a network TV for processing data for a monitoring service includes a broadcast interface receiving broadcast data through a broadcast network, the broadcast data including audio data and video data, a demultiplexer demultiplexing the audio data and the video data of the received broadcast data, an audio decoder decoding the demultiplexed audio data, a video decoder decoding the demultiplexed video data, an Internet interface receiving at least one or more contents through an Internet network, a first controller controlling the received contents to be executed in a background type, a collector collecting state information on the at least one or more contents executed in the background type, a generator generating a monitoring indicator corresponding to the collected state information, a second controller controlling a display module to display the decoded video data in a first zone of the network TV and display the generated monitoring indicator in a second zone of the network TV, and a speaker outputting the decoded audio data.

[0501] In accordance with one embodiment,, states of various contents operated on the network TV can easily be checked.

[0502] According to another embodiment, a solution for an OSD that can monitor states of various contents at the same time while minimizing interruption on a general broadcast screen.

[0503] According to another embodiment, unnecessary cost caused by contents operated as background although not recognized by the user can be prevented from being consumed, and throughput of the network TV can be prevented from being deteriorated temporarily.

[0504] According to another embodiment, a multifunctional display device, comprises a display; a storage device to store data; a tuner to receive a broadcast signal; a network interface to receive packet data; an input interface to receive signals from a wireless remote controller; and a processor to control display of first information that includes visual information and second information corresponding to display of monitoring information. The visual information and second information are displayed simultaneously, the monitoring information provides an indication of status of one or more applications executed at a same time the visual information is displayed, and the visual information corresponds to one of content provider, broadcast signal, or website information.

[0505] The second information may include an icon, and the monitoring information is displayed when the icon is selected. The detailed information may correspond to

the status of the one or more applications is displayed when the icon is selected.

[0506] The icon may be selected by placing a cursor on the icon, selection of the icon causing the monitoring information to be automatically displayed. Alternatively, the icon may be selected based on receipt of a selection signal from the remote controller.

[0507] The monitoring information may be displayed on a different screen from the icon when the icon is selected, and a preview of the monitoring information may be displayed on a same screen as the icon when the icon is selected.

[0508] The status condition may correspond to a condition of a storage device used for execution of the one or more applications. The condition of the storage device may include a remaining storage capacity of the storage device. Also, a color of the second information may provide an indication of the remaining storage capacity of the storage device.

[0509] The second information is displayed in at least a first color when the storage capacity is above a threshold value and is displayed in at least a second color when the storage capacity is below the threshold value.

[0510] The status condition may also correspond to billing for execution of the one or more applications, or the status condition may correspond to a number of times the one or more applications have been executed.

[0511] The processor may also control display of an indicator for controlling an appearance of display of the second information, and the monitoring information may provide an indication of a number of the one or more applications being executed and an amount of remaining storage capacity. The first information and the monitoring information is displayed simultaneously.

[0512] In addition, the visual information includes a home screen which includes a broadcast area, an application area, and a contents area. Also, the processor may cause warning information to be displayed when a condition of the status requires automatic termination of execution of the one or more applications.

[0513] According to another embodiment, a multifunctional display device comprises: a display; a storage device to store data; a tuner to receive a broadcast signal; a network interface to receive packet data; an input interface to receive signals from a wireless remote controller; and a processor to control display of a first information area, a second information area, and a monitoring indicator. The first and second information areas and the monitoring indicator are simultaneously displayed on a same screen.

[0514] Also, when the monitoring indicator is selected, detailed information of monitoring information is displayed corresponding to the first and second information areas, the monitoring information indicating status and a number of applications currently executed. The first information area includes information received through the network interface and the second information area includes information received through the tuner.

[0515] According to another embodiment, an information management method comprises simultaneously displaying a first information area, a second information area, and a monitoring indicator on a same screen of a display device; and displaying detailed monitoring information when the monitoring indicator is selected, the detailed monitoring information corresponding to the first and second information areas and indicating status and a number of applications currently executed, wherein the first information area includes information received through a network interface and the second information area includes information received through a tuner of the display device.

[0516] According to another embodiment, a computer-readable multifunctional apparatus for monitoring status of a number of applications comprises a display; storage device to store data; a tuner to receive a broadcast signal; a network interface to receive packet data; an input interface to receive signals from a wireless remote controller; a processor to control display of a first information area generated by an on-screen display (OSD) generator and a second information area that includes at least one category, wherein the first information and second information areas are simultaneously displayed on a same screen.

[0517] When a category is selected, detailed information is displayed, the detailed information including a condition of a storage device used for execution of one or more applications currently being executed, and wherein the second information area is overlaid on the first information area.

[0518] The detailed information may further comprise information indicative of a running time for execution of the one or more applications, and the processor may control display of a monitoring indicator which is at least partially transparent. Moreover, the condition of the storage device includes a storage capacity of the storage device used for execution of the one or more applications.

[0519] Herein, the suffixes 'module' and 'unit' for the elements used in the following description are given or used in common by considering facilitation in writing this disclosure only but fail to have meanings or roles discriminated from each other.

[0520] A display device as described in this specification may be an intelligent display device additionally provided with, for example, a computer support function in addition to a broadcasting receiving function. The display device can be provided with a more convenient interface such as a manual input unit, a touch screen and a spatial remote controller, in accordance with additional Internet function in addition to a basic broadcasting receiving function.

[0521] Also, the device enables e-mailing, web browsing, banking or games by accessing Internet or computer in accordance with the support of wire or wireless Internet function. For these various functions, a standardized general-purpose operating system (OS) can be used. Accordingly, since the display device disclosed herein can

freely be provided with or delete various applications on a general-purpose OS kernel, it may perform user-friendly various functions. More detailed examples of the display device include network TV, HBBTV, smart TV. The display device may be applied to a smart phone as the case may be. Also, the term, "contents" disclosed herein is the general term for digital information, which is provided through various wire and wireless communication networks and can be used through a display device, and its contents.

[0522] Any reference in this specification to "one embodiment," "an embodiment," "example embodiment," etc., means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. The appearances of such phrases in various places in the specification are not necessarily all referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with any embodiment, it is submitted that it is within the purview of one skilled in the art to effect such feature, structure, or characteristic in connection with other ones of the embodiments. The features of any one embodiment may be combined with the features of one or more other embodiments.

[0523] Although embodiments have been described with reference to a number of illustrative embodiments thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of the principles of this disclosure. More particularly, various variations and modifications are possible in the component parts and/or arrangements of the subject combination arrangement within the scope of the disclosure, the drawings and the appended claims. In addition to variations and modifications in the component parts and/or arrangements, alternative uses will also be apparent to those skilled in the art.

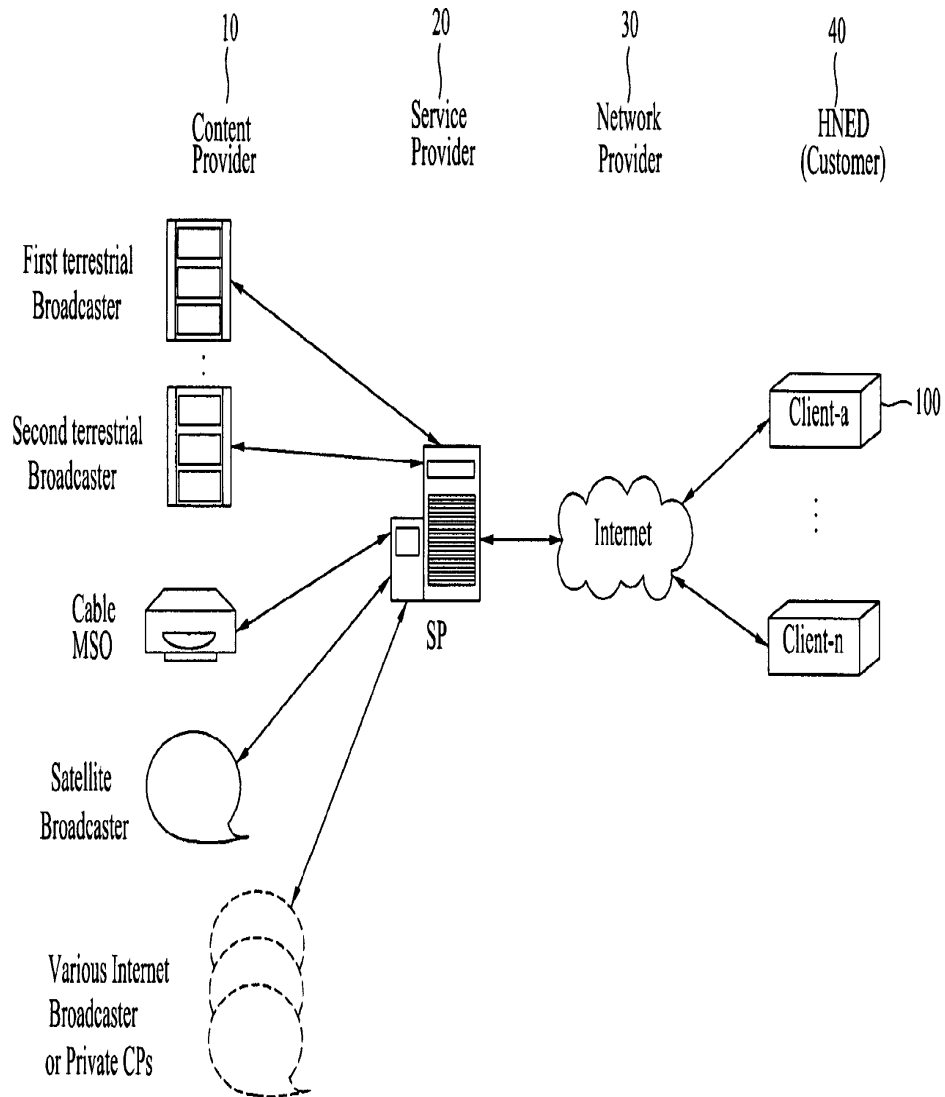
Claims

1. A multifunctional display device, comprising:

a display;
a storage device to store data;
a tuner to tune to a broadcast signal;
a network interface to receive packet data;
an input interface to receive input signals from a wireless remote controller;
and
a processor to control display of first information that includes visual information and second information that corresponds to monitoring information, wherein the first information and second information are displayed simultaneously, wherein the monitoring information provides status information of one or more applications ex-

- executed at a same time as the visual information is displayed, wherein the visual information is received from a content provider or corresponds to one of a broadcast signal, wallpaper, or website information. 5
2. The device of claim 1, wherein:
- the second information includes an icon, and the monitoring information is displayed when the icon is selected. 10
3. The device of claim 2, wherein detailed information corresponding to the status information of the one or more applications is displayed when the icon is selected. 15
4. The device of claim 2, wherein the monitoring information is displayed on a different screen area from a screen area the icon is displayed on. 20
5. The device of claim 1, wherein the status information corresponds to a condition of the storage device during execution of the one or more applications. 25
6. The device of claim 5, wherein the condition of the storage device includes a remaining storage capacity of the storage device.
7. The device of claim 6, wherein the processor controls display of warning information indicating the termination of an application when the storage capacity of storage device reaches a predetermined value. 30
8. The device of claim 1, wherein the status information corresponds to a number of times the one or more applications have been executed. 35
9. The device of claim 1, wherein the monitoring information provides an indication of a number of the one or more applications being executed and an amount of remaining storage capacity of the storage device. 40
10. The device of claim 1, wherein the one or more application comprises graphical data designed to help a user to perform a specific function in the multifunctional display device and is received via the network interface, and wherein the storage device is involved during execution of the one or more application. 45
11. A computer-readable multifunctional apparatus for monitoring a status of a number of applications, comprising:
- a display; 50
- a storage device to store data; 55
- a tuner to tune to a broadcast signal, wherein the broadcast signal is comprised of at least one of video data, audio data or supplemental data; a network interface to receive packet data, wherein the packet data is received from at least one of a service provider, content provider or an external device; an input interface to receive input signals from a wireless remote controller; and a processor to control display of a first information area and a second information area that includes at least one item, wherein the first information area and the second information area are displayed on a same screen, and video data displayed in the first information area is either received from the tuner or generated by an OSD generator, further wherein:
- when an item of the second information area is selected, a detailed information window is displayed listing at least one option corresponding to at least one application, the option indicating a condition of the storage device during execution of the at least one application, the detailed information window being superimposed over the first information area.
12. The apparatus of claim 11, wherein the at least one option further comprises additional information indicative of a running time for execution of the corresponding at least one application.
13. The apparatus of claim 12, wherein the processor further controls a specific application to stop running and removes a specific option from the detailed information window when the specific option corresponding to the specific application is selected from the detailed information window.
14. The apparatus of claim 11, wherein the condition of the storage device is changed depending on what applications are running.
15. The apparatus of claim 14, wherein the at least one application comprises graphical data designed to help a user to perform a specific function in the computer-readable multifunctional apparatus and is received via the network interface, and wherein the storage device is involved during execution of the at least one application.
16. The apparatus of claim 12, wherein the processor controls the detailed information window to rearrange an order of the at least one option corresponding to at least one application according to the condition of the storage device.

FIG. 1



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FIG. 2

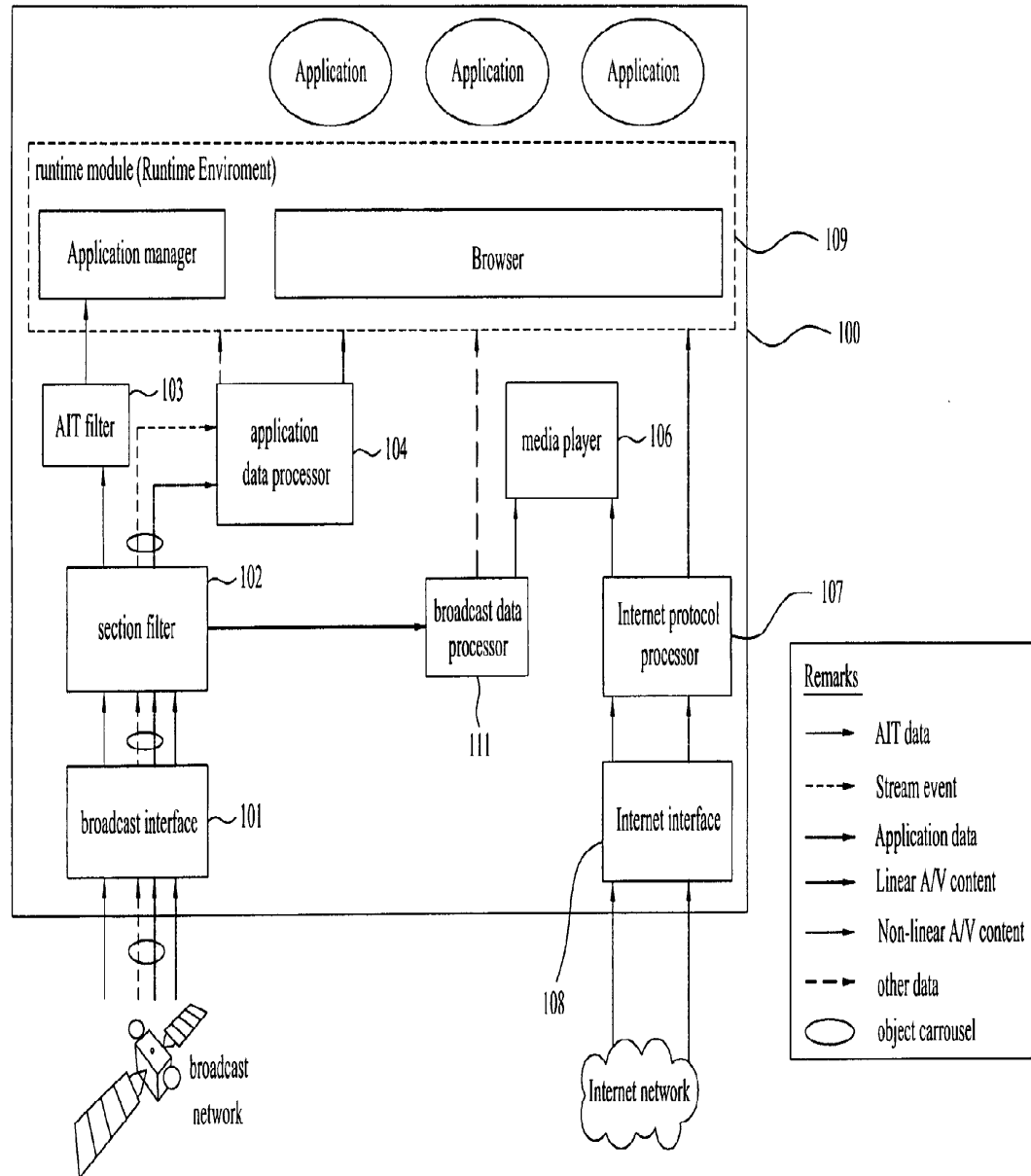


FIG. 3

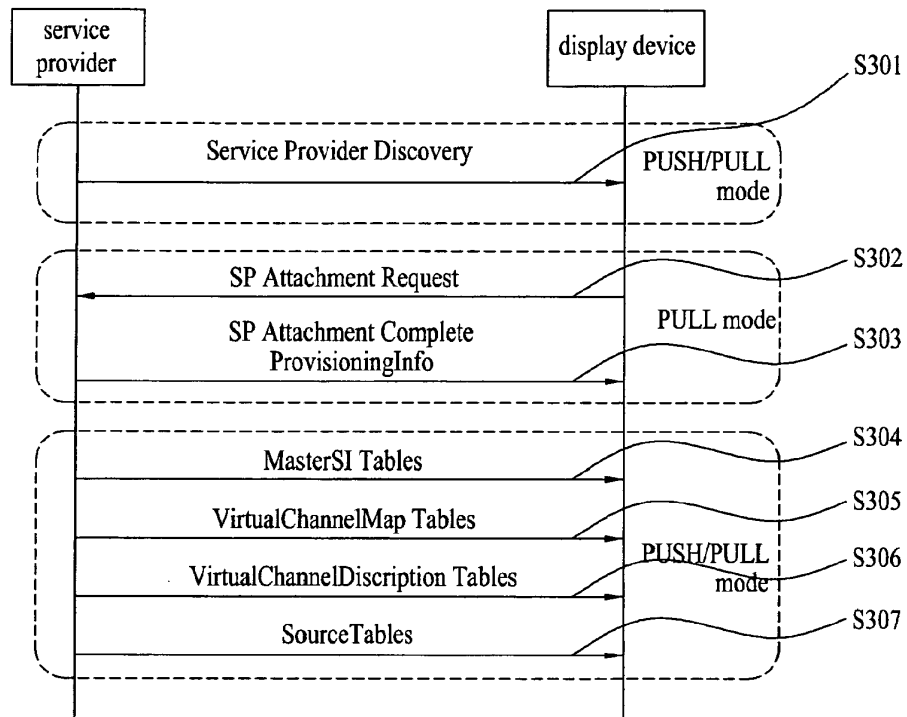


FIG. 4

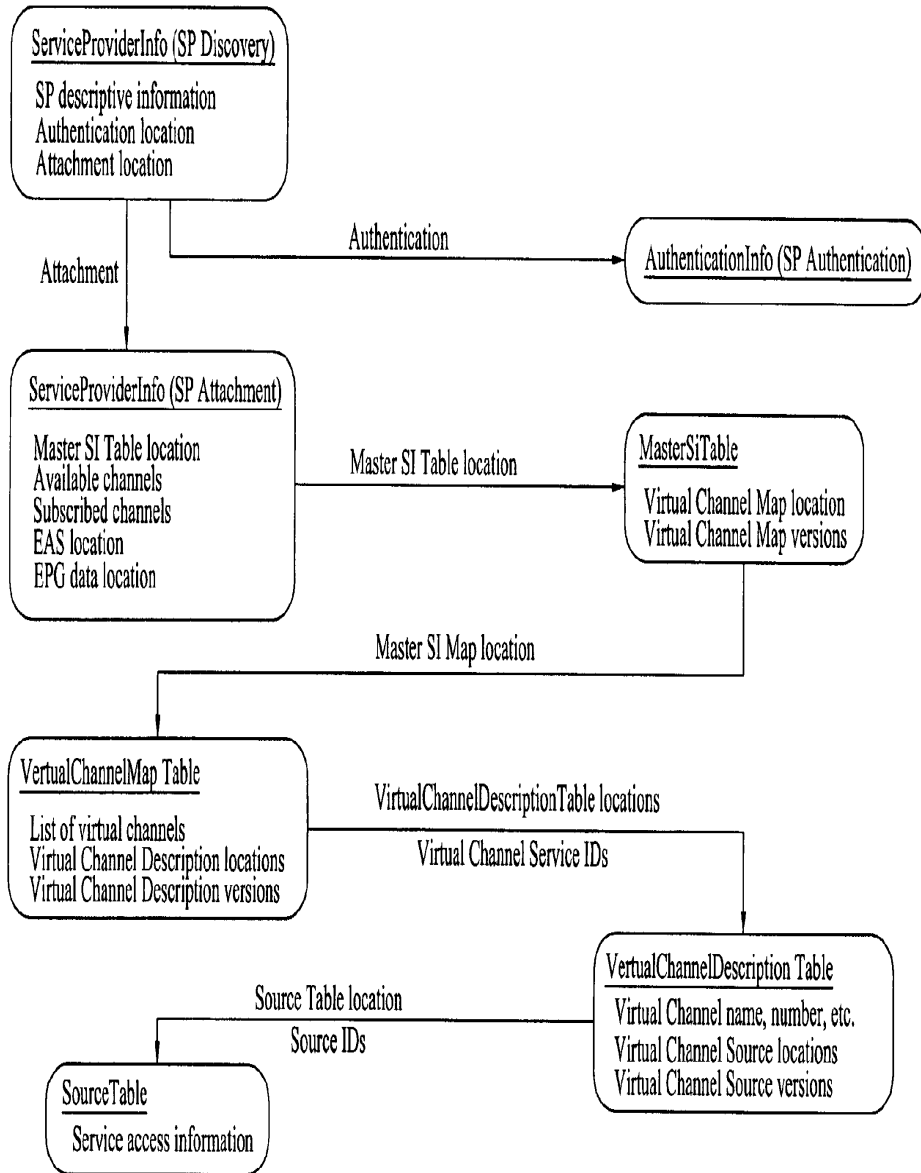


FIG. 5

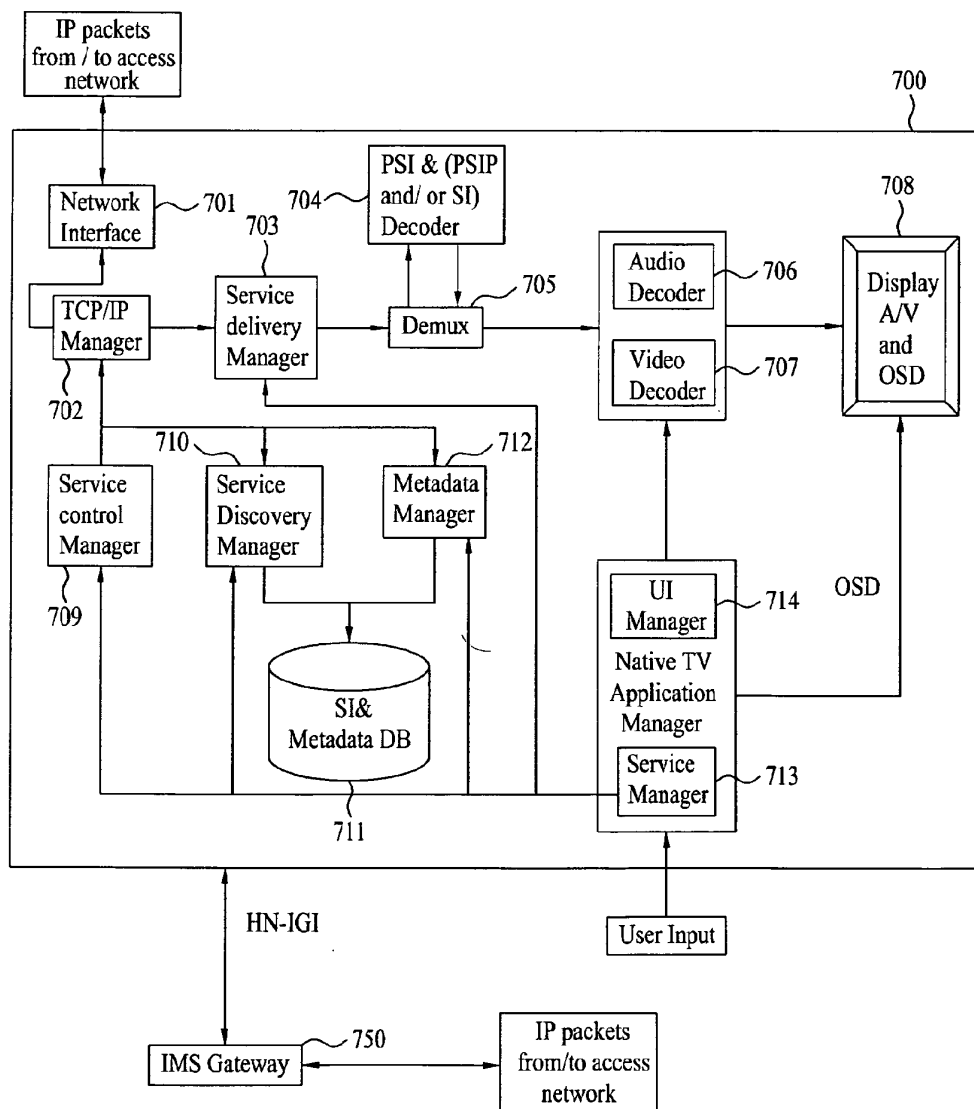


FIG. 6

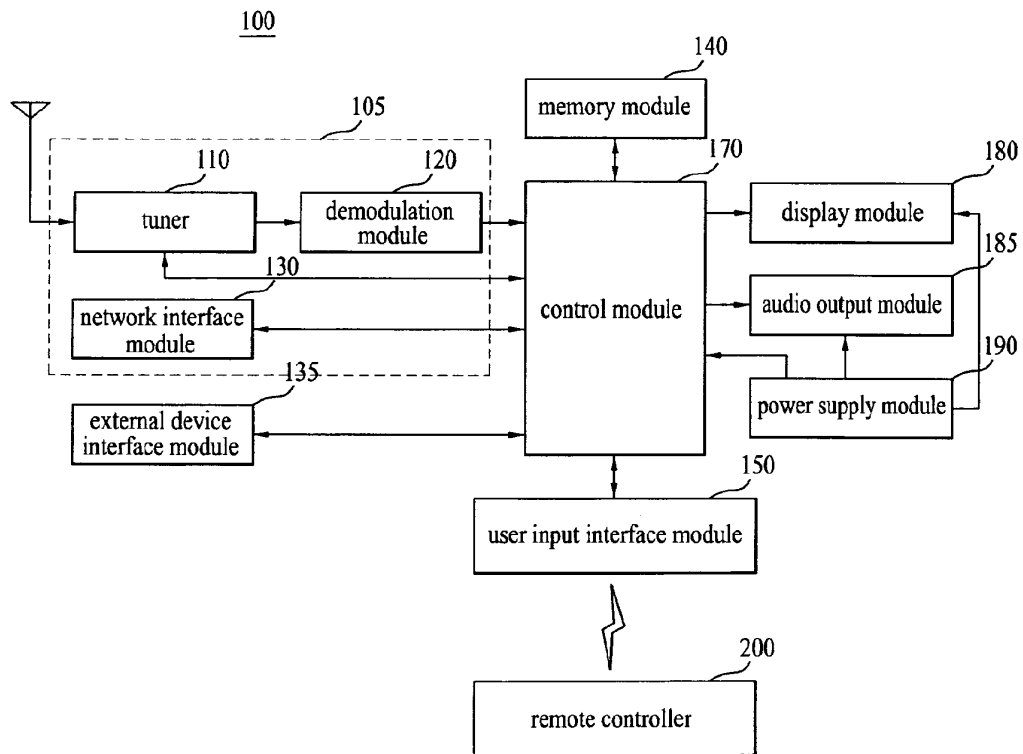


FIG. 7

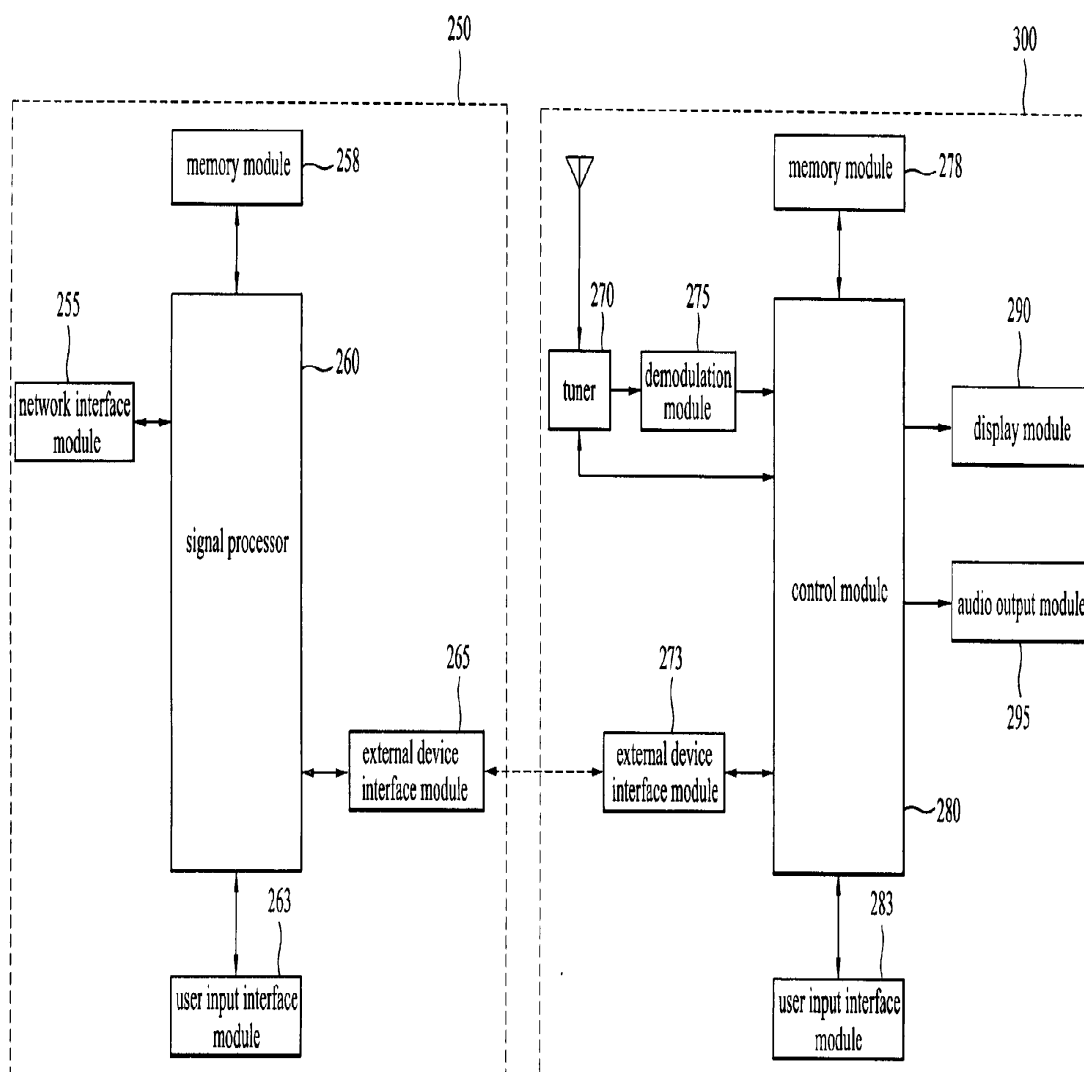


FIG. 8

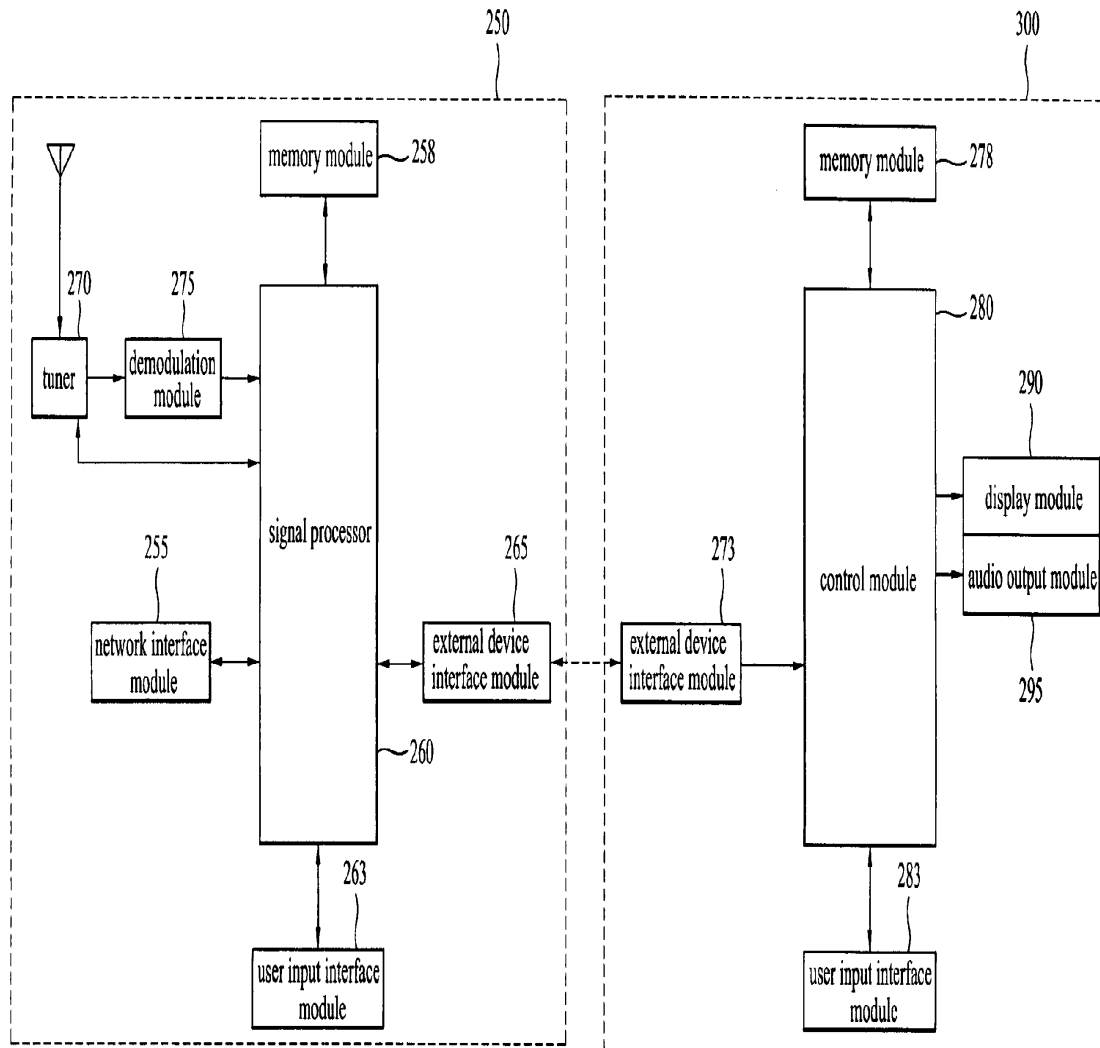


FIG. 9

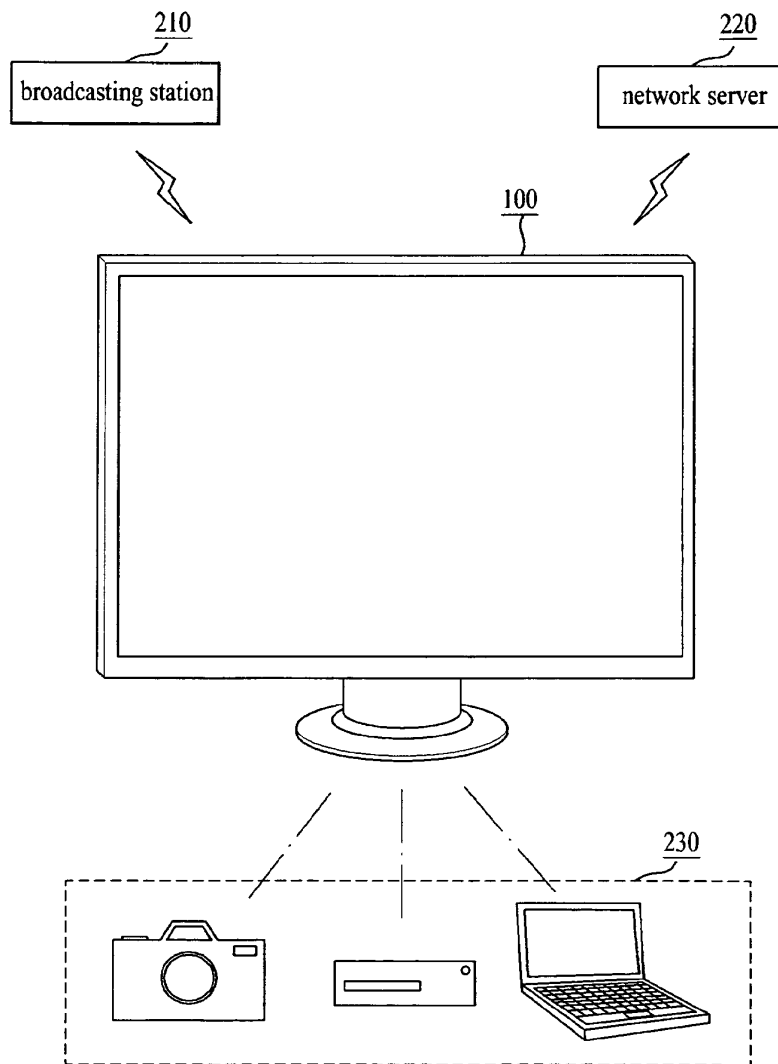
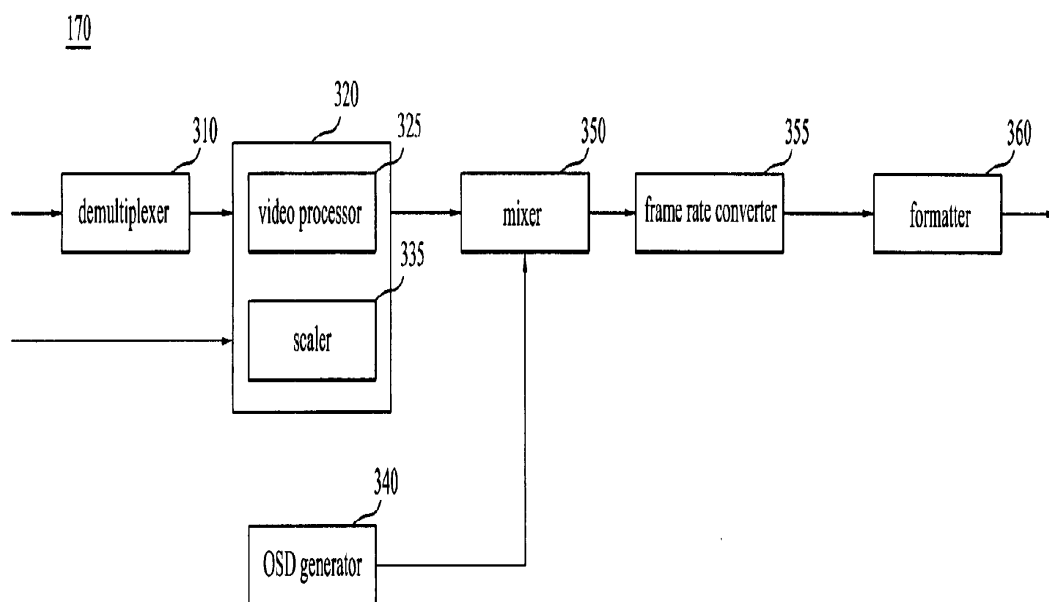


FIG. 10



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FIG. 11

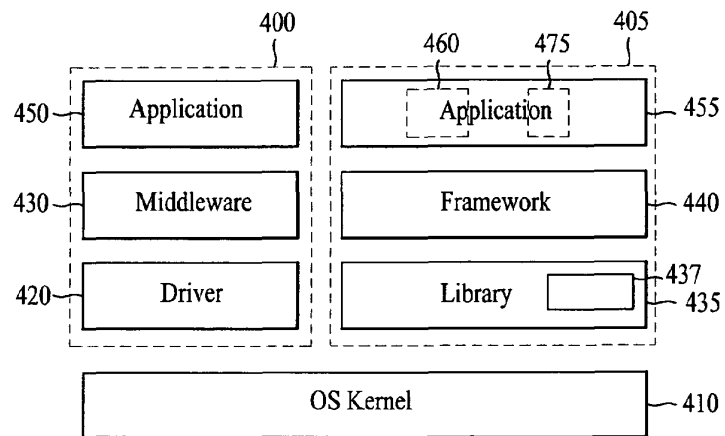


FIG. 12

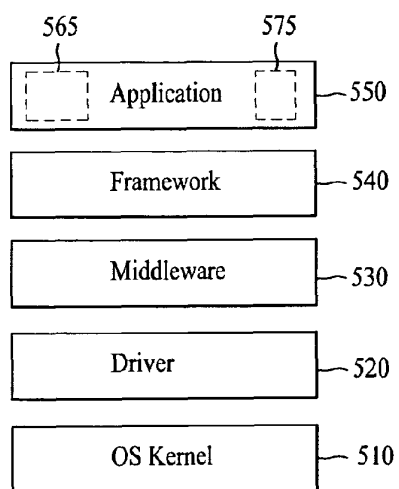


FIG. 13

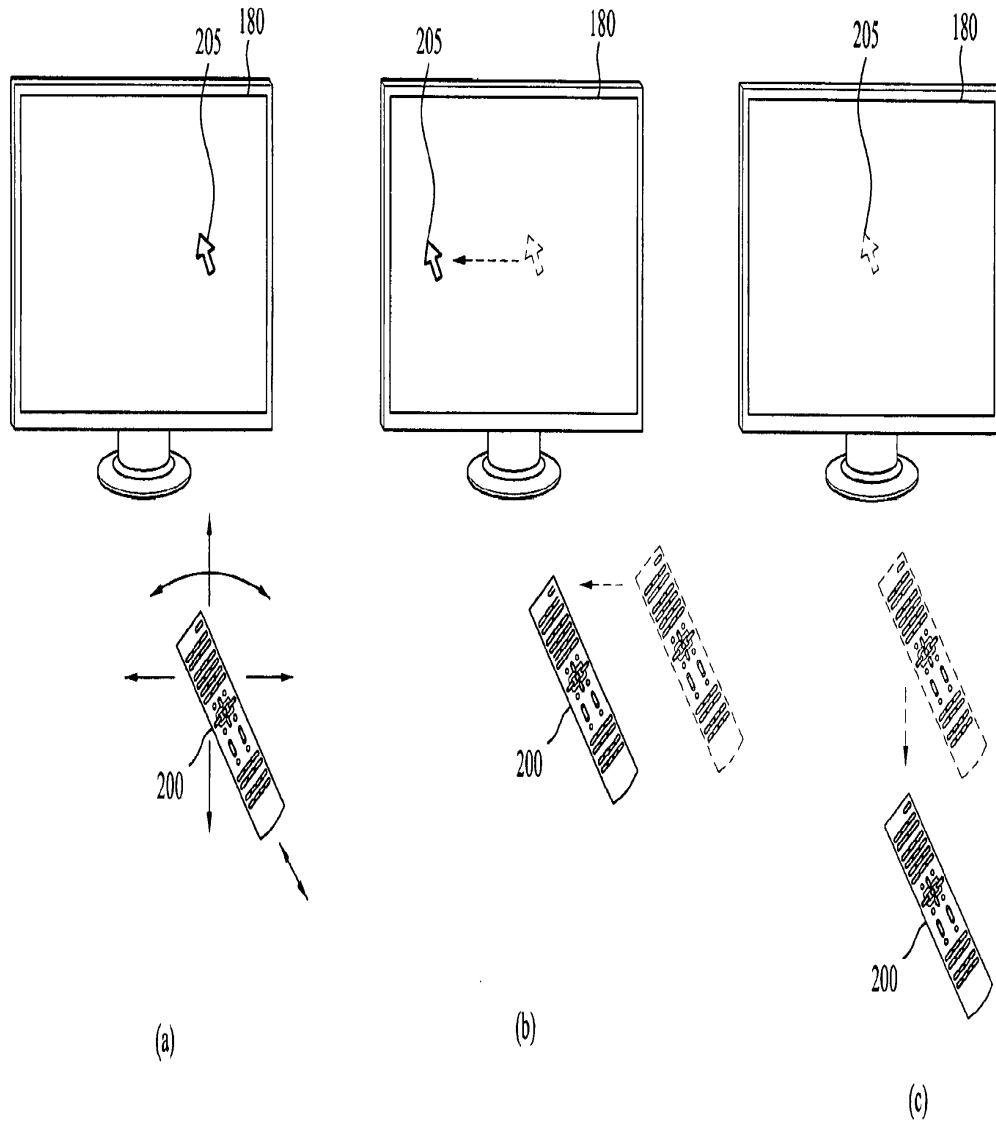


FIG. 14

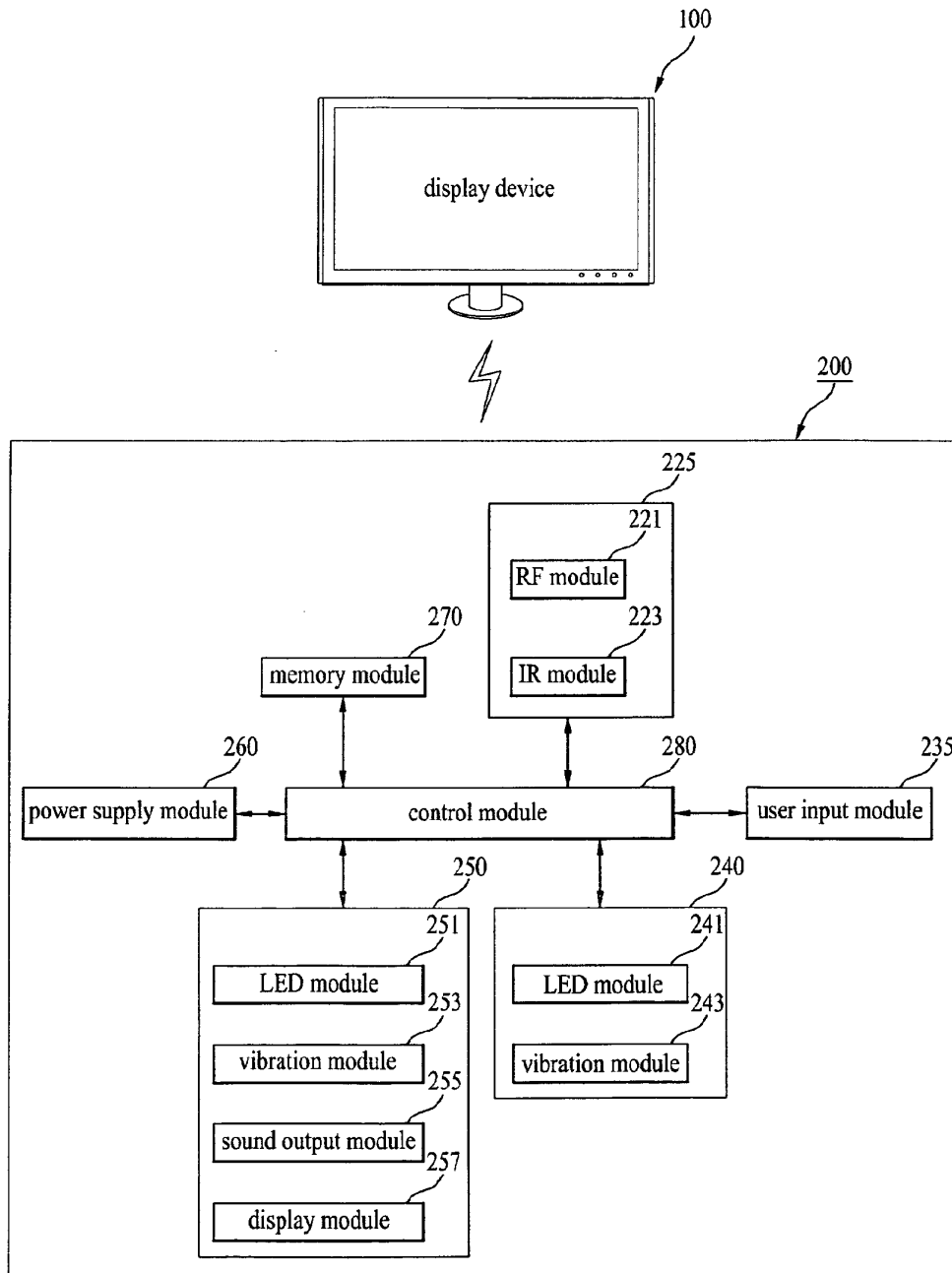


FIG. 15

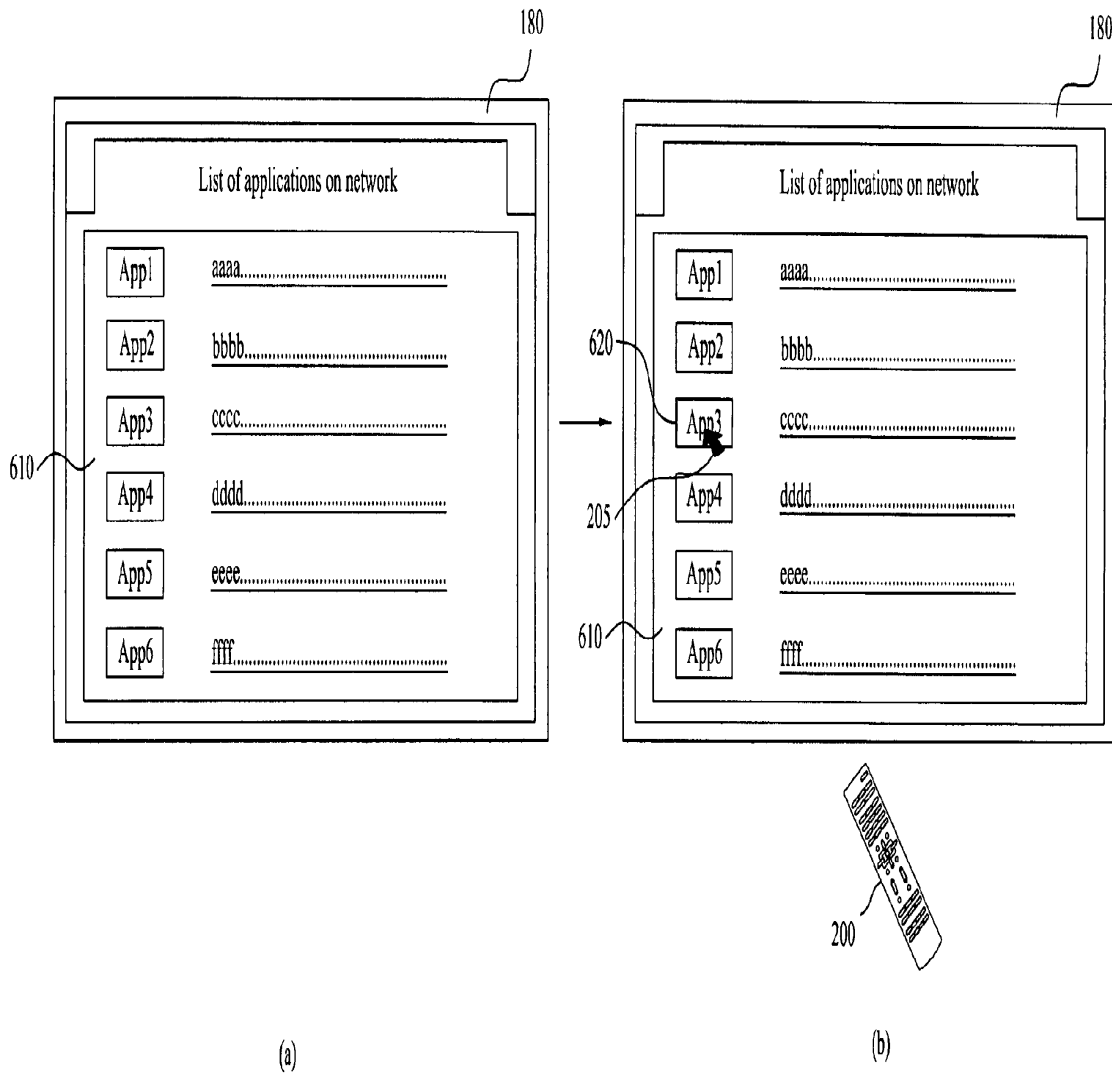
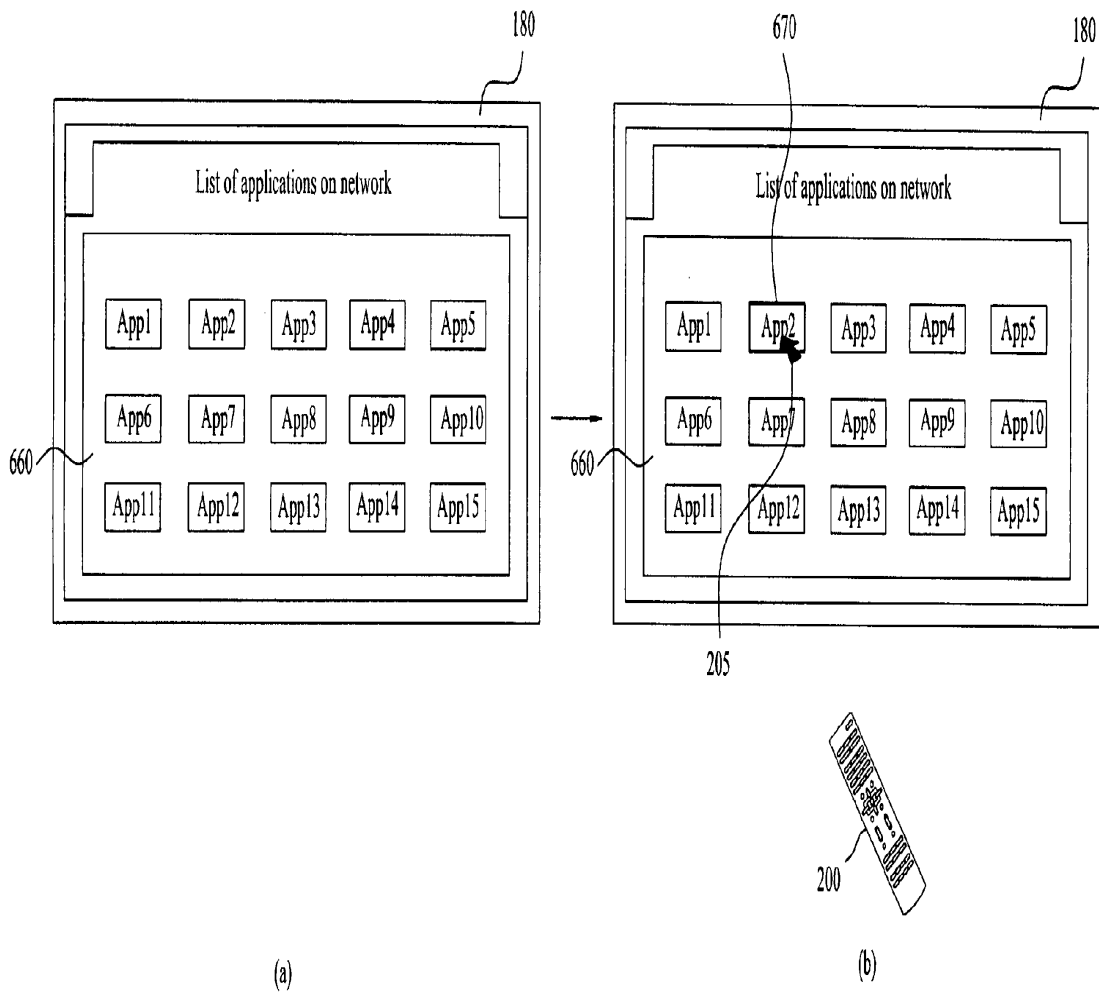
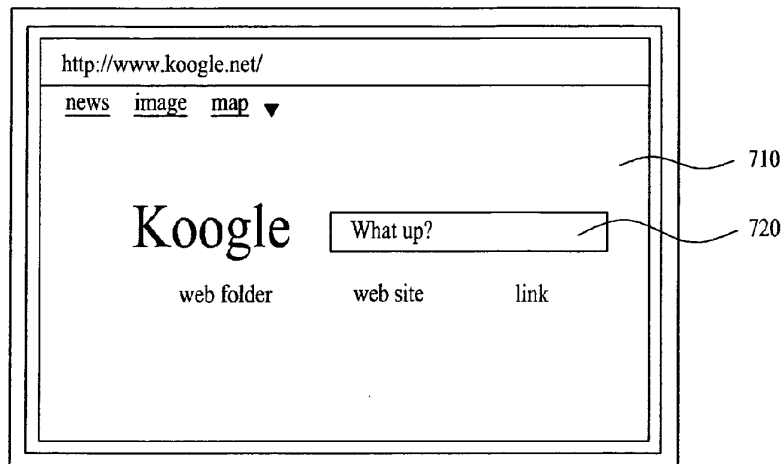


FIG. 16

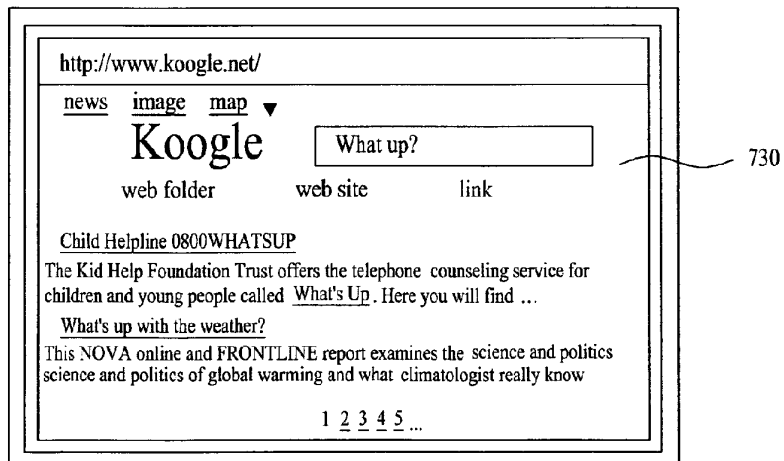


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FIG. 17



(a)



(b)

FIG. 18

810 Sign-in to yahoo!

ID

820 *****

PASSWORD

825 *****

☐ AUTO SIGN-IN

(a)

[illegible]

(b)

FIG. 19

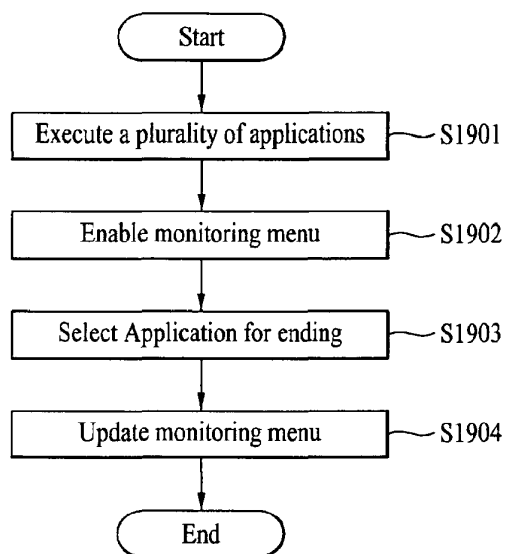


FIG. 20

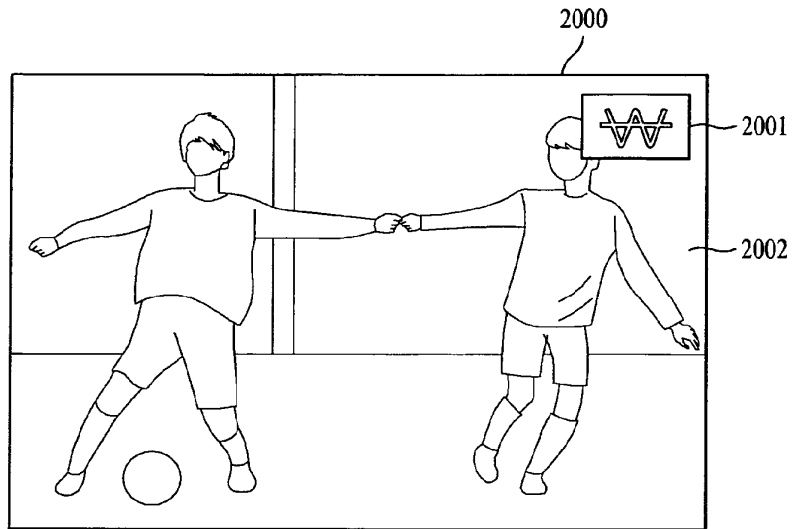


FIG. 21

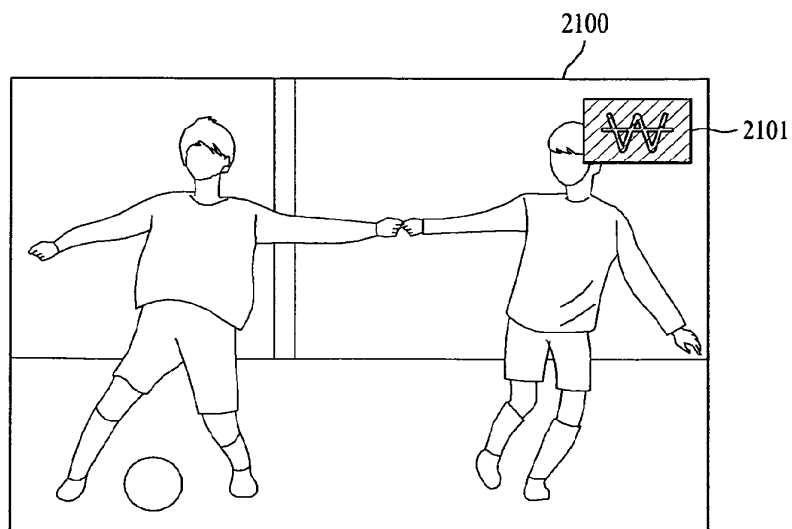


FIG. 22

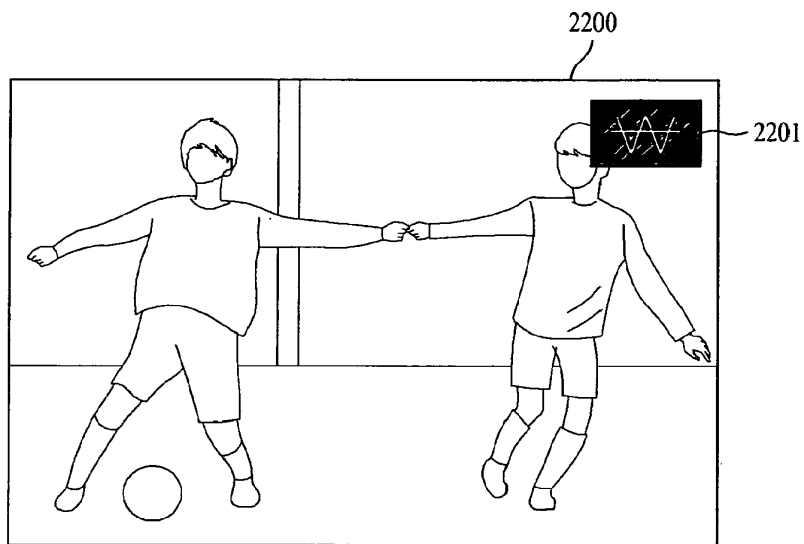


FIG. 23

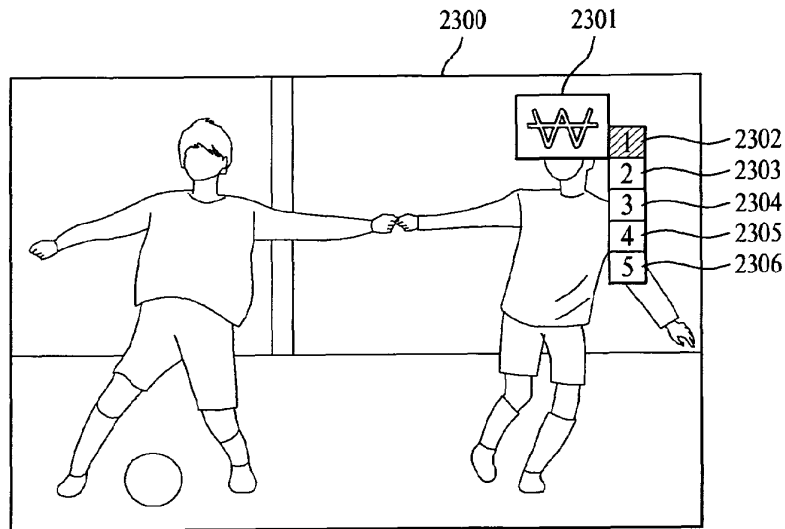


FIG. 24

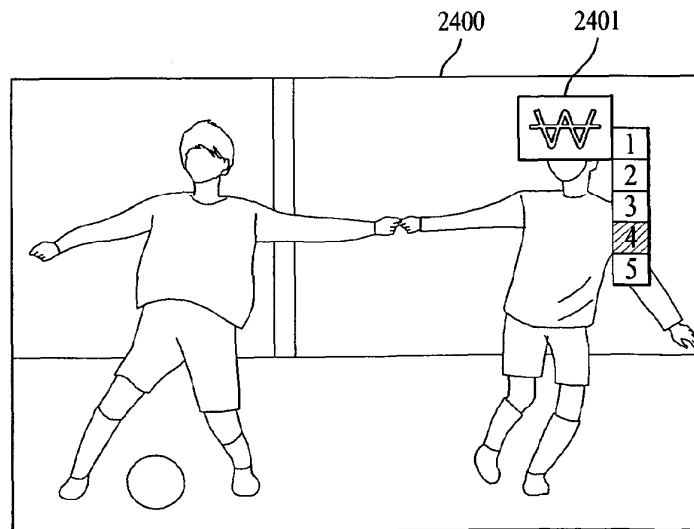


FIG. 25

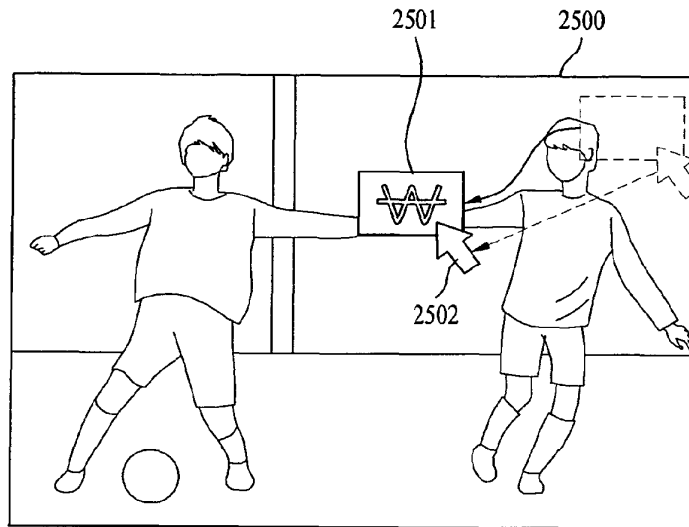


FIG. 26

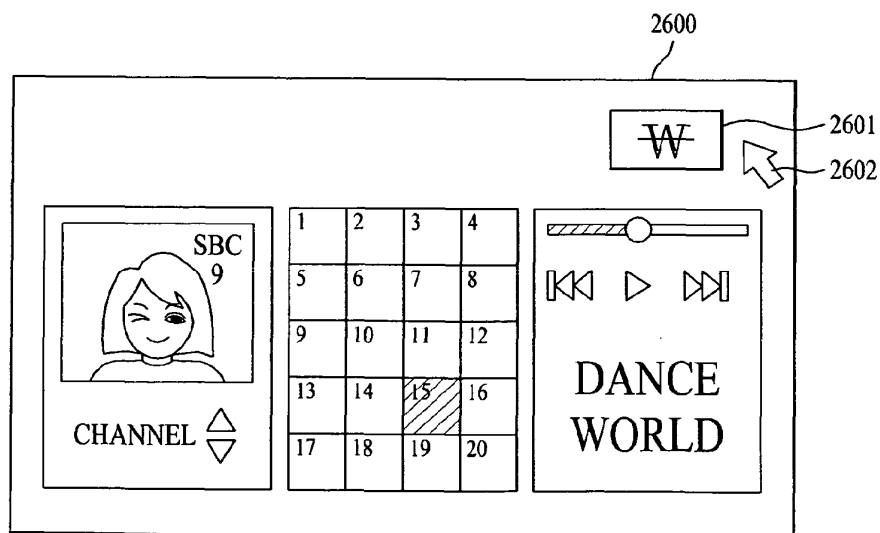


FIG. 27

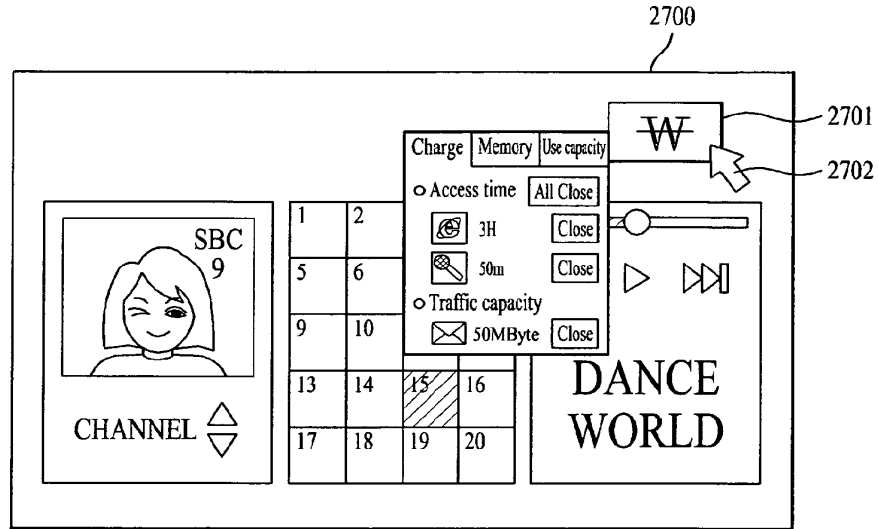


FIG. 28

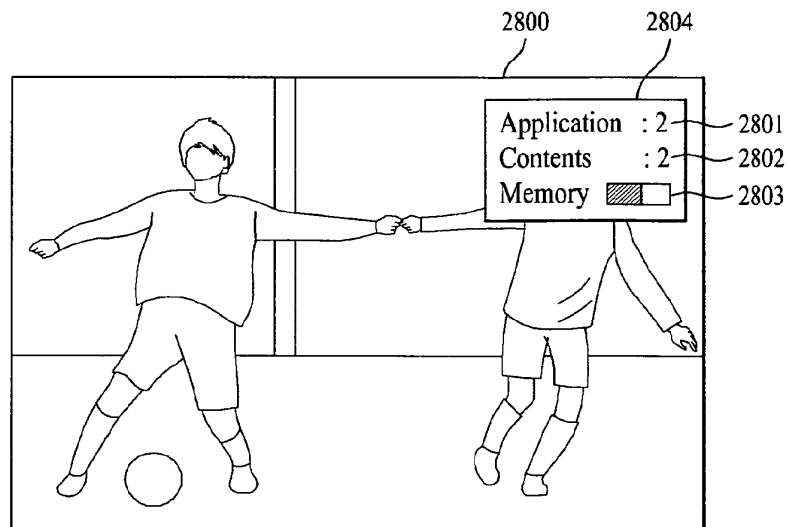


FIG. 29

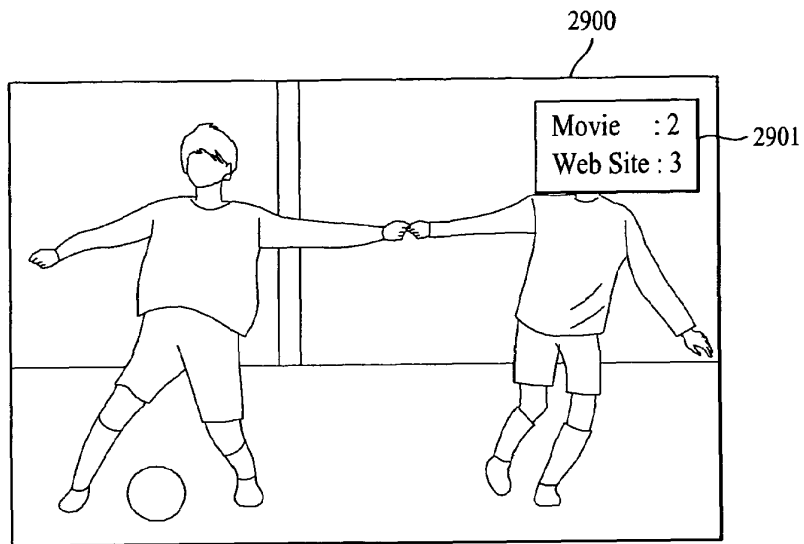


FIG. 30

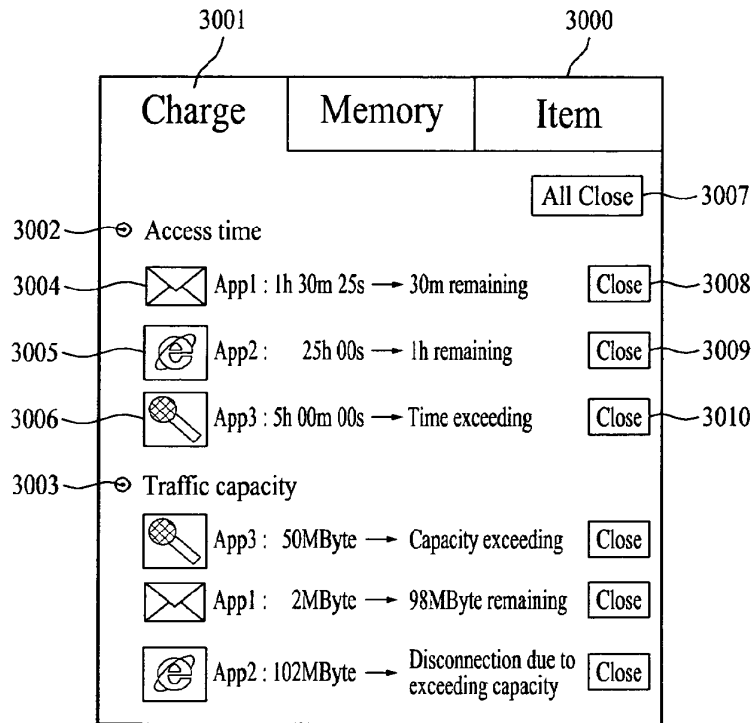


FIG. 31

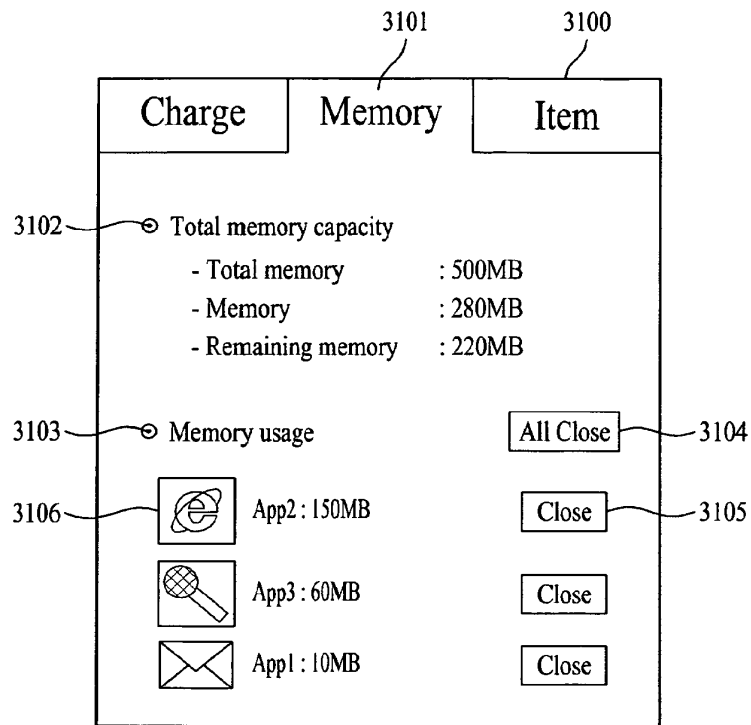


FIG. 32

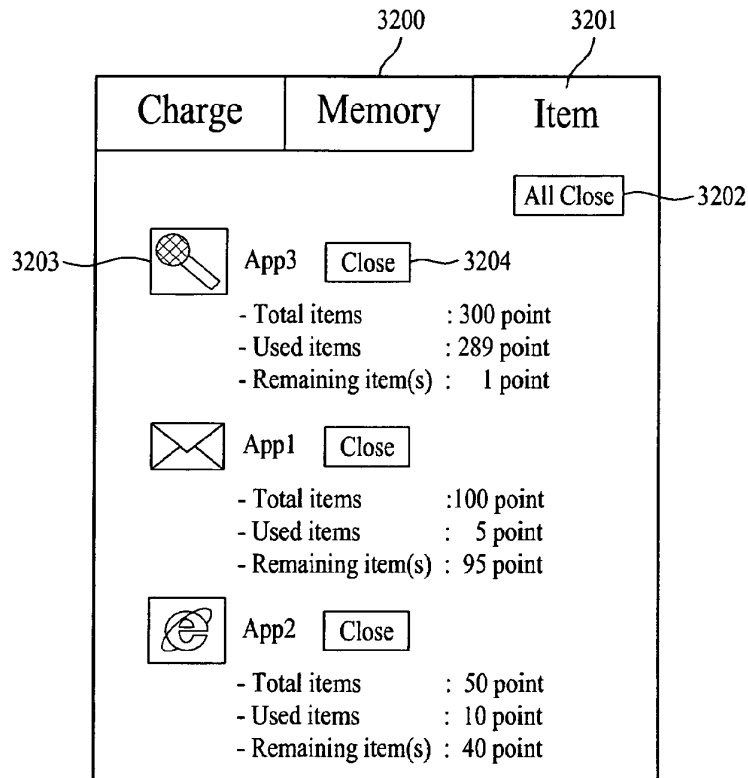


FIG. 33

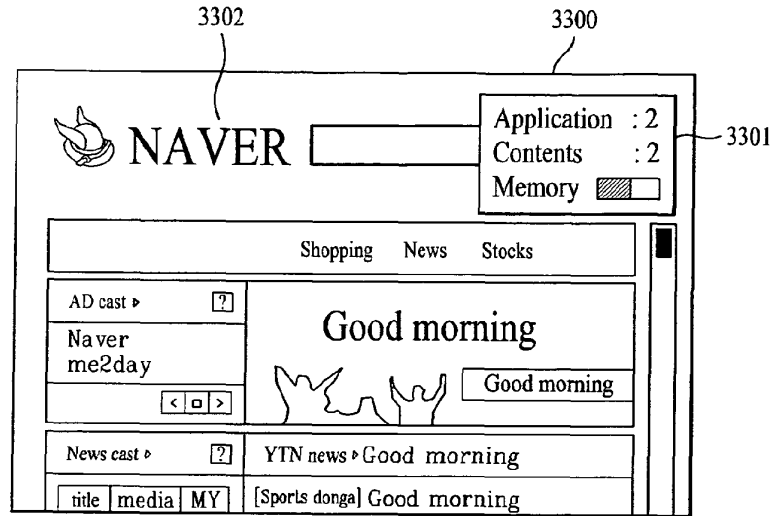


FIG. 34

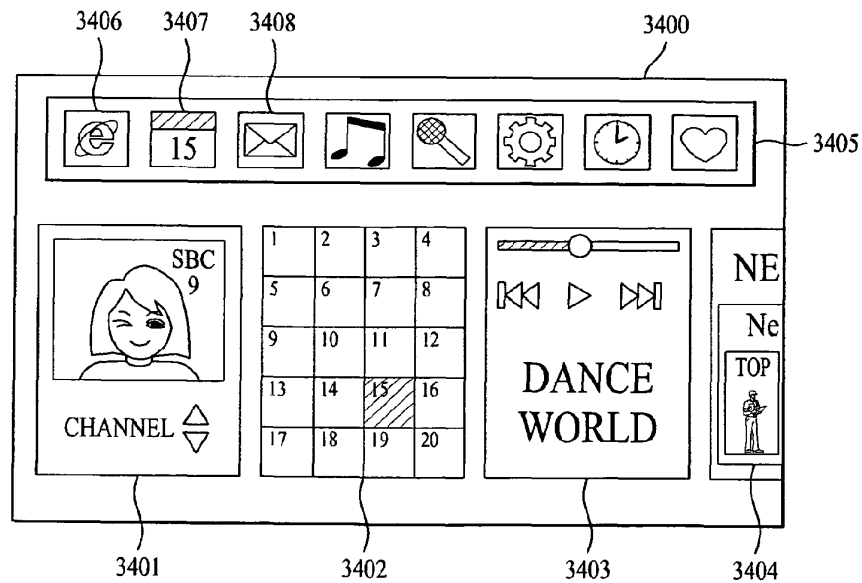


FIG. 35

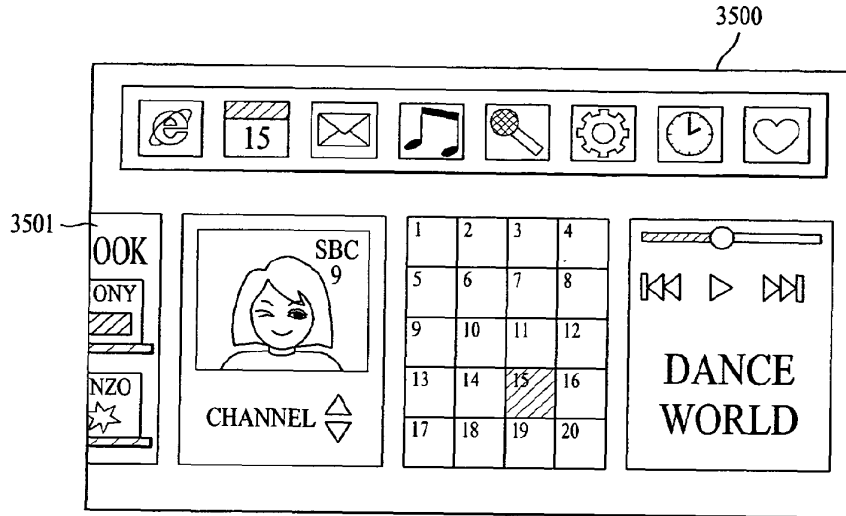


FIG. 36

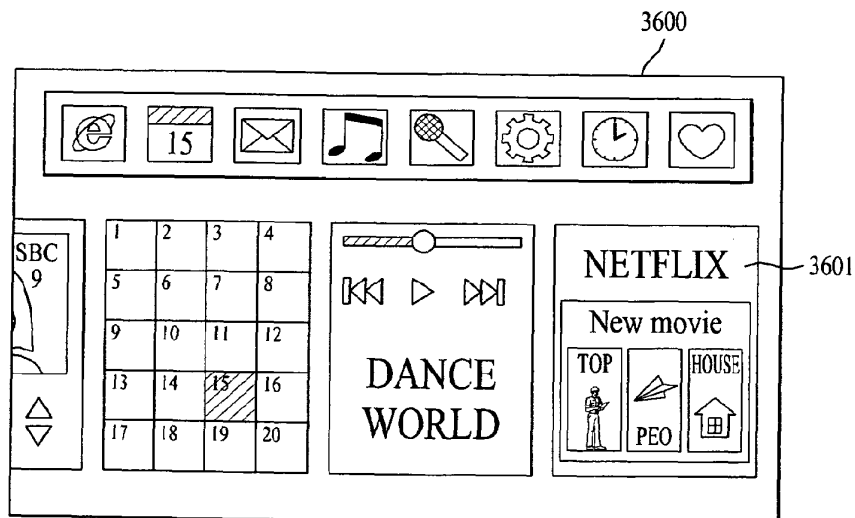


FIG. 37

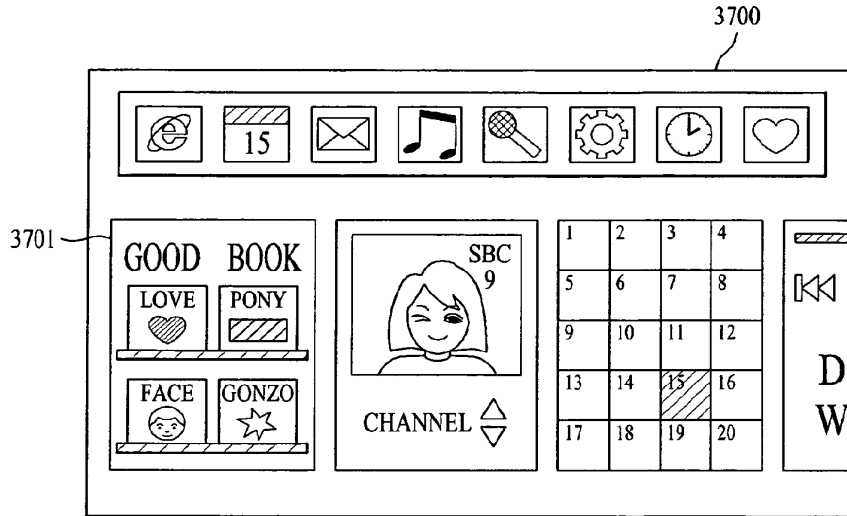


FIG. 38

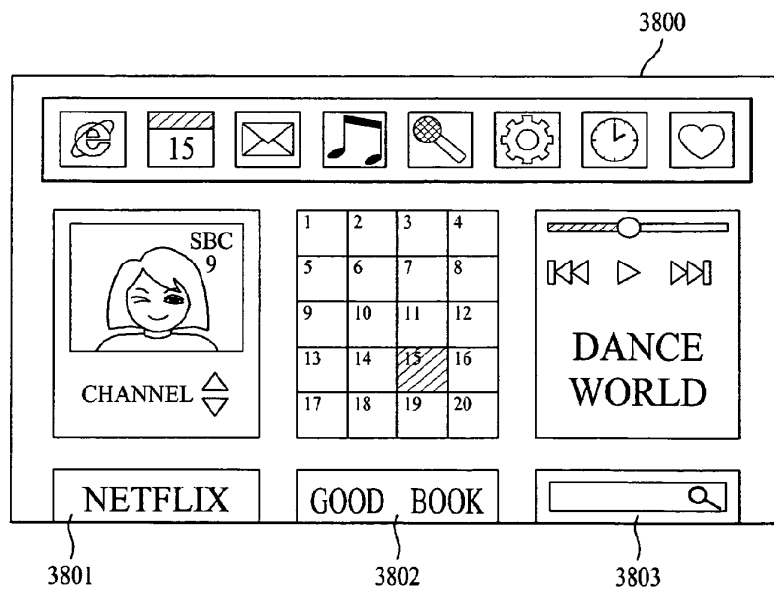


FIG. 39

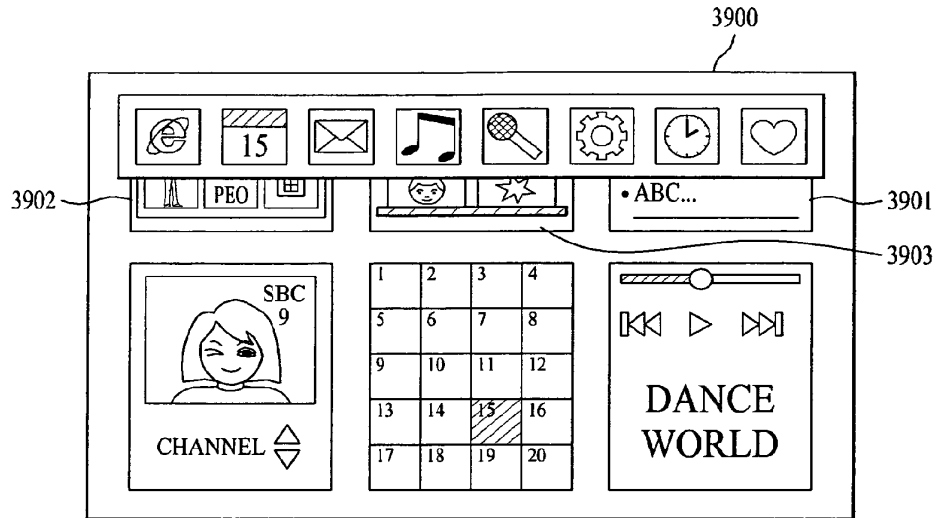


FIG. 40

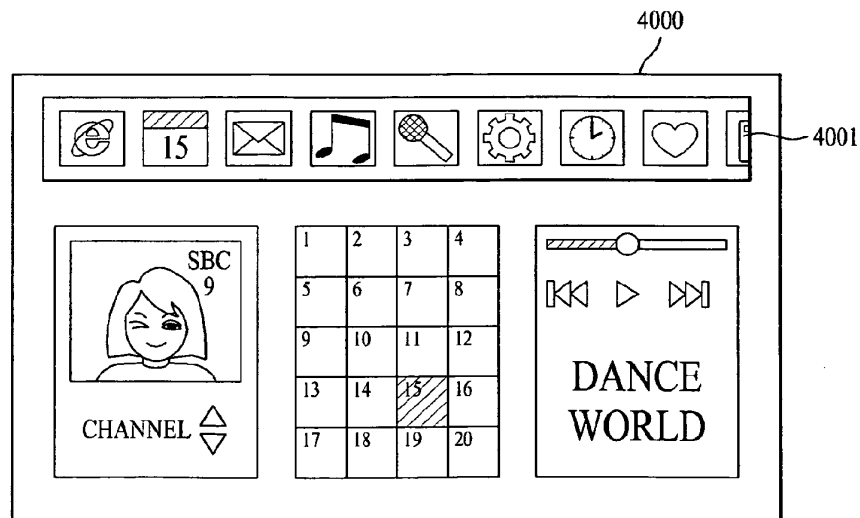


FIG. 41

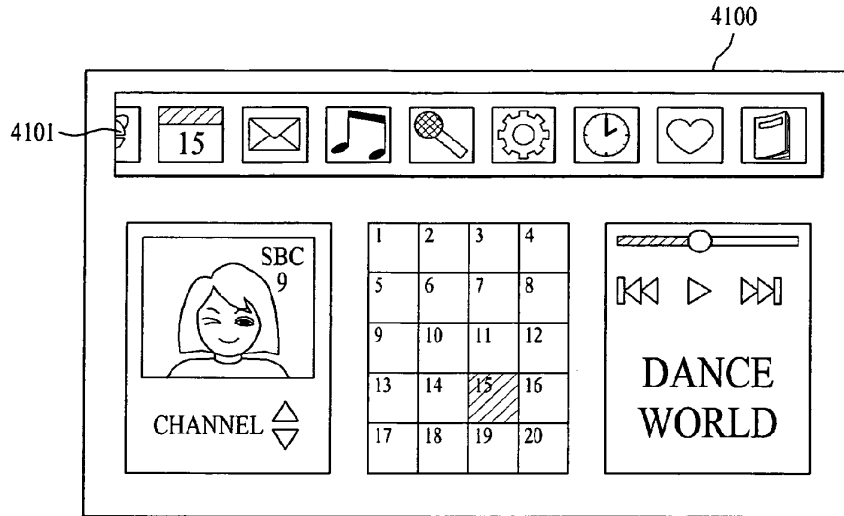


FIG. 42

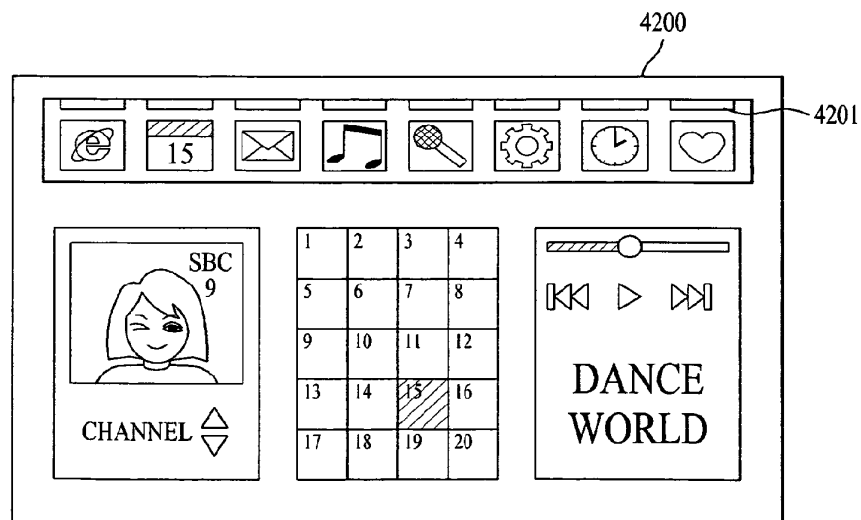


FIG. 43

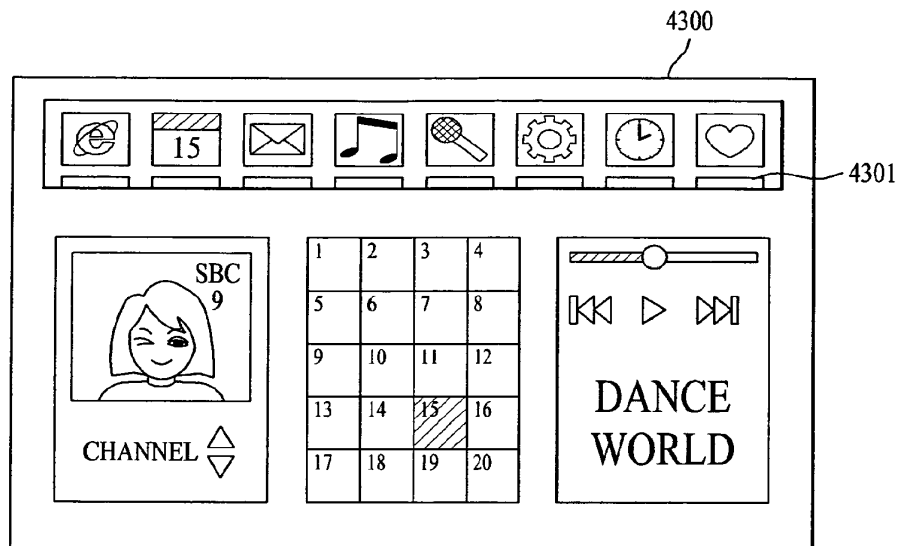
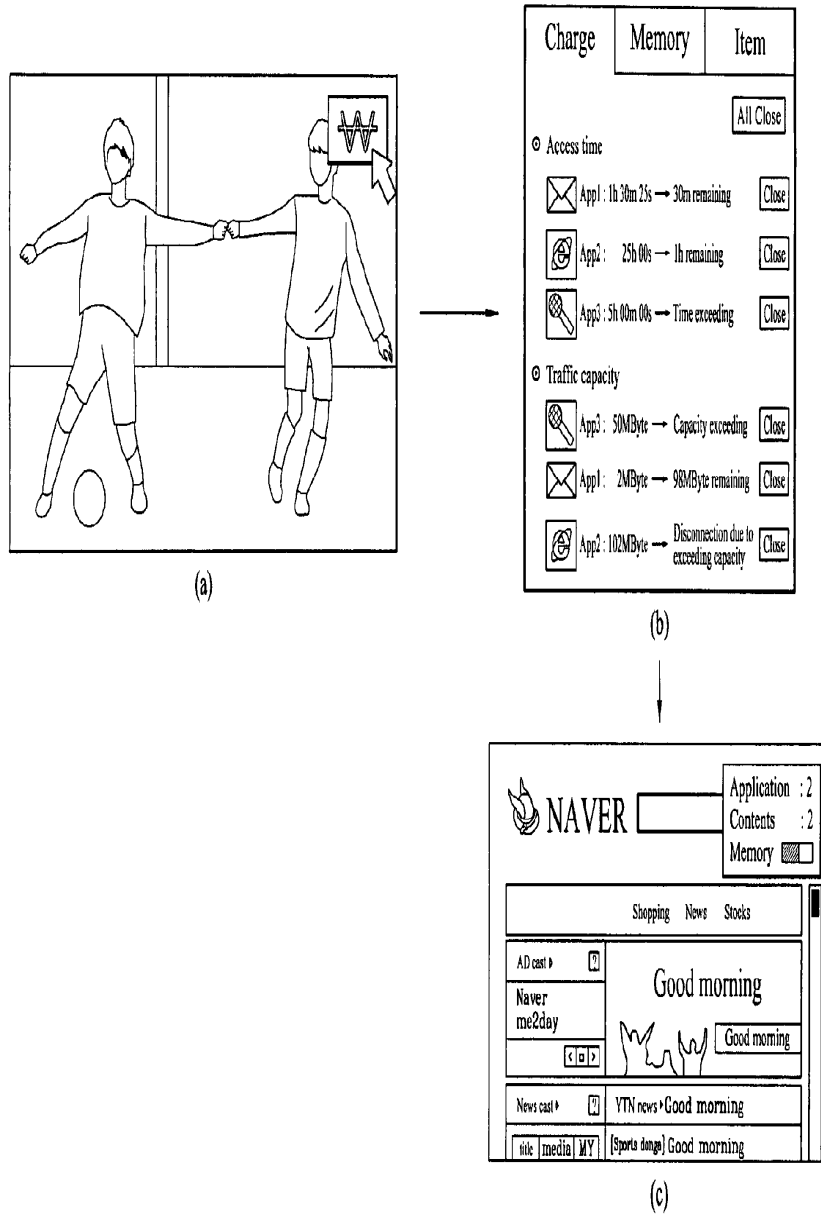
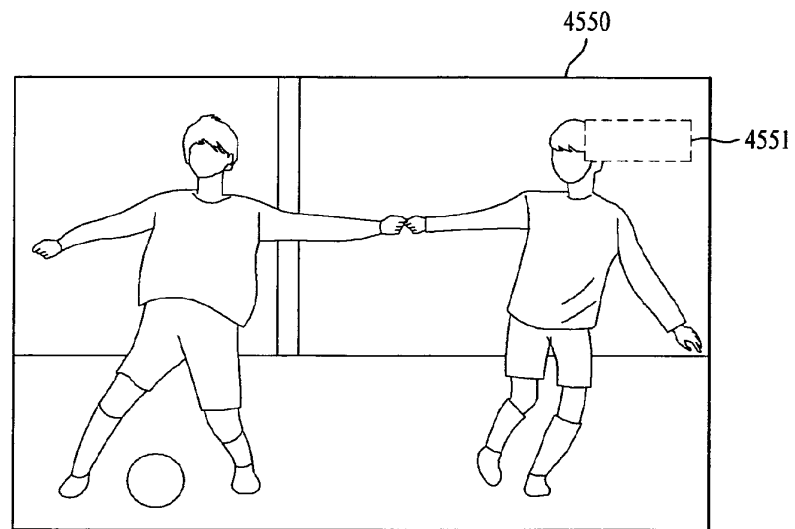


FIG. 44

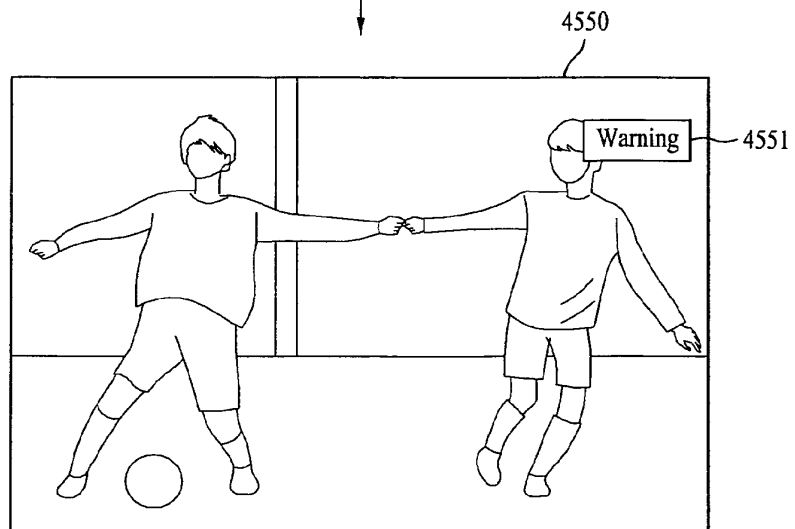


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FIG. 45



(a)



(b)

FIG. 46

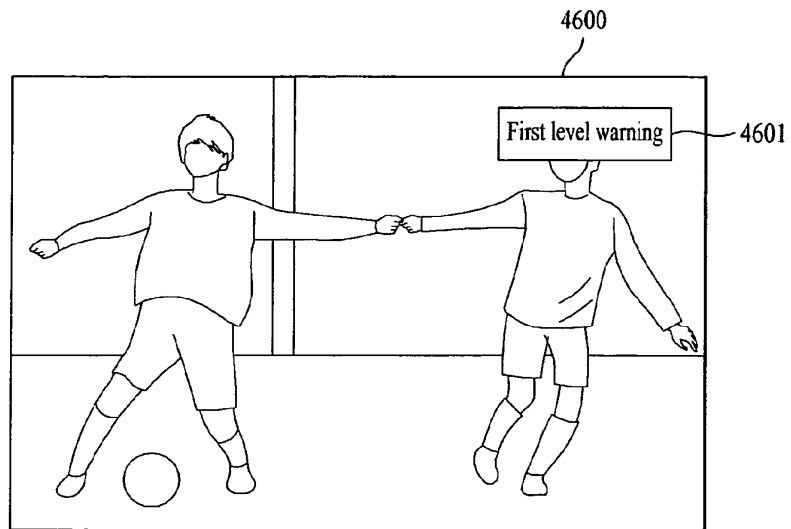


FIG. 47

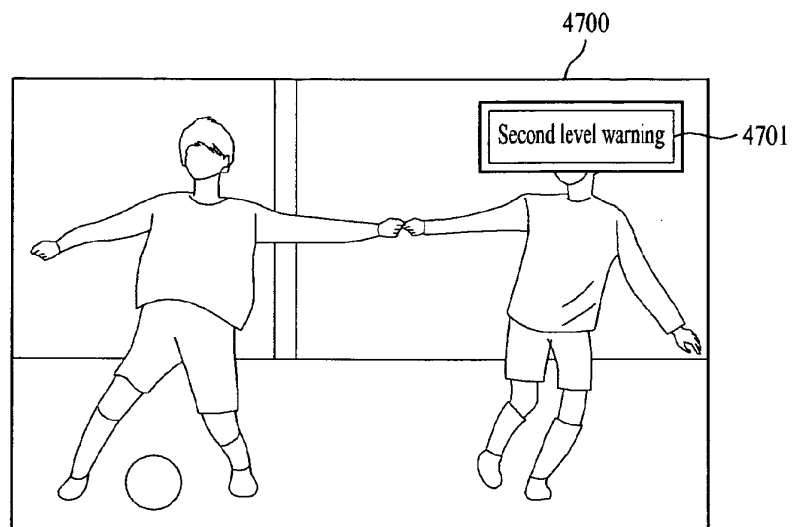


FIG. 48

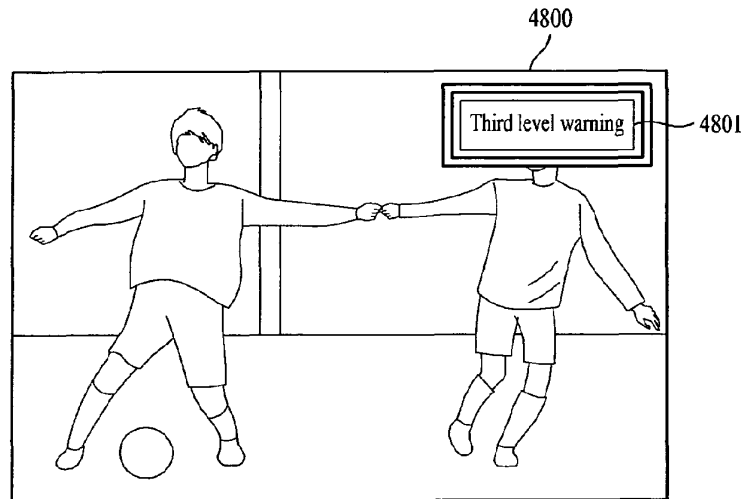


FIG. 49

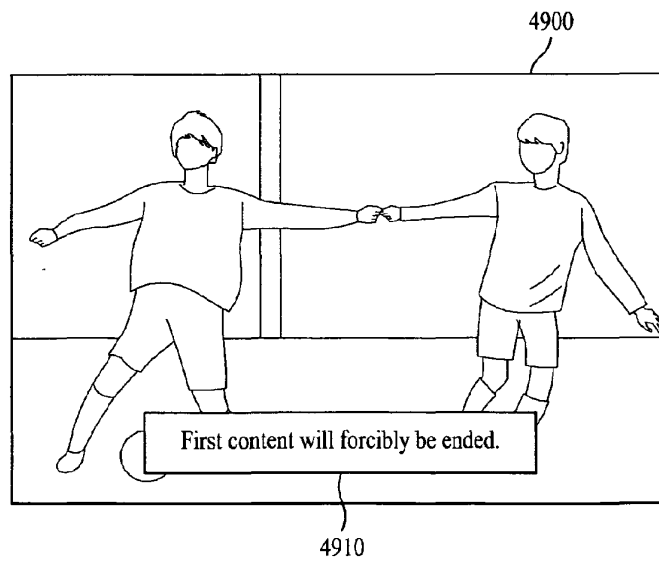


FIG. 50

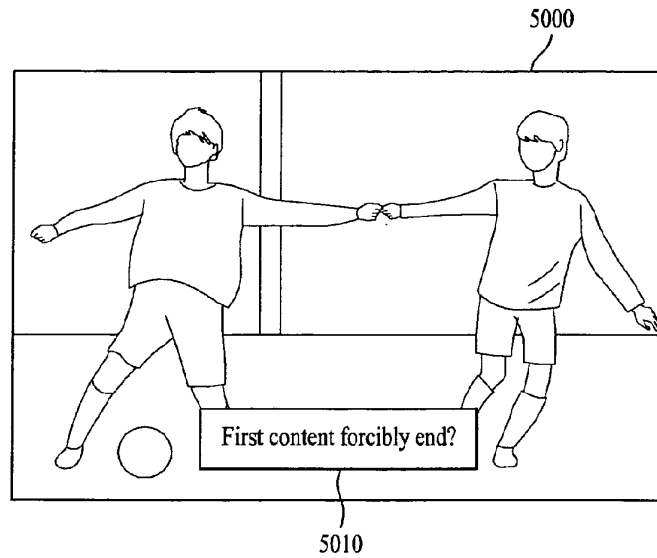


FIG. 51

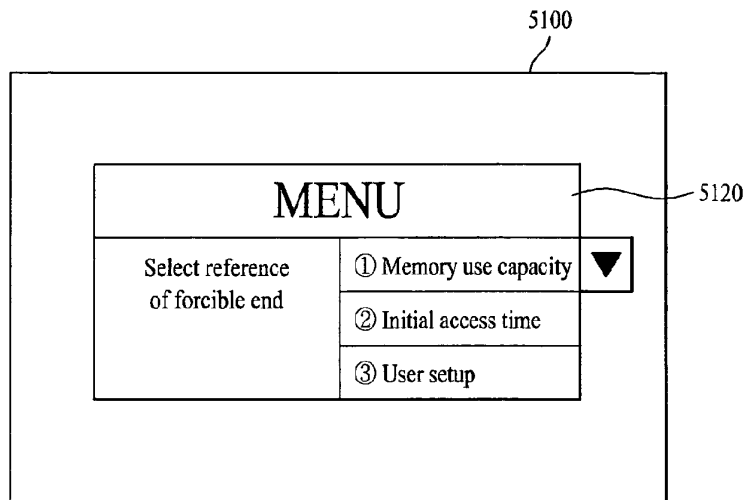


FIG. 52

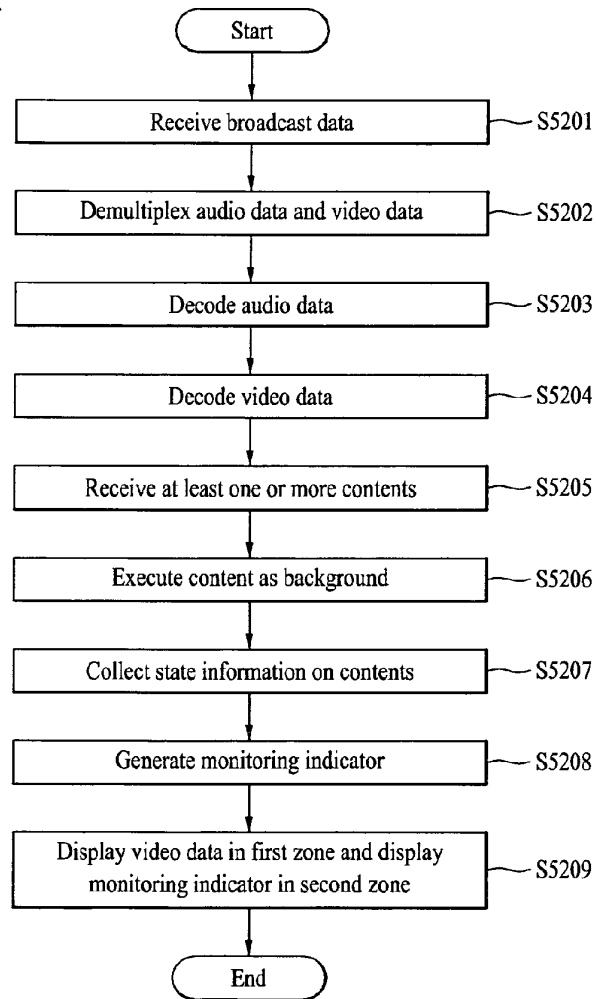


FIG. 53

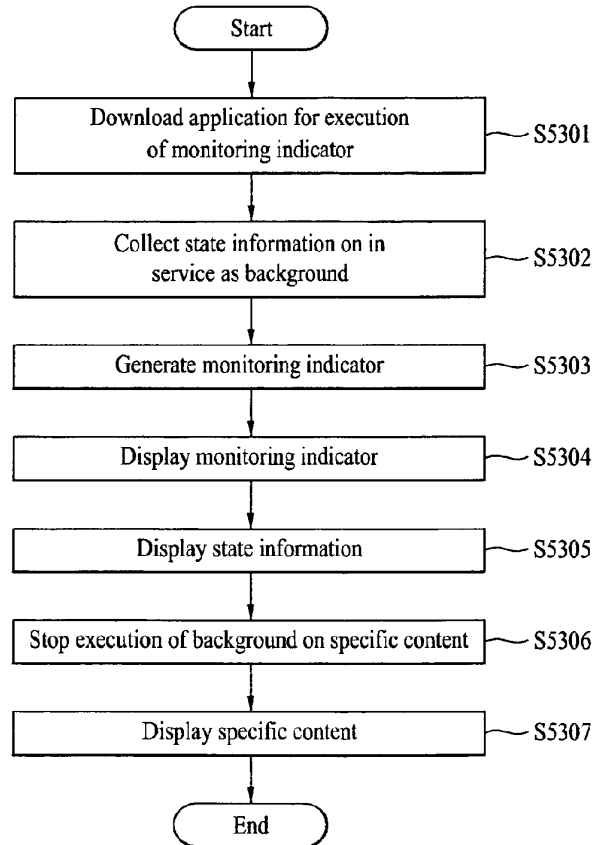


FIG. 54

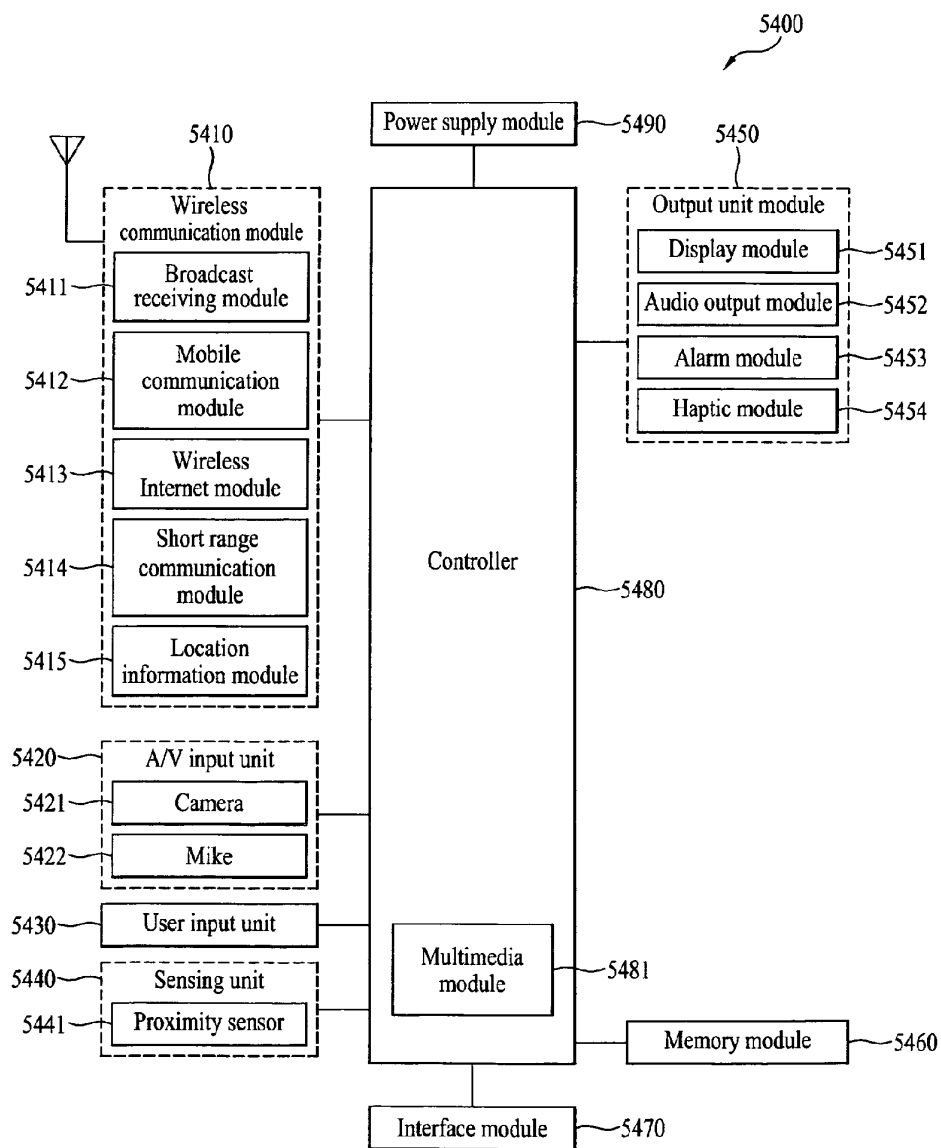


FIG. 55

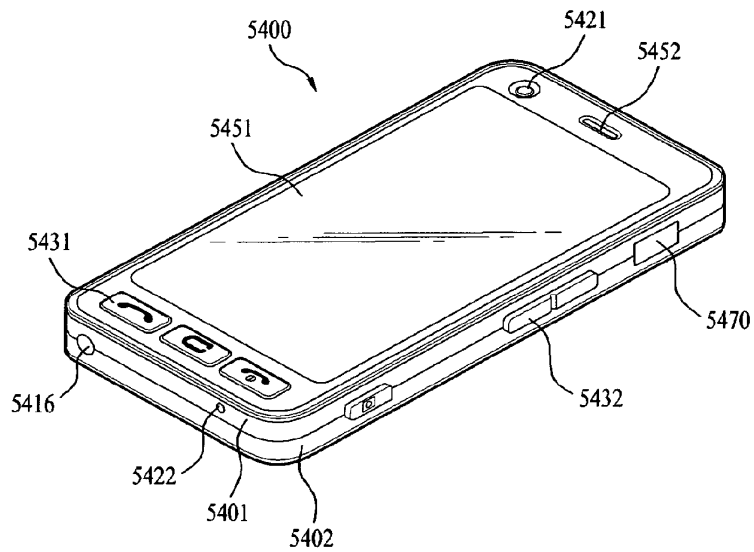


FIG. 56

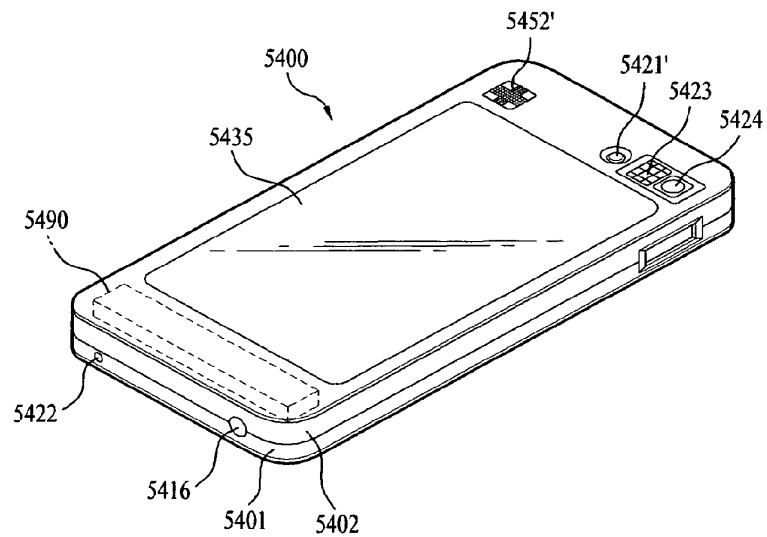


FIG. 57

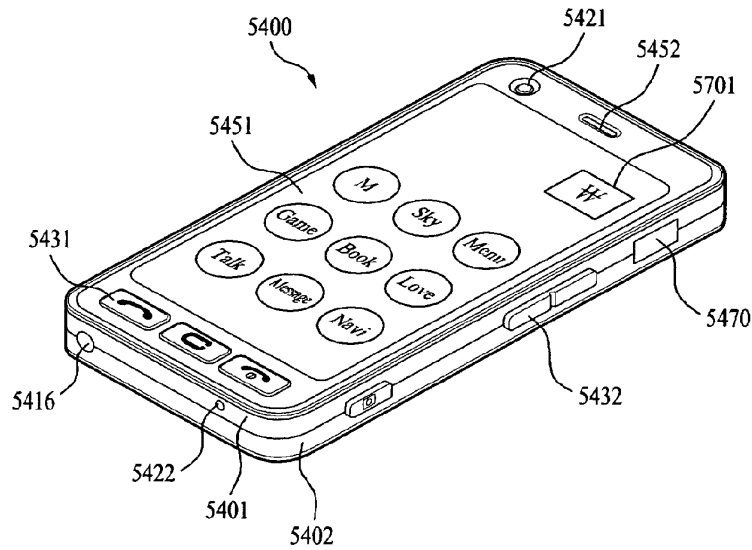


FIG. 58

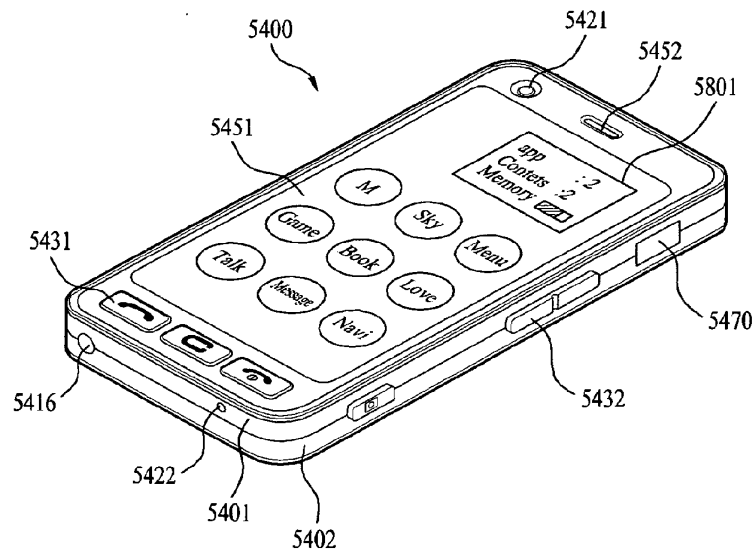


FIG. 59

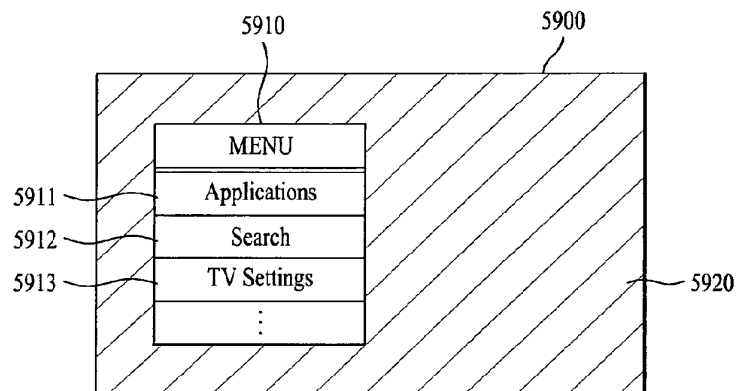


FIG. 60

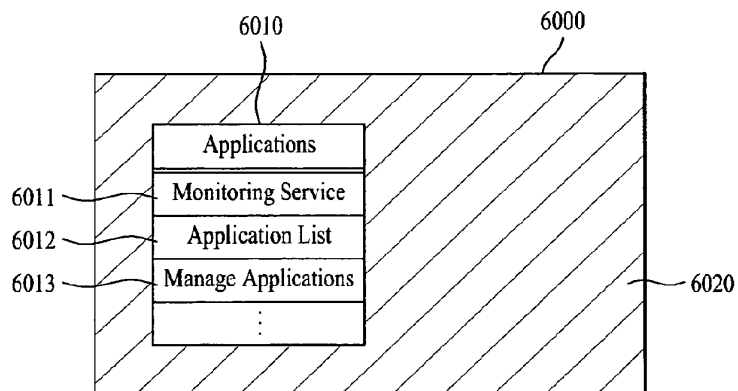


FIG. 61

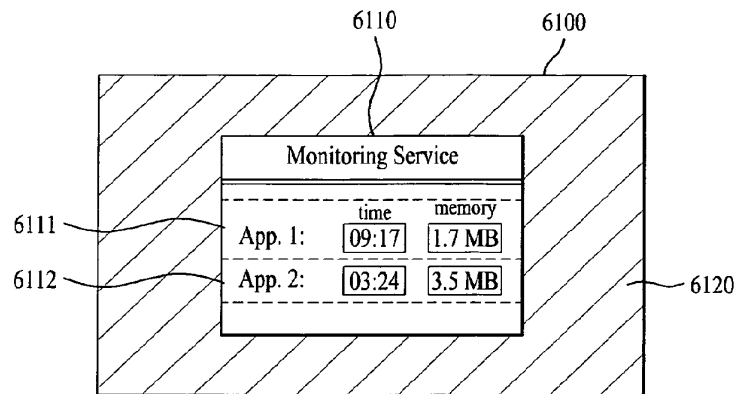
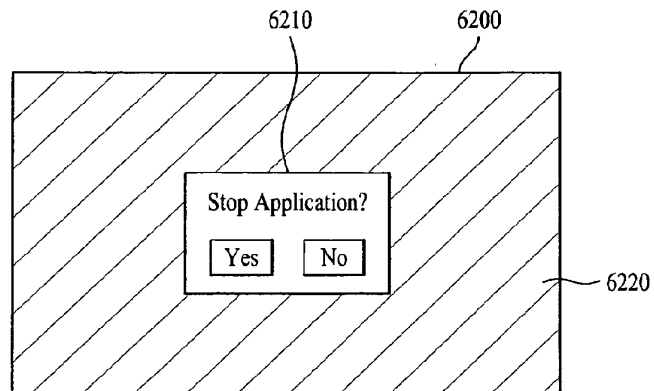


FIG. 62





EUROPEAN SEARCH REPORT

Application Number
EP 11 00 1370

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 June 2011	Examiner Bardella, Xavier
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 (08.02) (P04001)

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EP 11 00 1370

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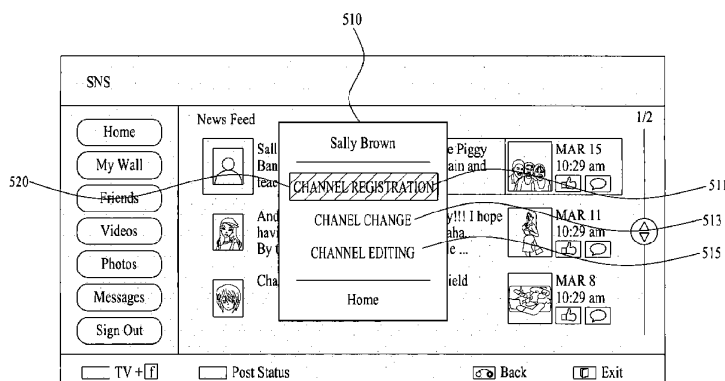
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(54) Multi-functional display device having an electronic programming guide and method for controlling the same

(57) A multi-functional display device and a method for displaying an electronic programming guide (EPG) in the same are disclosed herein. The multi-functional display device may include a display for displaying broadcast programs or data, a network interface configured to receive event information associated with a social network service (SNS) account for an individual or entity, a

storage device configured to store at least one channel number and at least one SNS account information assigned to the at least one channel number, and a controller for controlling the multi-functional display device. The controller may map the event information to one of the at least one channel numbers and may construct an EPG that includes the mapped event information and the corresponding channel number for display on the display.

FIG. 5



Description

BACKGROUND

5 Field

[0001] A multi-functional display device having an electronic programming guide and method for controlling the same are disclosed herein.

10 Background

[0002] Multi-functional display devices having electronic programming guides and methods for controlling the same are known. However they suffer from various disadvantages.

15 BRIEF DESCRIPTION OF THE DRAWINGS

[0003] The embodiments will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

- | | | |
|----|---------|--|
| 20 | FIG. 1 | is a schematic diagram illustrating a configuration of an exemplary embodiment for a broadcast system in accordance with the present invention; |
| | FIG. 2 | is a block diagram illustrating a configuration of an exemplary embodiment for a server in accordance with the present invention; |
| 25 | FIG. 3 | is a block diagram illustrating a configuration of an exemplary embodiment for an electronic device in accordance with the present invention; |
| | FIG. 4 | is a diagram illustrating an exemplary embodiment of a screen on which a Web page of a Social Network Service (SNS) is displayed; |
| 30 | FIG. 5 | is a diagram illustrating a screen on which an exemplary embodiment of a Graphical User Interface (GUI) for designation of a human address is displayed; |
| 35 | FIG. 6 | is a diagram illustrating a screen on which an exemplary embodiment of a GUI for designation of a channel number is displayed; |
| | FIG. 7 | is a diagram illustrating one example of a screen on which the result of assigning a human address to a channel number is displayed; |
| 40 | FIG. 8 | is a diagram illustrating an exemplary embodiment of a screen on which a menu is displayed; |
| | FIG. 9 | is a diagram illustrating a screen on which another exemplary embodiment of a GUI for designation of a human address is displayed; |
| 45 | FIG. 10 | is a diagram illustrating a screen on which another exemplary embodiment of a GUI for designation of a human address is displayed; |
| | FIG. 11 | is a diagram illustrating a screen on which a further exemplary embodiment of a GUI for designation of a human address is displayed; |
| 50 | FIG. 12 | is a diagram illustrating an exemplary embodiment for a human channel map; |
| | FIG. 13 | is a flowchart illustrating an implementation procedure of one exemplary embodiment for a method of constructing a human channel map in accordance with the present invention; |
| 55 | FIG. 14 | is a flowchart illustrating an implementation procedure of another exemplary embodiment for a method of constructing a human channel map in accordance with the present invention; |

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FIG. 15	is a diagram illustrating one exemplary embodiment of a screen on which a human channel map and content of a selected human channel are displayed;
5 FIG. 16	is a diagram illustrating another exemplary embodiment of a screen on which a human channel map and content of a selected human channel are displayed;
FIG. 17	is a diagram illustrating a further exemplary embodiment of a screen on which a human channel map and content of a selected human channel are displayed;
10 FIG. 18	is a diagram illustrating an implementation procedure of an exemplary embodiment for a method of providing a human channel service in accordance with the present invention;
FIG. 19	is a diagram illustrating an implementation procedure of one exemplary embodiment for a method of receiving content of a human channel;
15 FIG. 20	is a diagram illustrating an implementation procedure of another exemplary embodiment for a method of receiving content of a human channel;
20 FIG. 21	is a diagram illustrating an implementation procedure of a further exemplary embodiment for a method of receiving content of a human channel;
FIG. 22	is a diagram illustrating a method of setting up connection between two electronic devices;
25 FIG. 23	is a schematic diagram illustrating a configuration of another exemplary embodiment of a broadcast system in accordance with the present invention;
FIG. 24	is a diagram illustrating an exemplary embodiment of a Network Address Translation (NAT) table;
30 FIG. 25	is a diagram illustrating an exemplary embodiment of an address matching table recorded in a server;
FIG. 26	is a diagram illustrating an implementation procedure of an exemplary embodiment for a method of setting up connection between two electronic devices;
35 FIG. 27	is a diagram illustrating a screen on which one exemplary embodiment of a GUI for setting up a human channel is displayed;
40 FIG. 28	is a diagram illustrating a screen in a state in which a human address is being dragged on the displayed GUI of FIG. 27;
FIG. 29	is a diagram illustrating a screen on which another exemplary embodiment of a GUI for setting up a human channel is displayed;
45 FIG. 30	is a diagram illustrating a screen in a state in which a human address is being dragged on the displayed GUI of FIG. 29;
FIG. 31	is a diagram illustrating a screen on which an exemplary embodiment of a GUI for setting up a channel is displayed;
50 FIG. 32	is a diagram illustrating a screen in a state in which a human address is being dragged on the displayed GUI of FIG. 31;
55 FIG. 33	is a diagram illustrating a screen in a state in which a broadcast channel, a human address and an App channel are dragged onto a channel number region of the displayed GUI of FIG. 31;
FIGs. 34A	and 34B are flowcharts illustrating an implementation procedure of a further exemplary em-

		bodiment for a method of constructing a channel map in accordance with the present invention;
5	Figure 35	is a diagram illustrating an exemplary embodiment of a broadcast screen on which a human channel map is displayed;
	Figure 36	is a diagram illustrating an exemplary embodiment of a screen for invitation to view a channel;
10	Figure 37	is a schematic diagram illustrating a configuration of another exemplary embodiment of a broadcast system in accordance with the present disclosure;
	Figure 38	is a diagram illustrating a configuration of an exemplary embodiment for a channel invitation packet;
15	Figure 39	is a diagram illustrating an exemplary embodiment of a screen displayed when invitation to view a channel is made;
	Figure 40	is a diagram illustrating one exemplary embodiment of a guidance message with regard to invitation to view a channel;
20	Figure 41	is a diagram illustrating another exemplary embodiment of a guidance message with regard to invitation to view a channel;
25	Figure 42	is a diagram illustrating a further exemplary embodiment of a guidance message with regard to invitation to view a channel;
	Figures 43A and 43B	are diagrams illustrating an exemplary embodiment of a screen displayed when invitation to view a channel is accepted;
30	Figure 44	is a diagram illustrating an exemplary embodiment of a channel matching table;
	Figure 45	is a diagram illustrating an implementation procedure of one exemplary embodiment for a method of making invitation to view a channel in accordance with the present disclosure;
35	Figure 46	is a flowchart illustrating an implement procedure of another exemplary embodiment for a method of making invitation to view a channel in accordance with the present disclosure; and
	Figure 47	is a flowchart illustrating an implement procedure of an exemplary embodiment for a method of processing invitation to view a channel in accordance with the present disclosure.
40	Figure 48	is a diagram illustrating an embodiment of a screen on which content is displayed;
	Figure 49	is a diagram illustrating one embodiment of a screen on which content is displayed in a simultaneous viewing mode;
45	Figure 50	is a diagram illustrating another embodiment of a screen on which content is displayed in a simultaneous viewing mode;
	Figure 51	is a diagram illustrating a further embodiment of a screen on which content is displayed in a simultaneous viewing mode;
50	Figure 52	is a diagram explaining an embodiment of a method for confirming viewing of the same content;
55	Figure 53	is a diagram explaining a method for detecting user emotions;
	Figure 54	is a diagram illustrating the contour of a silhouette mapped to user emotions;

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Figure 55	is a diagram illustrating an embodiment of a screen on which different silhouettes depending on user emotions are displayed;
5 Figure 56	is a diagram explaining a procedure for registering a facial image;
Figure 57	is a diagram explaining a procedure for training a facial image;
Figure 58	is a diagram explaining a method for detecting a user motion;
10 Figures 59A to 59D	are diagrams explaining a method for reflecting a screen effect on content;
Figure 60	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for remotely viewing content at the same time;
15 Figure 61	is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for remotely viewing content at the same time;
Figure 62	is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for remotely viewing content at the same time;
20 Figure 63	is a flowchart illustrating an implementation procedure of a further exemplary embodiment in relation to a method for remotely viewing content at the same time;
25 Figure 64	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for confirming viewing of the same content;
Figure 65	is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for confirming viewing of the same content;
30 Figure 66	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for providing a viewing list;
Figure 67	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for displaying a silhouette;
35 Figure 68	is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for displaying a silhouette;
40 Figure 69	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for displaying a silhouette as a 3D image;
Figure 70	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for sharing a screen effect;
45 Figure 71	is a diagram illustrating a broadcast screen on which one exemplary embodiment of a channel map is displayed;
Figure 72	is a diagram illustrating a broadcast screen on which another exemplary embodiment of a channel map is displayed;
50 Figure 73	is a diagram illustrating a broadcast screen on which a further exemplary embodiment of a channel map is displayed;
55 Figure 74	is a diagram illustrating a screen on which one exemplary embodiment of a full channel map is displayed;
Figure 75	is a diagram illustrating a screen on which another exemplary embodiment of a full channel map is displayed;

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Figure 76	is a diagram illustrating a screen on which another exemplary embodiment of a full channel map is displayed;
5 Figure 77	is a diagram illustrating a screen on which a human channel sheet of the full channel map of Figure 76 is displayed;
Figure 78	is a diagram illustrating a screen on which an App channel sheet of the full channel map of Figure 76 is displayed;
10 Figure 79	is a diagram illustrating a screen on which an exemplary embodiment of a recently viewed channel map is displayed;
Figure 80	is a diagram illustrating a screen on which a further exemplary embodiment of a full channel map is displayed;
15 Figures 81A to 81D	are a diagrams explaining a connection state of an owner of a human channel; and
Figure 82	is a flowchart illustrating an implement procedure of an exemplary embodiment for a method of providing a channel map service in accordance with the present disclosure.
20 Figure 83	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a user registration method in accordance with the present disclosure;
Figure 84	is a diagram illustrating an embodiment of a GUI to receive user registration information;
25 Figure 85	is a diagram illustrating an embodiment of a GUI to select an SNS site;
Figure 86	is a diagram illustrating an embodiment of a GUI to receive authentication information for an SNS site;
30 Figure 87	is a diagram illustrating an embodiment of a GUI to confirm execution of a channel scan;
Figure 88	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for providing a channel scan interface in accordance with the present disclosure;
35 Figure 89	is a diagram illustrating an embodiment of a GUI to select a scan method;
Figure 90	is a diagram illustrating an embodiment of a GUI to select a service type;
40 Figure 91	is a diagram illustrating an embodiment of a screen which displays the progress of a human channel scan;
Figure 92	is a diagram illustrating an embodiment of a screen which displays the result of a human channel scan;
45 Figure 93	is a diagram illustrating another embodiment of a screen which displays the result of a human channel scan;
50 Figure 94	is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for scanning a human channel in accordance with the present disclosure;
Figure 95	is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for constructing a channel map in accordance with the present disclosure;
55 Figure 96	is a diagram illustrating an embodiment of a GUI for display of other human addresses of a friend who has a human address associated with a channel number;

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Figure 97	is a diagram illustrating another exemplary embodiment for a human channel map;
Figure 98	is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for providing a human channel service in accordance with the present disclosure;
Figure 99	is a diagram illustrating an embodiment of a GUI for designation of a human address;
Figure 100	is a diagram illustrating another embodiment of a screen on which a human channel map and content of a selected human channel are displayed;
Figure 101	is a diagram illustrating an embodiment of a screen on which an Electronic Program Guide (EPG) for a human channel in accordance with the present disclosure is displayed;
Figure 102	is a diagram illustrating an embodiment of a screen in which detailed information about an event is displayed on an electronic program guide in accordance with the present disclosure is displayed;
Figure 103	is a diagram illustrating an embodiment of a screen in which channel numbers are selected on an electronic program guide in accordance with the present disclosure;
Figure 104	is a diagram illustrating an embodiment of a screen on which content of a human channel is displayed;
Figures 105 to 107	are diagrams illustrating an embodiment in which an electronic program guide in accordance with the present disclosure is dragged;
Figure 108	is a diagram illustrating an embodiment of a screen on which a content list is displayed on an electronic program guide in accordance with the present disclosure;
Figure 109	is a diagram illustrating an embodiment of a screen on which a preview of content selected from among the content list of Figure 108 is displayed;
Figure 110	is a diagram illustrating an embodiment of a screen on which a graphical user interface to produce an event is displayed;
Figure 111	is a diagram illustrating an embodiment of a screen in which an event input into the graphical user interface of Figure 110 is displayed;
Figures 112A and 112B	are diagrams illustrating a screen on which an electronic program guide in accordance with the present disclosure, which reflects the event input in Figure 111, is displayed;
Figure 113	is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for providing service information in accordance with the present disclosure;
Figure 114	is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for constructing service information in accordance with the present disclosure;
Figure 115	is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for displaying service information in accordance with the present disclosure; and
Figure 116	is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for producing an event in accordance with the present disclosure.

DETAILED DESCRIPTION

[0004] An electronic device as disclosed herein may be a multi-functional display device. The multi-functional display device may be a television or a Smart TV that includes a broadcast receiver. The broadcast receiver may include, for

example, a function for receiving and processing a broadcast image viewable by a user. The broadcast receiver may display a broadcast, which is selected by the user from among broadcast signals transmitted from a broadcast station, on a display. Broadcasts may be transitioned from analog broadcasting to digital broadcasting.

[0005] Digital broadcasting may refer to digital audio and video signal broadcast. Digital broadcasting has low data loss due to robustness against external noise, favorable error correction, high resolution, and high-definition screen as compared with analog broadcasting. In addition, digital broadcasting may provide a bidirectional service unlike analog broadcasting.

[0006] In addition to providing digital broadcasting, the broadcast receiver may provide a Social Network Service (SNS). SNS may refer to a service for establishing and maintaining online social networks among various individuals and may enable personal media and information sharing. Examples of SNS may include Twitter, MySpace, and facebook widely used in America as well as Cyworld and Me2Day used in Korea, among others. SNS may be used for communication and information sharing among users. SNS assists users in making new connections or reinforcing existing connections with other users.

[0007] An electronic device as set forth herein is an intelligent electronic device equipped with a computer support function in addition to a broadcasting reception function, for example. Since an Internet function is added to a broadcasting reception function, the electronic device may have an interface which is more convenient than a handwriting input device, a touch screen, a touch pad, or a remote controller. Further, because the electronic device supports wired or wireless Internet, the electronic device may include e-mail transmission/reception, Web browsing, banking, and gaming functions and the like when connected to the Internet or a computer. To implement these functions, the electronic device may operate based on a standard, general-purpose Operating System (OS).

[0008] Various applications may be freely added to or deleted from, for example, a general-purpose OS kernel of the electronic device according to the present disclosure. Therefore, the electronic device may perform a number of user-friendly functions. The electronic device may be a network TV, a Hybrid Broadcast Broadband TV (HBBTV), a smart TV, an Open Hybrid TV (OHTV), etc. and as occasion demands, is applicable to smart phones, Personal Computers (PC) and home appliances.

[0009] Embodiments of the present disclosure will be described in detail with reference to the attached drawings, but it should be understood that they are merely illustrative of the present disclosure and should not be interpreted as limiting the scope of the present disclosure.

[0010] In addition, although the terms used in the present disclosure are selected from generally known and used terms, some of the terms mentioned in the description of the present disclosure, the detailed meanings of which are described in relevant parts of the description herein, have been selected at the discretion of the applicant. Furthermore, the present disclosure must be understood, not simply by the actual terms used but by the meanings of each term lying within. Accordingly, the terms used herein should be understood not simply by the actual terms used but by the meaning lying within and the description disclosed herein.

[0011] Figure 1 is a schematic diagram illustrating a configuration of an exemplary embodiment for a broadcast system in accordance with the present disclosure.

[0012] Referring to Figure 1, the broadcast system 1 in accordance with the present disclosure may include a first server 10, a second server 20, a first digital TV 100, a second digital TV 110, a personal computer system 120, a notebook computer 130 and a mobile terminal 140. The first server 10, the second server 20, the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 may be connected to one another via a network 2. Broadcast system 1 may include other appropriate types of multi-functional display devices in addition to the examples as shown in Figure 1.

[0013] The network 2 may include a backbone network and an access network. The backbone network may include an X.25 network, a frame relay network, an Asynchronous Transfer Mode (ATM) network, a Multi Protocol Label Switching (MPLS) network and a Generalized Multi Protocol Label Switching (GMPLS) network, alone or in combination. The access network may be a Fiber To The Home (FTTH) network, an Asymmetric Digital Subscriber Line (ADSL) network, a cable network, a wireless LAN (IEEE 802.11b, IEEE 802.11a, IEEE 802.11g, IEEE 802.11n) network, a Wireless Broadband (WiBro) network, a WiMax network and a High Speed Downlink Packet Access (HSDPA) network. In some embodiments, the network 2 may be an Internet network or mobile communication network.

[0014] The first server 10 may provide a service for connection between the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140. The first server 10 may provide User Datagram Protocol (UDP) hole punching. In addition, the first server 10 may have a static IP address. The first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 may be connected to the first server 10 using the static IP address.

[0015] The second server 20 may provide the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 with a human channel service. Here, a human channel refers to a communication channel for transmission of content provided by an individual. The human channel may refer to an identification sign for identification of the communication channel in terms of a user, and may refer to a

communication channel corresponding to a channel number mapped to a human address in terms of a device, i.e. a communication channel accessible using the human address. As broadly described herein the human channel service may include, for example, a service to provide access to a Social Network Service (SNS) provided by an SNS service provider on a channel of a multi-functional display device (e.g., a social network channel service or SNS channel service). The human channel may be a particular channel on the multi-functional display device (e.g., digital TV) for accessing an SNS account for an individual or an entity. The human channel may also be referred to as a social network channel or SNS channel. A human channel may be associated with a channel number similar to a conventional broadcast channel on the multi-functional display device (e.g., digital TV), but unlike the broadcast channel, the human channel is also associated with a human address that identifies an SNS account.

[0016] The human address as broadly described herein refers to an identification character string for identification of a human or individual. The human address may also be referred to herein as an SNS identifier or a user identifier. The human address may correspond to a channel assigned to an individual, a group of individuals, or an entity and may be referred to as an SNS channel name. The human address may include at least one of an e-mail address, an account name, a family name and a Session Initiation Protocol-Uniform Resource Locator (SIP-URL), or another appropriate type of identifier or address. The human address may be an address or identifier given to a human or individual and is different from an address assigned to an electronic device. For example, the human address may include an SNS address for an individual or user (e.g., a social network address or SNS address). Moreover, the human address may include multiple SNS addresses for a particular user (e.g., a user's facebook and twitter accounts), or multiple SNS addresses for a group of users (e.g., dad's facebook account and mom's facebook account). As described above, the human channel service may refer to a service for providing a human channel of at least one individual. The second server 20 may be a conventional Social Network Service (SNS) server.

[0017] The first digital TV 100 and the second digital TV 110 may be a network TV, a smart TV, an HBBTV, a 3-dimensional (3D) TV, an OHTV, etc.

[0018] The personal computer system 120 may be a desktop, computer, a laptop computer, a tablet, a handheld computer, etc.

[0019] The mobile terminal 140 may be a cellular phone, a smart phone, a Digital Multimedia Broadcasting (DMB) terminal, a Personal Digital Assistant (PDA), a Portable Multimedia Player (PMP), a navigator, etc.

[0020] The first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 may serve not only as a subject for providing the human channel service, but also as an object affected by the human channel service of the second server 20 or another first digital TV 100, second digital TV 110, personal computer system 120, notebook computer 130 and mobile terminal 140.

[0021] The first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 may have a static IP address or a dynamic IP address, or may have a private IP address.

[0022] The first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 may receive a dynamic IP address or a private IP address from the first server 10, if a device for providing a human channel has the dynamic IP address or the private IP address.

[0023] Alternatively, if the device has a static IP address, the user may input the static IP address to the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140.

[0024] Figure 2 is a block diagram illustrating a configuration of an exemplary embodiment for a server in accordance with the present disclosure.

[0025] Referring to Figure 2, a server 200 may function as the first server 10 or the second server 20, or may perform functions of both the first and second servers 10 and 20. The server 200 may include a communication unit 210, a controller 220 and a storage unit 230 (or storage device).

[0026] The communication unit 210 may receive packets transmitted through the network 2 and may transmit the packets to the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 through the network 2. The packets may be transmitted by a Session Initiation Protocol (SIP), User Datagram Protocol (UDP) and Transmission Control Protocol (TCP). The packets may include registration request signals, response signals, connection request signals, connection set-up signals, moving image streaming, Web pages and files.

[0027] The controller 220 may control transmission of the packets by the communication unit 210 based on at least one protocol of SIP, Simple Mail Transfer Protocol (SMTP), Hypertext Transfer Protocol (HTTP), File Transfer Protocol (FTP), Real-Time Streaming Protocol (RTSP) and Multi Media Streaming (MMS).

[0028] The controller 220 may control storing an address of an electronic device which transmits a registration request signal and a human address included in the registration request signal to the storage unit 230, in response to the received registration request signal. The address of the electronic device and the human address may be stored in association with each other. The controller 220 may extract the address of the electronic device from the registration request signal or from the packet including the registration request signal. The address of the electronic device may include at least

one of a Media Access Control (MAC) address, an IP address, a port number, a Domain Name System (DNS) name and a URL. The IP address may include a static IP address, a dynamic IP address and a private IP address.

[0029] The controller 220 reads an address of an electronic device associated with a human address included in a connection request signal from the storage unit 230, in response to the received connection request signal. The controller 220 controls transmission of the read address of the electronic device to an electronic device which issues the connection request signal. Also, the controller 220 may control transmission of an address of the electronic device which issues the connection request signal to the electronic device, the address of which has been read.

[0030] The storage unit 230 may store the address of the electronic device address and the human address. The address of the electronic device address and the human address may be stored in association with each other.

[0031] Figure 3 is a block diagram illustrating a configuration of an exemplary embodiment for an electronic device in accordance with the present disclosure.

[0032] Referring to Figure 3, the electronic device 300 may function as at least one of the first broadcast receiver 100, the second broadcast receiver 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140.

[0033] The electronic device 300 may include a tuner 305, a demodulator 310, a demultiplexer 315, a network interface 320, an external signal input unit 325, a video decoder 330, an audio decoder 335, a controller 340, a storage unit 345, a scaler 350, a mixer 360, a formatter 370, a communication unit 380 and a sound sensor 390. The electronic device 300 may further include an image capture device 301, a display 302, spectacles 303 and a remote controller 304.

[0034] The tuner 305 selects a Radio Frequency (RF) broadcast signal corresponding to a channel selected by the user from among RF broadcast signals transmitted through an antenna and converts the selected RF broadcast signal into an Intermediate Frequency (IF) signal or a base-band video or audio signal.

[0035] The demodulator 310 receives a Digital IF (DIF) signal converted by the tuner 305 and demodulates the DIF signal.

[0036] The demodulator 310 may also perform channel decoding. To this end, the demodulator 310 may include a Trellis decoder, a deinterleaver and a Reed Solomon decoder, to perform Trellis decoding, deinterleaving and Reed-Solomon decoding.

[0037] The demodulator 310 may output a Transport Stream (TS) signal after performing demodulation and channel decoding. An audio signal, a video signal or a data signal may be multiplexed in the TS signal.

[0038] The demultiplexer 315 may receive a stream signal from the demodulator 310, the network interface 320 and the external signal input unit 325. The demultiplexer 315 may demultiplex the received stream signal to a video signal, an audio signal and a data signal to output the demultiplexed signal to the video decoder 330, the audio decoder 335 and the controller 340.

[0039] The video decoder 330 receives a video signal from the demultiplexer 315 and restores the received video signal to output the restored video signal to the scaler 350. The video signal may include a 3D video signal.

[0040] The audio decoder 335 receives an audio signal from the demultiplexer 315 and restores the received audio signal to output the restored audio signal to the display 302 or the scaler 350.

[0041] The network interface 320 receives the packets from the network 2 and transmits the packets to the network 2. The network interface 320 may transmit a registration request signal and a connection request signal to the server 10 and may receive a response signal with respect to the transmitted registration request signal and connection request signal from the server 10. The registration request signal may include a human address, an address of the electronic device 300, an Identifier (ID) and a password. The connection request signal may include a human address.

[0042] The network interface 320 may receive content from the second server 20, the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 through the network 2. The content may include applications, moving image streams, moving image files, music files and picture files. The content may be provided through a particular human channel.

[0043] The network interface 320 may also receive an IP packet for transmission of broadcast data from a service provider through the network 2. The broadcast data may be real-time broadcast service data and Internet service data.

[0044] If the IP packet includes a stream signal, the network interface 320 may extract the stream signal from the IP packet to output the stream signal to the demultiplexer 315. The stream signal may be transmitted from the second server 20, the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140. The stream signal may be provided through a particular human channel.

[0045] The network interface 320 may output the received signal and content to the controller 340.

[0046] The external signal input unit 325 may provide a user interface and an interface capable of connecting an external device and the electronic device 300 to each other. The external device may be a variety of types of video or audio output devices, such as a Digital Versatile Disk (DVD) player, a Blu-ray player, a gaming device, a camcorder and a computer (e.g., a notebook computer). The electronic device 300 may display video and audio signals transmitted from the external signal input unit 325 and may store or use data signals.

[0047] The external device may be the image capture device 301. The image capture device 301 may include a

plurality of cameras. The image capture device 301 may capture an image of a human. In one example, the image capture device 301 may recognize, focus on, and capture a human hand shape by zooming in. Here, the captured hand shape may be recognized as a spatial gesture. More specifically, the controller 340 may recognize the captured hand shape as a spatial gesture and may execute commands for performing operations associated with the recognized spatial gesture. The spatial gesture may be defined as a gesture recognized from a video frame or an image which is mapped to one or more particular computing operations and is transmitted from the image capture device 301.

[0048] In some embodiments, the electronic device 300 may include the image capture device 301.

[0049] The external signal input unit 325 may be a touch pad or a touch screen. The touch screen may be integrally formed with the display 302, or may be a separate element. If the touch screen is integrally formed with the display 302, the display 302 may be called a touch screen display. The touch screen is arranged at the front of the display 302, which allows the user to directly operate a Graphical User Interface (GUI) displayed on a screen. For example, the user may place his or her finger on an object to be controlled.

[0050] With regard to the touch pad, the touch pad is separately put on a different plane from the display 302. For example, the display unit 302 is generally located on a vertical plane and the touch pad is generally located on a horizontal plane. Thus, the touch pad is less intuitive and therefore, is difficult to use as compared with the touch screen.

[0051] The touch pad and the touch screen may be a multi-point input device.

[0052] The controller 340 may recognize a touch gesture applied to the external signal input unit 325 and may control the electronic device 300 based on the touch gesture. The touch gesture may be defined as a stylized interaction with the external signal input unit 325, mapped to one or more particular computing operations. The touch gesture may be implemented through hand, more particularly, finger movement. Alternatively or additionally, the touch gesture may be implemented through a stylus. A subject implementing the touch gesture, such as a finger or a stylus, is called an object.

[0053] The external signal input unit 325 receives the touch gesture, and the controller 340 executes commands for performing operations associated with the touch gesture. The storage unit 345 may include a gesture operating program which may be a part of an operating system or an additional application. The gesture operating program includes a series of commands for recognizing the occurrence of a gesture (e.g., a touch gesture or a spatial gesture) and informing one or more software agents of the gesture and/or which actions should be taken in response to the gesture.

[0054] When the user performs one or more gestures, the external signal input unit 325 transmits gesture information to the controller 340. The controller 340 analyzes the touch gesture using commands from the storage unit 345, more particularly, using the gesture operating program and then, controls different constituent elements of the electronic device 300, such as the display 302, the demultiplexer 315, the network interface 320, the external signal input unit 325, the storage unit 345, the scaler 350, the mixer 360, the formatter 370 and the sound sensor 390. The gesture may be identified as commands for performing operations of applications stored in the storage unit 345, for correcting a GUI object represented on the display 302 and data stored in the storage unit 345 and for performing operations in the multiplexer 315, the network interface 320, the scaler 350, the mixer 360 and the formatter 370. In one example, these commands may be associated with zooming-in, panning, scrolling, page-eject, rotation, scaling, video channel switch, content reception, Internet connection and the like.

[0055] In another example, the commands may be associated with designating a channel number, designating a human address, selecting a displayed object, dragging a displayed object, dropping a displayed object, switching a channel, displaying a channel map, switching a displayed channel map, transmitting a channel viewing request signal, booting a particular program, requesting a particular GUI, opening a file or a document, looking at a menu, selecting a menu, executing a command, log-in to an Internet site, allowing an authorized person to access a limited system region, loading a user profile associated with a user preference arrangement on the desktop, and/or the like. The displayed object may include images, channels listed in a channel map, selected regions on a GUI, menu items and displayed content.

[0056] A wide range of different touch gestures may be used. For example, touch gestures may include a single-point or multi-point gesture, a static or dynamic gesture, a continuous or segmented gesture, and/or the like. The single point gesture may be performed through a single contact point. For example, the single-point gesture is performed by a single touch using a single finger, palm or stylus. The multi-point gesture may be performed through a plurality of points. For example, the multi-point gesture is performed by multiple touches using plural fingers, a finger and a palm, a finger and a stylus, plural styluses and/or combinations thereof. The static gesture does not contain movement, and the dynamic gesture contains movement. The continuous gesture is performed by a single stroke and the segmented gesture is performed by a sequence of separate steps or strokes.

[0057] Contact between the object and the touch screen conventionally has various different patterns. For example, the single-point gesture on the touch screen includes a down event and a subsequent up event, the down event and the up event occurring at the same or almost the same position. The dynamic gesture on the touch screen includes a down event, at least one dragging event subsequent to the down event, and other following events.

[0058] In some embodiments, parameters are used to describe a process in which a finger accesses, comes into contact with and moves away from a touch screen display. These parameters may be a mathematical function of at

least one of a distance between the finger and the touch screen display, pressure applied to the touch screen display by the finger, a contact area between the finger and the touch screen display, a voltage between the finger and the touch screen, a capacitance between the finger and the touch screen display or other physical parameters.

[0059] In some embodiments, according to the magnitude of each parameter (e.g., capacitance) between the finger and the touch screen display, a down event occurs when the parameter exceeds a predetermined threshold value, a dragging event occurs when a position of a cursor corresponding to the finger is moved from position A to position B while the parameter exceeds the predetermined threshold voltage, and an up event occurs when the parameter falls below the threshold level.

[0060] The controller 340 executes a command and performs an operation associated with the electronic device 300. For example, the controller 340 may control data reception and processing and input and output of signals between constituent elements of the electronic device 300 using commands found in the storage unit 345. The controller 340 may be implemented as a single chip, a plurality of chips, or a plurality of electric components. For example, a variety of architectures including a dedicated or embedded processor, a single purpose processor, a controller, an Application Specific Integrated Circuit (ASIC), etc. may be used as the controller 340. The controller 340 may include at least one processor.

[0061] The controller 340 may detect a user action and may control the electronic device 300 based on the detected user action. The user action may include selecting a physical button of a display appliance or a remote controller, executing a prescribed touch gesture or selecting a soft button on a touch screen display, executing a prescribed spatial gesture recognized from an image captured through an image capture device, and producing prescribed sound by recognizing sound received by the sound sensor 390. The controller 340 may analyze a user action as at least one executable command. The controller 340 may control constituent elements of the electronic device 300 in response to the at least one analyzed command. That is, the controller 340 may control data reception and processing and input and output of signals between constituent elements of the electronic device 300 using the at least one command.

[0062] The controller 340 may detect a user action for requesting a GUI for designation of a human address and may control displaying the GUI for designation of the human address in response to the detected user action. The controller 340 may detect a user action for designating a human address and may control displaying a GUI for designation of a channel number in response to the detected user action. The controller 340 may detect a user action for designating a channel number and may store the designated channel number, the designated human address and information associating the designated channel number and human address with each other to a human channel map, in response to the detected user action. The human channel map as broadly described herein may be a channel map that correlates a channel with a human address (or SNS identifier). The human channel map may also be referred to herein as a social network channel map, SNS channel map, or SNS channel listing, and may be displayed in a similar manner and format as a broadcast channel map (e.g., broadcast channel listing).

[0063] The controller 340 may detect a user action for designating a channel number, may read a human address associated with the designated channel number from the human channel map in response to the detected user action, and may control acquiring an address of an electronic device to access, based on the read human address. In some embodiments, the controller 340 may read the address of the electronic device based on the human address from the storage unit 345. In some embodiments, the controller 340 may control transmitting a connection request signal including the read human address to the server 10 and may acquire the address of the electronic device to access from the server 10.

[0064] The controller 340 may control transmitting a registration request signal to the server 10 upon booting or when a user action for requesting server registration is detected. The registration request signal may include an address of an electronic device, a human address, an ID and a password.

[0065] The controller 340 may control transmitting a connection set-up signal to another electronic device. The connection set-up signal may include a human address. When the controller 340 receives a connection set-up signal from another electronic device, the controller 340 may initialize connection with the electronic device which transmits the connection set-up signal, in response to the received connection set-up signal, and may transmit a response signal to the electronic device. During initialization, the controller 340 may open a particular port based on information included in the connection set-up signal and may transmit a response signal including a port number of the port.

[0066] If the controller 340 receives the response signal with respect to the connection set-up signal from the electronic device, the controller 340 may confirm whether or not the response signal includes a particular port number. If the response signal includes the particular port number, the controller 340 may receive and transmit data from and to the electronic device through a port corresponding to the particular port number. In one example, the particular port number may correspond to a port for providing a human channel. In this case, the electronic device 300 may receive content of a human channel through the port.

[0067] The controller 340 may control routing a packet transmitted to the network interface 320 using at least one of an IP address or a port number included in the packet. That is, the controller 340 may control outputting a packet having a particular port to the demultiplexer 315 and may control storing the packet in the storage unit 345.

[0068] The controller 340 may extract data included in the packet and may perform routing of the extracted data using

at least one of the IP address or the port number included in the packet. That is, the controller 340 may control outputting the packet having the particular port to the demultiplexer 315 and may control storing the packet in the storage unit 345. The controller 340 may directly process the data included in the packet and may control displaying the processed result on a screen.

5 **[0069]** The controller 340 executes a computer code together with an Operating System (OS) and generates and uses data. The OS is generally known and therefore a detailed description thereof is omitted. An example of the OS may include Windows OS, Unix, Linux, Palm OS, DOS, Android, and Mac OS. The OS, other computer codes and data may be present within the storage unit 345 which is linked to and operated by the controller 340.

10 **[0070]** The storage unit 345 generally stores program codes and data used by the electronic device 300. For example, the storage unit 345 may be implemented as a Read-Only Memory (ROM), a Random Access Memory (RAM), a hard disk drive, etc. The program codes and data may be stored in a separable storage medium and, if necessary, may be loaded or installed onto the electronic device 300. The separable storage medium may include a CD-ROM, a PC card, a memory card, a floppy disk, a magnetic tape and a network component.

15 **[0071]** The storage unit 345 may store a human channel map. The storage unit 345 may also catch port numbers and addresses of other electronic devices connected to the electronic device 300. The port numbers and addresses of the electronic devices may be stored in association with human addresses. If a human channel associated with a particular human address is redisplayed, the controller 340 may read a port number and address of an electronic device associated with the particular human address from among the caught port numbers and addresses of the electronic devices and may receive content of the human channel using the read port number and address of the electronic device.

20 **[0072]** The scaler 350 performs scaling of signals processed in the video decoder 330 and the audio decoder 335, so as to provide the signals with a magnitude suitable to be output through the display 302 or a speaker (not shown).

25 **[0073]** The scaler 350 adjusts and outputs combinations of at least two of a GUI, a video signal and an aspect ratio of a 3D image, according to the kind of content to be displayed or user set-up conditions. An aspect ratio value may be 21:9, 16:9, 4:3 or 3:2. The scaler 350 may perform scaling such that a ratio of a horizontal screen length to a vertical screen length has a particular value.

[0074] The mixer 360 mixes outputs of the scaler 350 and the controller 340.

30 **[0075]** The formatter 370 changes the format of audio and video signals output from the mixer 360 to suit the display 302. The formatter 370 passes input signals without implementing a format change function when a 2D image is displayed. When a 3D image is displayed, the formatter 370 may serve as a 3D formatter for processing a signal into a 3D video signal based on the format of a 3D image and the output frequency of the display 302 under control of the controller 340.

[0076] The formatter 370 may output the resultant 3D video signal to form a 3D image to the display 302 and may produce a Sync signal relating to the 3D video signal to output the sync signal to the communication unit 380. The sync signal is a signal for synchronizing display times of left eye viewpoint video data and right eye viewpoint video data and opening/closing times of a left eye lens and a right eye lens of the shutter spectacles 303.

35 **[0077]** The communication unit 380 is a communication module for providing omnidirectional (or non-directional) communication and performs wireless communication with other communication appliances based on predetermined communication standards. The communication standards may be Zigbee, Bluetooth, Ultra WideBand (UWB), Radio Frequency Identification (RFID) and wireless Lan. The communication appliances may be the electronic device 300, the spectacles 303 and the remote controller 304.

40 **[0078]** The communication unit 380 may include an infrared receiver capable of receiving infrared light from the remote controller 304.

[0079] The sound sensor 390 may receive sound and output the received sound to the controller 340. The controller 340 may recognize sound output from the sound sensor 390 and may control the electronic device 300 based on the recognized sound.

45 **[0080]** Figure 4 is a diagram illustrating an exemplary embodiment of a screen on which a Web page of a Social Network Service (SNS) is displayed.

50 **[0081]** Referring to Figure 4, the display 302 may display a Web page 400 of the server 200. The network interface 320 may receive the Web page 400 from the server 200, the controller 340 may produce video image data of the Web page 400 to enable displaying the received Web page 400, and the scaler 350 may adjust a resolution of the produced video image data. The display 302 may display the video image data 400, the resolution of which has been adjusted by the scaler 350.

[0082] The Web page 400 may list one or more human addresses 411, 412 and 413. The human address 411 represents 'Sally Brown', the human address 412 represents 'Andy Fox', and the human address 413 represents 'Charlie Brown'. The listed human addresses 411, 412 and 413 are selectable by an indicator 401.

55 **[0083]** In some embodiments, an indicator 401 may be provided to highlight one of the human addresses 411, 412 and 413, and/or a corresponding item (e.g., news feed). Once highlighted, the address or item may be selected to perform a prescribed process, for example, for designating the corresponding human address. The selection may be made through a remote controller by pressing a particular button (for example, an 'OK' button) or by performing a spatial

gesture corresponding to a selection. The selection may be made by other methods, such as a touch input.

[0084] Figure 5 is a diagram illustrating a screen on which an exemplary embodiment of a GUI for designation of a human address is displayed.

[0085] Referring to Figure 5, if the electronic device 300 detects a user action for designating a human address, the electronic device 300 may display a GUI 510 in response to the detected user action. The GUI 510 may be a pop-up window.

[0086] The GUI 510 may include a menu item 511 for channel registration, a menu item 513 for channel switch, and a menu item 515 for channel editing. The menu items 511, 513 and 515 are selectable by an indicator 520.

[0087] If the electronic device 300 detects a user action for selecting the menu item 511, the electronic device 300 may display a GUI for designation of a channel number in response to the detected user action.

[0088] If the electronic device 300 detects a user action for selecting the menu item 513, the electronic device 300 may display a GUI for switching a channel number in response to the detected user action.

[0089] Also, if the electronic device 300 detects a user action for selecting the menu item 515, the electronic device 300 may display a GUI for editing a channel number in response to the detected user action.

[0090] Figure 6 is a diagram illustrating a screen on which an exemplary embodiment of a GUI for designation of a channel number is displayed.

[0091] Referring to Figure 6, if the electronic device 300 detects a user action for designating a human address, the electronic device 300 may display a GUI 610 in response to the detected user action. Also, if the electronic device 300 detects a user action for selecting the menu item 511, the electronic device 300 may display the GUI 610 in response to the detected user action.

[0092] The GUI 610 lists channel numbers from 41 to 61. The channel numbers from 41 to 61 are selectable by an indicator 620. The GUI 610 may display the channel numbers in such a manner that a channel number to which a human address has been assigned is discriminated from an empty channel number. In the drawing, the channel numbers '41', '43' to '45', '48' to '55', '58', '59' and '61' are channel numbers to which human addresses have been assigned, and the other channel numbers '42', '46', '47', '56', '57' and '60' may be empty channel numbers and distinguished by a bold font. The controller 340 may confirm the channel numbers and whether or not human addresses have been assigned to the channel numbers using a human channel map stored in the storage unit 345 and may produce the GUI 610 based on the confirmed results.

[0093] The channel numbers listed in the GUI 610 may be channel numbers to which human addresses have been assigned, or may be channel numbers to which channels are not assigned.

[0094] In some embodiments, a channel number to which a channel is not assigned may be a channel number which does not belong to any one of a sky wave broadcast channel, a cable channel, an IPTV channel or a satellite channel. Thus, the electronic device 300 may simultaneously perform browsing of a human channel and one of a sky wave broadcast channel, a cable channel, an IPTV channel or a satellite channel.

[0095] In some embodiments, a channel number to which a channel is not assigned may be a channel number which belongs to some kinds of channels including a broadcast channel and an App channel, but does not belong to a human channel.

[0096] Figure 7 is a diagram illustrating one example of a screen on which the result of assigning a human address to a channel number is displayed.

[0097] Referring to Figure 7, if the user performs a user action for issuing a selection order to the indicator 620 in a state in which the indicator 620 is located at one of the channel numbers from 41 to 61 listed in the GUI 610, the electronic device 300 may detect a user action for designating a channel number and may display a message 710 in response to the detected user action. The message 710 may indicate that the designated channel number is assigned to the designated human address. For example, the message 710 indicates that the channel number '60' is assigned to 'Sally Brown'.

[0098] The electronic device 300 may store the human address 'Sally Brown', the channel number '60' and information associating the human address 'Sally Brown' and the channel number '60' with each other in a human channel map, in response to the detected user action.

[0099] Figure 8 is a diagram illustrating an exemplary embodiment of a screen on which a menu is displayed.

[0100] Referring to Figure 8, the electronic device 300 may display a menu 800 including a menu item 810 for requesting displaying a GUI for designation of a human address.

[0101] If the user performs a user action for selecting the menu item 810, the electronic device 300 may detect the user action for selecting the menu item 810 and may display a message 820 in response to the detected user action.

[0102] Figure 9 is a diagram illustrating a screen on which another exemplary embodiment of a GUI for designation of a human address is displayed.

[0103] Referring to Figure 9, if the user performs a user action for selecting a button 821, the electronic device 300 may detect the user action for selecting the button 821 and may display a GUI 910 in response to the detected user action. In another embodiment, if the user performs a user action for selecting the menu item 810, the electronic device 300 may detect the user action for selecting the menu item 810 and display the GUI 910 in response to the detected

user action.

[0104] The user may input an IP address to the GUI 910. After the user completes the user action for inputting the IP address, the electronic device 300 may detect the user action and may display the GUI 610 in response to the detected user action.

[0105] If the user performs a user action for issuing a selection order to the indicator 620 in a state in which the indicator 620 is located at one of the channel numbers from 41 to 61 listed in the GUI 610, the electronic device 300 may detect the user action for designating a channel number and may display a message in response to the detected user action. The message may indicate that the designated channel number is assigned to the input IP address.

[0106] The electronic device 300 may store the input IP address, the channel number '60' and information associating the input IP address and the channel number '60' with each other in the human channel map, in response to the detected user action.

[0107] In some embodiments, the user may further input the human address 'Sally brown' via the GUI 910. If the user completes the user action for inputting the human address 'Sally Brown' and the IP address, the electronic device 300 may detect the user action and may display the GUI 610 in response to the detected user action. If the electronic device 300 detects a user action for designating the channel number '60' among the displayed channel numbers, the electronic device 300 may display a message 710 in response to the detected user action. The electronic device 300 may store the human address 'Sally Brown', the IP address, the channel number '60', and information associating the human address 'Sally Brown' and the IP address with each other and information associating the channel number '60' and the human address 'Sally Brown' with each other in the human channel map, in response to the detected user action.

[0108] Figure 10 is a diagram illustrating a screen on which another exemplary embodiment of a GUI for designation of a human address is displayed.

[0109] Referring to Figure 10, if the user performs a user action for selecting the menu item 810, the electronic device 300 may detect the user action for selecting the menu item 810 and may display a GUI 1010 in response to the detected user action.

[0110] The user may input a human address to the GUI 1010. The human address may include at least one of an e-mail address, an account name, a family name or an SIP-URL. If the user completes the user action for inputting the human address, the electronic device 300 may detect the user action and may display the GUI 610 in response to the detected user action.

[0111] If the user performs a user action for issuing a selection order to the indicator 620 in a state in which the indicator 620 is located at one of the channel numbers from 41 to 61 of the GUI 610, the electronic device 300 may detect the user action for designating a channel number and may display a message in response to the detected user action. The message may indicate that the designated channel number is assigned to the input human address. The message may be the message 710 illustrated in Figure 7.

[0112] The electronic device 300 may store the input human address, the channel number '60' and information associating the input human address and the channel number '60' with each other in the human channel map, in response to the detected user action.

[0113] Figure 11 is a diagram illustrating a screen on which a further exemplary embodiment of a GUI for designation of a human address is displayed.

[0114] Referring to Figure 11, if the user performs a user action for selecting the menu item 810, the electronic device 300 may detect the user action for selecting the menu item 810 and may display a GUI 1110 in response to the detected user action.

[0115] The user may input a human address to the GUI 1110. The GUI 1110 may be a pull-down menu, or the like, that lists one or more selectable human addresses. The human address may include at least one of an e-mail address, an account name or an SIP-URL. If the user completes the user action for inputting the human address, the electronic device 300 may detect the user action and may display the GUI 610 in response to the detected user action.

[0116] In some embodiments, the user may perform a user action for selecting one human address from among the human addresses listed in the GUI 1110. If the user completes the user action for inputting the human address, the electronic device 300 may detect the user action and may display the GUI 610 in response to the detected user action.

[0117] If the user performs a user action for issuing a selection order to the indicator 620 in a state in which the indicator 620 is located at one of the channel numbers from 41 to 61 listed in the GUI 610, the electronic device 300 may detect the user action for designating a channel number and may display a message in response to the detected user action. The message may indicate that the designated channel number is assigned to the input human address. The message may be the message 710 illustrated in Figure 7.

[0118] The electronic device 300 may store the input human address, the channel number '60' and information associating the input human address and the channel number '60' with each other in the human channel map, in response to the detected user action.

[0119] Figure 12 is a diagram illustrating an exemplary embodiment for a human channel map.

[0120] Referring to Figure 12, a human channel map 1210 may include channel numbers, human addresses and

pointers. In the human channel map, a channel number, a human address to which the channel number is assigned, and a pointer associated with the human address may be arranged in a single line. That is, information representing a line may be information associating a channel number and a human address with each other. In one example, since a channel number '71' and a human address 'Zoe' are located in the second line, the electronic device 300 may confirm that the channel number '71' is assigned to the human address 'Zoe'.

[0121] Access information maps 1230, 1240, 1250, 1260 and 1270 store information required to access the human channels. The access information maps 1230, 1240, 1250, 1260 and 1270 may respectively store different kinds of information according to access methods thereof. The first access information map 1230 may store type information indicating an access method, IP addresses, port numbers and authentication information. The second access information map 1240 may store type information indicating an access method, SIP-URLs and authentication information. The third access information map 1250 may store type information indicating an access method, IP addresses, port numbers, accounts and authentication information. The fourth access information map 1260 may store type information indicating an access method, IP addresses, port numbers, e-mail addresses and authentication information. The fifth access information map 1270 may store type information indicating an access method, shortcuts and authentication information. The information stored in the access information maps 1230, 1240, 1250, 1260 and 1270 may be input by the user, or may be transmitted from the server 10 and the server 20. In addition, the information may be stored in the access information maps before and after the information associating the channel number and the human address with each other is stored in the human channel map 1210.

[0122] An access method may be one of a first access method using IP addresses and port numbers, a second access method using SIP-URLs, a third access method for accessing a server and receiving a service associated with a particular account, a fourth access method for accessing an SNS server and receiving a service associated with a particular e-mail address and a fifth access method using shortcuts. The first access method, the second access method, the third access method, the fourth access method and the fifth access method may respectively be denoted by type 1, type 2, type 3, type 4 and type 5.

[0123] The pointers may indicate positions where information associated with the human addresses is stored. A pointer 1221 indicates a position where information associated with 'Me' is stored. That is, the pointer 1221 indicates the first line of the first access information map 1230. An IP address associated with 'Me' is 127.0.0.1, and a port number associated with 'Me' is 88. Access to a human channel of 'Me' may be implemented by the access method denoted by type 1. A pointer 1222 indicates a position where information associated with 'Zoe' is stored. That is, the pointer 1222 indicates the second line of the first access information map 1230. An IP address associated with 'Zoe' is 210.1.7.29, and a port number associated with 'Zoe' is 545. Access to a human channel of 'Zoe' may be implemented by the access method denoted by type 1. Also, a pointer 1223 indicates a position where information associated with 'Susan' is stored. That is, the pointer 1223 indicates the third line of the first access information map 1230. An IP address associated with 'Susan' is 198.10.8.102, and a port number associated with 'Susan' is 546. Access to a human channel of 'Susan' may be implemented by the access method denoted by type 1.

[0124] A pointer 1225 indicates a position where information associated with 'Chuck' is stored. That is, the pointer 1225 indicates the first line of the second access information map 1240. An SIP-URL associated with 'Chuck' is chuck@TV.com. Access to a human channel representing 'Chuck' may be implemented by the access method denoted by type 2. A pointer 1226 indicates a position where information associated with 'Dad' is stored. That is, the pointer 1226 indicates the second line of the second access information map 1240. An SIP-URL associated with 'Dad' is Dad@TV.com. Access to a human channel of 'Dad' may be implemented by the access method denoted by type 2.

[0125] A pointer 1224 indicates a position where information associated with 'Sophie' is stored. That is, the pointer 1224 indicates the first line of the third access information map 1250. An IP address associated with 'Sophie' is 202.131.29.70, a port number associated with 'Sophie' is 80, and an account name is Sophie. Access to a human channel of 'Sophie' may be implemented by the access method denoted by type 3. A pointer 1227 indicates a position where information associated with 'George' is stored. That is, the pointer 1227 indicates the second line of the third access information map 1250. An IP address associated with 'George' is 209.62.105.13, and a port number associated with 'George' is 80. Access to a human channel of 'George' may be implemented by the access method denoted by type 3.

[0126] A pointer 1228 indicates a position where information associated with 'Carrie' is stored. That is, the pointer 1228 indicates the first line of the fourth access information map 1260. An IP address associated with 'Carrie' is 69.171.224.12, a port number associated with 'Carrie' is 80, and an e-mail address associated with 'Carrie' is Carrie@SNS.com.

[0127] A pointer 1229 indicates a position where information associated with 'Paul' is stored. That is, the pointer 1229 indicates the first line of the fifth access information map 1270. A shortcut associated with 'Paul' is ftp://Paul.sns.com:21.

[0128] The authentication information of the access information maps 1230, 1240, 1250, 1260 and 1270 may include IDs and passwords as well as stored character strings. In addition, the authentication information may be encoded and stored.

[0129] Figure 13 is a flowchart illustrating an implementation procedure of one exemplary embodiment for a method

of constructing a human channel map in accordance with the present disclosure.

[0130] Referring to Figure 13, the display 302 displays a first GUI for designation of a human address (S100). The displayed first GUI may list at least one selectable human address. The listed human address may be transmitted from one of the first server 10 and the second server 20. The network interface 320 may receive the human address from one of the first server 10 and the second server 20. The controller 340 may control displaying the first GUI which provides the human address. The first GUI may be one of the Web page 400 in Figure 4, the GUI 910 in Figure 9, the GUI 1010 in Figure 10 and the GUI 1110 in Figure 11.

[0131] The controller 340 detects a first user action for designating a human address (S110).

[0132] The display 302 displays a second GUI for designation of a channel number in response to the detected first user action (S120). The displayed second GUI may list a plurality of selectable channel numbers. The second GUI may include an indicia that indicates the channel numbers which are currently available. The second GUI may be the GUI 610 in Figure 6.

[0133] The controller 340 detects a second user action for designating a channel number (S130).

[0134] The controller 340 stores a human address, a channel number and information associating the human address and the channel number with each other in a human channel map in response to the detected second user action (S140). The human channel map may be the human channel map 1210 in Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0135] Figure 14 is a flowchart illustrating an implementation procedure of another exemplary embodiment for a method of constructing a human channel map in accordance with the present disclosure.

[0136] Referring to Figure 14, the display 302 displays a first GUI for designation of a channel number (S200). The displayed first GUI may list a plurality of selectable channel numbers. The channel numbers may include an indicia identifying channel numbers which are available such as highlighting, bold text, or the like. The first GUI may be the GUI 610 in Figure 6.

[0137] The controller 340 detects a first user action for designating a channel number (S210).

[0138] The display 302 displays a second GUI for designating a human address in response to the detected first user action (S220). The displayed second GUI may list at least one selectable human address. The listed human address may be transmitted from one of the first server 10 and the second server 20. The network interface 320 may receive the human address transmitted from one of the first server 10 and the second server 20, and the controller 340 may control displaying the second GUI which provides the received human address. The second GUI may be one of the Web page 400 in Figure 4, the GUI 910 in Figure 9, the GUI 1010 in Figure 10 and the GUI 1110 in Figure 11.

[0139] The controller 340 detects a second user action for designating a human address (S230).

[0140] The controller 340 stores a human address, a channel number and information associating the human address and the channel number with each other in a human channel map in response to the detected second user action (S240). The human channel map may be the human channel map 1210 in Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0141] Figure 15 is a diagram illustrating one exemplary embodiment of a screen on which a human channel map and content of a selected human channel are displayed.

[0142] Referring to Figure 15, the controller 340 may control displaying a screen 1500. The screen 1500 may include a channel map region 1510, a channel display region 1520, a content list region 1530 and a human display region 1540.

[0143] The channel map region 1510 provides a human address and a channel number mapped to the human address. In one example, the channel map region 1510 provides a human address 'Me', denoted by reference numeral 1511, and a channel number '00', denoted by reference numeral 1512, mapped to the human address 'Me'. The controller 340 may produce an image displayed on the channel map region 1510 using information of the human channel map. The human address and channel number of the channel map region 1510 may be selected using a cursor 1501 and an indicator 1502. For example, when the cursor 1501 is positioned over a particular human address (e.g., human address 'Sophie', denoted by reference numeral 1513, and channel number '72' denoted by reference numeral 1514), the indicator 1502 may be located over a designated human address and channel number, as illustrated in Figure 15. The cursor 1501 may be a pointer, arrow, or the like, and the indicator 1502 may be a highlight, bold text, or the like.

[0144] The channel display region 1520 may display a human channel corresponding to a designated channel number. In Figure 15, since the indicator 1502 and cursor 1501 are positioned over the channel number '72', a designated channel number is 72 and thus, the channel display region 1520 displays a human channel corresponding to the channel number '72'. The human channel corresponding to the channel number '72' is a human channel of the human address mapped to the channel number '72'. That is, the channel display region 1520 displays the human channel of 'Sophie'.

[0145] The content list region 1530 provides a content list provided by a human channel corresponding to a designated channel number. The content list region 1530 may provide a thumbnail of content. If a user action for selecting particular content from among content provided in the content list region 1530 is detected, the controller 340 may control displaying

the selected content on the channel display region 1520 in response to the detected user action. In addition, it is possible to discriminate between content displayed on the channel display region 1520 and content displayed on the content list region 1530. To this end, for example, the content displayed on the channel display region 1520 may be highlighted in the content list region 1530.

5 **[0146]** The human display region 1540 displays a human having a human address associated with a selected channel number. The human display region 1540 may display a picture of an owner of a human channel indicated by the indicator 1501.

[0147] Figure 16 is a diagram illustrating another exemplary embodiment of a screen on which a human channel map and content of a selected human channel are displayed.

10 **[0148]** Referring to Figure 16, the controller 340 may detect a user action for requesting channel switch to Channel 73. The user action for requesting channel switch may include executing a spatial gesture for requesting channel increment, or pressing a button of a remote controller for requesting channel increment.

[0149] The controller 340 may control displaying a screen 1600 in response to the detected user action. In a channel map region 1610, an indicator 1601 is located at the channel number '73' designated by the user action. A channel display region 1620 displays a human channel corresponding to the channel number '73', i.e. the human channel of 'Chuck'. A content list region 1630 displays a content list provided by the human channel mapped to the channel number '73'.

[0150] Figure 17 is a diagram illustrating a further exemplary embodiment of a screen on which a human channel map and content of a selected human channel are displayed.

20 **[0151]** Referring to Figure 17, the controller 340 may detect a user action for requesting channel switch to Channel 75. The controller 340 may control displaying a screen 1700 in response to the detected user action. In a channel map region 1710, an indicator 1701 is located at the channel number '75' designated by the user action. A channel display region 1720 displays a human channel corresponding to the channel number '75', i.e. the human channel of 'Susan'. A content list region 1730 displays a content list provided by the human channel mapped to the channel number '75'.

25 **[0152]** Figure 18 is a diagram illustrating an implementation procedure of an exemplary embodiment for a method of providing a human channel service in accordance with the present disclosure.

[0153] Referring to Figure 18, the controller 340 detects a user action for designating a channel number (S300). Step S300 may be performed while the display 302 is displaying at least one of a human channel, a broadcast channel or an App channel. For example, the controller 340 may detect the user action for designating a channel number while the display 302 is displaying the screen 1500 of Figure 15, the screen 1600 of Figure 16 or the screen 1700 of Figure 17. The broadcast channel may include at least one of a sky wave broadcast channel, a cable channel, a satellite channel or an IPTV channel.

30 **[0154]** The controller 340 receives content of a human channel indicated by the designated channel number in response to the detected user action (S310). The content may be first content of a content list provided by the human channel or initial content introducing the human channel.

35 **[0155]** The controller 340 controls displaying the received content (S320). The display 302 may display the screen 1500 of Figure 15, the screen 1600 of Figure 16 or the screen 1700 of Figure 17.

[0156] Figure 19 is a diagram illustrating an implementation procedure of one exemplary embodiment for a method of receiving content of a human channel.

40 **[0157]** Referring to Figure 19, the controller 340 reads a human address associated with a designated channel number from a human channel map (S400). The human channel map may be the human channel map 1210 of Figure 12 or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

45 **[0158]** The controller 340 reads an address of an electronic device to access, based on the read human address (S410). The electronic device to access may be one of the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130, the mobile terminal 140, or another appropriate type of multi-functional display device. The address of the electronic device to access may be stored in the access information map 1230 illustrated in Figure 12. The address of the electronic device to access may include an IP address and a port number.

50 **[0159]** The network interface 320 receives content from the electronic device using the read address of the electronic device (S420). The electronic device 300 may set up communication with the electronic device using the address of the electronic device read in Step S410 and may receive content of a human channel from the electronic device. The content may be transmitted based on a protocol such as SMTP, HTTP, FTP, RTSP or MMS.

55 **[0160]** The method of receiving content of a human channel illustrated in Figure 19 may be one example of the first access method as described with reference to Figure 12.

[0161] Figure 20 is a diagram illustrating an implementation procedure of another exemplary embodiment for a method of receiving content of a human channel.

[0162] Referring to Figure 20, the controller 340 reads a human address associated with a designated channel number

from a human channel map (S500). The human channel map may be the human channel map 1210 of Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

5 **[0163]** The controller 340 reads an address of a server to be connected, based on the read human address (S510). The server may be the server 10 or the server 20. The address of the server may be stored in the access information map 1250, the access information map 1260 and the access information map 1270. The address of the server may include an IP address, a port number and an account name, or may include an IP address, a port number and an e-mail address, or may include a shortcut.

10 **[0164]** The network interface 320 receives content from the server using the read address of the server (S520). The electronic device 300 may access the server using the address of the server read in Step S510 and may receive content of a human channel from the server. The content may be transmitted based on a protocol such as SMTP, HTTP, FTP, RTSP or MMS.

15 **[0165]** The method of receiving content of a human channel illustrated in Figure 19 may be one example of one of the third access method, the fourth access method and the fifth access method as described with reference to Figure 12, according to the address of the server read in Step S510.

[0166] Figure 21 is a diagram illustrating an implementation procedure of a further exemplary embodiment for a method of receiving content of a human channel.

20 **[0167]** Referring to Figure 21, the controller 340 reads a human address associated with a designated channel number from a human channel map (S600). The human channel map may be the human channel map 1210 of Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12. Also, the read human address may include an SIP-URL.

25 **[0168]** The network interface 320 transmits a connection request signal including the read human address to a server (S610). The connection request signal may include an SIP-URL. Also, the server may be the server 10.

[0169] The network interface 320 receives a signal including an address of an electronic device from the server (S620). The signal may be a response signal with respect to the connection request signal. The address of the electronic device 300 may include an IP address and a port number. The electronic device 300 may be one of the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140.

30 **[0170]** The controller 340 controls receiving content using the received address of an electronic device (S630). The electronic device 300 may set up communication with the electronic device using the received address of the electronic device read in operation 620 and may receive content of a human channel from the electronic device. The content may be transmitted based on a protocol such as SMTP, HTTP, FTP, RTSP or MMS.

[0171] Figure 22 is a diagram illustrating a method of setting up connection between two electronic devices.

35 **[0172]** Referring to Figure 22, an electronic device 2210 may set up (or configure) a first connection 2211 with a server 2230. During set up of the first connection 2211, the server 2230 acquires and stores an IP address and port number of the electronic device 2210. The first connection 2211 may be set up during booting of the electronic device 2210, or may be set up when a user requests connection between the electronic device 2210 and the server 2230. The electronic device 2210 may be one of the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 or the mobile terminal 140, and the server 2230 may be the server 10, for example.

40 **[0173]** An electronic device 2220 may set up a second connection 2231 with the server 2230. During set up of the second connection 2231, the server 2230 acquires and stores an IP address and a port number of the electronic device 2220. The second connection 2231 may be set up during booting of the electronic device 2220, or may be set up when a user requests connection between the electronic device 2220 and the server 2230.

45 **[0174]** The second connection 2231 may be set up after the server 2230 completes set up of the first connection 2211 with the electronic device 2210. When requesting the second connection 2231, the server 2230 may use the previously stored IP address and port number of the electronic device 2220. The electronic device 2220 may be one of the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 or the mobile terminal 140.

50 **[0175]** The electronic device 2210 may set up a third connection 2221 with the electronic device 2220. In this case, the electronic device 2210 may receive the IP address and port number of the electronic device 2220 from the server 2230 which has previously acquired the IP address and port number through the second connection 2231, and may transmit a signal to the electronic device 2220 using the received IP address and port number. The transmitted signal may be a connection set-up signal or a human channel request signal.

55 **[0176]** The electronic device 2220 may receive the IP address and port number of the electronic device 2210 from the server 2230 which has previously acquired the IP address and port number through the first connection 2211, and may transmit a response signal to the electronic device 2210 using the received IP address and port number. In some embodiments, the electronic device 2220 may extract the IP address and port number of the electronic device 2210

from the connection set-up signal transmitted from the electronic device 2210 and may transmit a response signal to the electronic device 2210 using the extracted IP address and port number.

[0177] Figure 23 is a schematic diagram illustrating a configuration of another exemplary embodiment of a broadcast system in accordance with the present disclosure, and Figure 24 is a diagram illustrating an exemplary embodiment of a Network Address Translation (NAT) table, and Figure 25 is a diagram illustrating an exemplary embodiment of an address matching table recorded in a server.

[0178] Referring to Figures 23 to 25, the broadcast system 2300 may include a first electronic device 2310, a second electronic device 2320, a network device 2330, a network device 2340 and a server 2350.

[0179] The first electronic device 2310 and the second electronic device 2320 respectively have private IP addresses. Specifically, the private IP address of the electronic device 2310 is private_ip1 and the private IP address of the electronic device 2320 is private_ip2. The electronic device 2310 and the electronic device 2320 may be one of the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 or the mobile terminal 140.

[0180] The network device 2330, as set up in the NAT table, translates the private IP address of the first electronic device 2310 into a public IP address, i.e. from private_ip1 to public_ip1. More specifically, the network device 2330 translates a source IP address of a packet, transmitted from the first electronic device 2310 to the server 2350, from private_ip1 into public_ip1. The network device 2330 may be one of a router, a sharer or a gateway.

[0181] The network device 2340, as set up in the NAT table, translates the private IP address of the second electronic device 2320 into a public IP address, i.e. from private_ip2 to public_ip2. More specifically, the network device 2340 translates a source IP address of a packet, transmitted from the second electronic device 2320 to the server 2350, from private_ip2 into public_ip2. The network device 2340 may be one of a router, a sharer or a gateway.

[0182] The server 2350 may be the server 10 illustrated in Figure 1. The server 2350 may store an address matching table 2500. The address matching table 2500 may be permanently or temporarily stored in the storage unit. The address matching table 2500 may store a human address, an IP address and information associating the human address and the IP address with each other. The information associating the human address and the IP address with each other may be information representing a line of the table.

[0183] In the address matching table 2500, a human address 1 is associated with public_ip1, and a human address 2 is associated with public_ip2. The human address 1 is user1@TV.com, which is a human address transmitted by the first electronic device 2310, and the human address 2 is user2@TV.com, which is a human address transmitted by the second electronic device 2320.

[0184] If the server 2350 receives a connection request signal including the human address 2 'user2@TV.com' from the first electronic device 2310, the server 2350 reads the IP address 'public_ip2' matching to the human address 2 from the address matching table 2500 and transmits a response signal including the read IP address 'public_ip2' to the first electronic device 2310. Also, the server 2350 reads the IP address 'public_ip1' of the first electronic device 2310 from the address matching table 2500 and transmits a signal including the read IP address 'public_ip1' to the second electronic device 2320. In conclusion, the first electronic device 2310 may implement data reception/transmission with the second electronic device 2320 having the private IP address using the received IP address 'public_ip2'.

[0185] Figure 26 is a diagram illustrating an implementation procedure of an exemplary embodiment for a method of setting up connection between two electronic devices.

[0186] Referring to Figure 26, the first electronic device 2610 transmits a registration request signal to a server 2630 (S700). The server 2630 may receive the registration request signal. The first electronic device 2610 may be one of the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 or the mobile terminal 140. The registration request signal may include a human address 'user1@TV.com' and information required to log-in to the server 2630. The log-in information may be authentication information stored in a human channel map.

[0187] The server 2630 transmits a response signal with respect to the registration request signal to the first electronic device 2610 (S705). The server 2630 may store the human address 'user1@TV.com' included in the registration request signal and the address of the first electronic device 2610 in an address matching table. Also, the server 2630 may implement a log-in procedure using information included in the registration request signal. The address matching table may be the address matching table 2500 illustrated in Figure 26. The server 2630 may be the server 10 illustrated in Figure 1.

[0188] The second electronic device 2620 transmits a registration request signal to the server 2630 (S710). The server 2630 may receive the registration request signal. The second electronic device 2620 may be one of the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 or the mobile terminal 140. The registration request signal may include the human address 'user2@TV.com' and information required to log-in to the server 2630.

[0189] The server 2630 transmits a response signal with respect to the received registration request signal to the second electronic device 2620 (S715). The server 2630 may store the human address 'user2@TV.com' included in the registration request signal and the address of the second electronic device 2620 in the address matching table. Also,

the server 2630 may implement a log-in procedure using information included in the registration request signal.

[0190] The first electronic device 2610 transmits a connection request signal including the human address 'user2@TV.com' to the server 2630 (S720). The server 2630 receives the connection request signal.

5 **[0191]** The server 2630 transmits a connection response signal including 'public_ip2' to the first electronic device 2610 in response to the received connection request signal (S725). 'Public_ip2' is the public IP address of the second electronic device 2620. The first electronic device 2610 receives the connection response signal and acquires the address of the second electronic device 2620 using the connection response signal.

[0192] The server 2630 transmits a connection response signal including 'public_ip1' to the second electronic device 2620 (S730). 'Public_ip1' is the public IP address of the first electronic device 2610. The second electronic device 2620
10 receives the connection response signal and acquires the address of the first electronic device 2610 using the connection response signal.

[0193] The first electronic device 2610 transmits a connection set-up signal to the second electronic device 2620 using the IP address 'public-ip2' (S735). The second electronic device 2620 receives the connection set-up signal.

15 **[0194]** The second electronic device 2620 transmits a connection response signal with respect to the connection set-up signal to the first electronic device 2610 using the IP address 'public_ip1' (S740). The first electronic device 2610 receives the connection response signal. With Step S735 and Step S740, communication between the first electronic device 2610 and the second electronic device 2620 is initialized. The connection response signal may include a particular port number, and the second electronic device 2620 may open a port corresponding to the particular port number.

20 **[0195]** The first electronic device 2610 transmits a human channel request signal to the second electronic device 2620 in response to the received connection response signal (S745). The second electronic device 2620 receives the human channel request signal. The human channel request signal may be transmitted to a port corresponding to the port number included in the connection response signal.

[0196] The second electronic device 2620 transmits a response signal with respect to the received human channel request signal to the first electronic device 2610 (S750).

25 **[0197]** The response signal may include content of a human channel or a content list of a human channel. The first electronic device 2610 receives the response signal. The first electronic device 2610 may display content when the content is transmitted as the response signal, or may display a content list when the content list is transmitted as the response signal.

30 **[0198]** Figure 27 is a diagram illustrating a screen on which one exemplary embodiment of a GUI for setting up a human channel is displayed.

[0199] Referring to Figure 27, the display 302 may display a GUI 2700. If the controller 340 detects a user action for setting up a human channel in a state in which the Web page 400 is displayed, the controller 340 may control displaying the GUI 2700 in response to the detected user action. In some embodiments, the controller 340 may control displaying the GUI 2700 after the Web page 400 is received.

35 **[0200]** The GUI 2700 includes a channel number region 2710 including at least one channel number and a human channel region 2720 including at least one human address. In one example, the Web page 400 illustrated in Figure 4 may be displayed on the human channel region 2720, and the GUI 610 illustrated in Figure 6 may be displayed on the channel number region 2710.

40 **[0201]** The user may drag each human address 411, 412 or 413 to the channel number region 2710 on the GUI 2700 and drop the dragged human address onto one of the channel numbers listed on the channel number region 2710. The human address 411, 412, and 413 may be represented by an icon, or another appropriate type of selectable object. The icon may have an image associated with the individual. Then, the controller 340 may store the channel number onto which the human address was dropped, the dropped human address and information associating the channel number and human address with each other in a human channel map. The human channel map may be the human channel
45 map 1210 in Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0202] Figure 28 is a diagram illustrating a screen in a state in which a human address is being dragged on the displayed GUI of Figure 27.

50 **[0203]** Referring to Figure 28, an image 2810 represents a state in which the human address 411 is being dragged. If the image 2810 drops onto a channel number '60', the human address 411, the channel number '60' and information associating the human address 411 and the channel number '60' with each other may be stored in the human channel map.

[0204] Figure 29 is a diagram illustrating a screen on which another exemplary embodiment of a GUI for setting up a human channel is displayed.

55 **[0205]** Referring to Figure 29, the display 302 may display a GUI 2900. If the controller 340 detects a user action for setting up a human channel, the controller 340 may control display of the GUI 2900 in response to the detected user action. The user action is, for example, a user action for selecting the menu item 810 illustrated in Figure 8, or a user action for selecting a separate channel set-up menu item.

[0206] The GUI 2900 includes a channel number region 2910 including at least one channel number and a human channel region 2920 including at least one human address. The GUI 1110 illustrated in Figure 11 may be displayed on the human channel region 2920 and the GUI 610 illustrated in Figure 6 may be displayed on the channel number region 2910.

[0207] The user may drag each human address "user99@TV.com", "user91@TV.com", "user23@TV.com", etc., to the channel number region 2910 on the GUI 2900 and drop the dragged human address onto one of the channel numbers listed on the channel number region 2910. Then, the controller 340 may store the channel number to which the human address was dropped, the dropped human address and information associating the channel number and the human address with each other in a human channel map. The human channel map may be the human channel map 1210 in Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0208] Figure 30 is a diagram illustrating a screen in a state in which a human address is being dragged on the displayed GUI of Figure 29.

[0209] Referring to Figure 30, an image 3010 represents a state in which the human address "user91@TV.com" is being dragged. If the image 3010 is dragged onto the channel number "60", the human address "user91@TV.com", the channel number "60" and information associating the human address "user91@TV.com" and the channel number "60" with each other may be stored in the human channel map.

[0210] Figure 31 is a diagram illustrating a screen on which an exemplary embodiment of a GUI for setting up a channel is displayed.

[0211] Referring to Figure 31, the display 302 may display a GUI 3100. If the controller 340 detects a user action for setting up a channel, the controller 340 may control displaying the GUI 3100 in response to the detected user action. The user action is, for example, the user action for selecting the menu item 810 illustrated in Figure 8, the user action for selecting the menu item 513 or the menu item 515 illustrated in Figure 5, a user action for selecting a channel set-up menu item, or the like, which may be configured to display the GUI 3100.

[0212] The GUI 3100 includes a broadcast channel region 3110 including at least one broadcast channel, a human channel region 3120 including at least one human address and an App channel region 3130 including at least one App channel. The broadcast channel refers to a channel for providing real-time broadcasting received through a satellite, a terrestrial broadcast system or an IP network. The App channel may refer to a content provider or a service provider connectable through an IP network, or may refer to a channel for providing data reception/transmission with the content provider or the service provider. Also, the App channel may refer to a channel capable of receiving an Internet service provided by the content provider or the service provider. The Internet service refers to a Content on Demand (CoD) service, a YouTube service, an information service for providing weather, news and local information and enabling information retrieval and the like, an entertainment service related to gaming, singing and the like, a communication service related to TV mail and TV SMS services and the like, and other Internet services including an application providing service and the like.

[0213] The broadcast channel region 3110 lists broadcast channels, such as "NBC", "FOX", "CNN", "SBS", "KBS" and "OCN". The human channel region 3120 lists human addresses, such as "Marek Foss", "Ellisabeth Daveine" and "Anne". The App channel region 3130 lists App channels, such as "Farmville", "Chess", "Angry birds" and "Unblock Me".

[0214] The GUI 3100 further includes a channel number region 3140, a next channel call button 3150 and a cancel button 3160. The channel number region 3140 serves to indicate a particular channel number, and the next channel call button 3150 serves to switch the channel number indicated on the channel number region 3140 to another channel number. The cancel button 3160 serves to cancel a user action implemented on the GUI 3100.

[0215] The user may drag each human address "Marek Foss", "Ellisabeth Daveine" or "Anne" to the channel number region 3140 on the GUI 3100 and may drop the dragged human address onto the channel number region 3140. Then, the controller 340 may store the channel number indicated on the channel number region 3140, the dropped human address and information associating the channel number and the human address with each other in a human channel map. The human channel map may be the human channel map 1210 in Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0216] Also, the user may drag each broadcast channel "NBC", "FOX", "CNN", "SBS", "KBS" or "OCN" to the channel number region 3140 on the GUI 3100 and may drop the dragged broadcast channel onto the channel number region 3140. Then, the controller 340 may store the channel number indicated on the channel number region 3140, the dropped broadcast channel and information associating the channel number and the broadcast channel with each other in a broadcast channel map. The broadcast channel map refers to a channel map in which the broadcast channel and the channel number are stored in association with each other.

[0217] The user may also drag each App channel "Farmville", "Chess", "Angry bird" or "Unblock Me" to the channel number region 3140 on the GUI 3100 and may drop the dragged App channel onto the channel number region 3140.

Then, the controller 340 may store the channel number indicated on the channel number region 3140, the dropped App channel and information associating the channel number and the App channel with each other in an App channel map. The App channel map refers to a channel map in which the App channel and the channel number are stored in association with each other.

5 **[0218]** Figure 32 is a diagram illustrating a screen in a state in which a human address is being dragged on the displayed GUI of Figure 31.

[0219] Referring to Figure 32, a screen 3200 displays an image 3125 on the GUI 3100. The image 3125 represents a state in which the human address 'Marek Foss' is being dragged. If the image 3125 drops onto the channel number region 3140, the human address 'Marek Foss', the channel number '100' and information associating the human address
10 'Marek Foss' and the channel number '100' with each other may be stored in the human channel map.

[0220] Figure 33 is a diagram illustrating a screen in a state in which a broadcast channel, a human address and an App channel are dropped onto the channel number region of the displayed GUI of Figure 31.

[0221] Referring to Figure 33, a screen 3300 displays images 3115, 3125 and 3135 dropped onto the channel number region 3140. The image 3115 and the image 3135 respectively represent a state in which the broadcast channel 'NBC' and the App channel 'Chess' were dropped. In this case, the broadcast channel, the human address and the App channel
15 may be mapped to the same channel number. In other words, the same channel number may be assigned to a broadcast channel, a human channel and an App channel.

[0222] It should be appreciated that a particular channel number may be assigned multiple SNS accounts associated with a particular individual or multiple individuals. For example, an individual may have multiple SNS accounts, such as a facebook account and a twitter account, each represented by an image or icon in the human channel region 3120. In this case, the images or icons corresponding to each of the SNS accounts may be dragged into the channel number region 3140 and associated with the corresponding channel number (e.g., channel 100). Alternatively, the multiple SNS accounts for a particular individual may be assigned to different channels. In another embodiment, icons for multiple SNS accounts of different users (e.g., SNS accounts corresponding to Marek Foss and Anne) may be dropped in the
20 channel number region 3140 and associated with a particular channel number (e.g., channel 100). In this case, the group of SNS addresses may be given a human address (or SNS identifier) that represents the group, for example, "family." The human address for the group may be associated with a particular channel number.

[0223] Figure 34A and Figure 34B are flowcharts illustrating an implementation procedure of a further exemplary embodiment for a method of constructing a channel map in accordance with the present disclosure.

30 **[0224]** Referring to Figure 34A and Figure 34B, the display 302 displays a GUI for setting up a channel (S800). The displayed GUI may be one of the GUI 2700 illustrated in Figure 27, the GUI 2900 illustrated in Figure 29 or the GUI 3100 illustrated in Figure 31.

[0225] The controller 340 detects a first user action for selecting a human address (S801). The first user action may be a user action for generating a down event (e.g., a selection) in a region at which the human address is located.

35 **[0226]** The controller 340 detects a second user action for requesting dragging (S802). The second user action may occur consecutively after the first user action. The second user action may be a user action for successively generating a dragging event. The controller 340 controls dragging the human address selected by the first user action.

[0227] The controller 340 detects a third user action for selecting a channel number (S803). The third user action may be a user action for generating a drop event in a region at which the channel number is located. The controller 340
40 controls dropping the dragged human address onto the region at which the channel number selected by the third user action is located, in response to the detected third user action.

[0228] The controller 340 confirms whether or not a human address associated with the selected channel number is present in a human channel map, in response to the detected third user action (S804). The human channel map may be the human channel map 1210 in Figure 12 or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0229] If the associated human address is present, the controller 304 deletes the associated human address, the selected channel number and information associating the associated human address and the selected channel number with each other from the human channel map (S805).

50 **[0230]** Then, the controller 340 stores the selected human address, the selected channel number and information associating the selected human address and the selected channel number with each other in the human channel map (S806).

[0231] The controller 340 detects a fourth user action for selecting a broadcast channel (S807). The fourth user action may be a user action for generating a down event in a region at which the broadcast channel is located.

55 **[0232]** The controller 340 detects a fifth user action for requesting dragging (S808). The fifth user action may occur consecutively after the fourth user action. The fifth user action may be a user action for successively generating a dragging event. The controller 340 controls dragging the broadcast channel selected by the fourth user action, in response to the detected fifth user action.

[0233] The controller 340 detects a sixth user action for selecting a channel number (S809). The sixth user action may be a user action for generating a drop event in a region at which the channel number is located. The controller 340 controls dropping the dragged broadcast channel onto the region at which where the selected channel number is located, in response to the detected sixth user action.

5 [0234] The controller 340 confirms whether or not a broadcast channel associated with the selected channel number is present in a broadcast channel map, in response to the detected sixth user action (S810).

[0235] If the associated broadcast channel is present, the controller 304 deletes the associated broadcast channel, the selected channel number and information associating the associated broadcast channel and the selected channel number with each other from the broadcast channel map (S811).

10 [0236] Then, the controller 340 stores the selected broadcast channel, the selected channel number and information associating the selected broadcast channel and the selected channel number with each other in the broadcast channel map (S812).

[0237] The controller 340 detects a seventh user action for selecting an App channel (S813). The seventh user action may be a user action for generating a down event in a region at which the App channel is located.

15 [0238] The controller 340 detects an eighth user action for requesting dragging (S814). The eighth user action may occur consecutively after the seventh user action. The eighth user action may be a user action for successively generating a dragging event. The controller 340 controls dragging the App channel selected by the seventh user action, in response to the detected eighth user action.

20 [0239] The controller 340 detects a ninth user action for selecting a channel number (S815). The ninth user action may be a user action for generating a drop event in a region at which the channel number is located. The controller 340 controls dropping the dragged App channel onto the region at which the channel number selected by the ninth user action is present, in response to the detected ninth user action.

[0240] The controller 340 confirms whether or not an App channel associated with the selected channel number is present in an App channel map, in response to the detected ninth user action (S816).

25 [0241] If the associated App channel is present, the controller 304 deletes the associated App channel, the selected channel number and information associating the associated App channel and the selected channel number with each other from the App channel map (S817).

[0242] Then, the controller 340 stores the selected App channel, the selected channel number and information associating the selected App channel and the selected channel number with each other in the App channel map (S818).

30 [0243] Figure 35 is a diagram illustrating an exemplary embodiment of a broadcast screen on which a human channel map is displayed.

[0244] Referring to Figure 35, the display 302 may display a screen 3500. The screen 3500 displays a broadcast program 3510 of a broadcast channel and a human channel map. If the controller 340 detects a user action for requesting display of a human channel map in a state in which the broadcast program 3510 is displayed on the screen 3500, the controller 340 may control displaying a human channel map 3520 in response to the detected user action.

35 [0245] The human channel map 3520 displays a human address 3531 and a channel number 3533 associated with the human address 3531, which are stored in the human channel map 1210 of Figure 12. The human channel map 3520 also displays a broadcast channel 3535 that a person indicated by the human address 3531 is viewing, a broadcast program 3537 and display time information 3539 of the broadcast program 3537. A channel guiding signal (or a signal or message for identifying a channel), which includes at least one of the broadcast channel 3535, the broadcast program 3537 or the display time information 3539, may be received according to Step S310 of Figure 18. That is, instead of content, the channel guiding signal is received in Step S310.

[0246] In some embodiments, the channel guiding signal may be received from the server 10 illustrated in Figure 1.

45 [0247] The controller 340 may transmit a channel guiding signal, which includes at least one of the broadcast program 3510 which is being displayed, a broadcast channel which broadcasts the broadcast program 3510 or display time information of the broadcast program 3510, to an electronic device or a server. The channel guiding signal may be transmitted in a constant period or whenever a broadcast program being displayed is switched. The controller 340 may transmit the channel guiding signal to the electronic device or the server according to an access method associated with the channel numbers included in the human channel map. The server for receiving the channel guiding signal may be the server 10 illustrated in Figure 1. The human channel map may be the human channel map 1210 in Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0248] Figure 36 is a diagram illustrating an exemplary embodiment of a screen for invitation to view a channel.

55 [0249] Referring to Figure 36, the display 302 may display a GUI 3600. If the controller 340 detects a user action for requesting display of a human channel map while a broadcast program 3610 is being displayed on the screen 3600, the controller 340 may control displaying a human channel map 3620 in response to the detected user action.

[0250] The human channel map 3620 displays the human address 'Me' and the channel number '00' associated with

the human address 'Me', which are stored in the human channel map 1210 of Figure 12.

[0251] The user may drag a broadcast program from an original display region 3610 thereof to the human channel map 3620 and then, may drop the dragged broadcast program 3630 onto a position at which a human channel 3622 is located. The controller 340 may control displaying an image 3630 representing the dragged broadcast program on the screen, in response to the user dragging action. The controller 340 also generates and controls transmitting a channel viewing request signal for requesting viewing of the broadcast program 3630 to an electronic device (e.g., a remote multi-functional display device) associated with the human channel 3622. The channel viewing request signal may be transmitted to the electronic device or the server according to an access method associated with the channel numbers included in the human channel map. The human channel map may be the human channel map 1210 in Figure 12, or may include the human channel map 1210, the first access information map 1230, the second access information map 1240, the third access information map 1250, the fourth access information map 1260 and the fifth access information map 1270 as illustrated in Figure 12.

[0252] In some embodiments, the controller 340 may control transmission of the signal for requesting viewing of the broadcast program 3630 to the server. The server may be the server 10 illustrated in Figure 1.

[0253] In some embodiments, when the image 3630 is located at the human channel, the controller 340 may control displaying a message 'User B' which represents a human address associated with the human channel.

[0254] In some embodiments, if the controller 340 detects a user action for selecting the broadcast program 3610 and a user action for selecting the channel number, the controller 340 controls transmitting a channel viewing request signal for requesting viewing of the broadcast program 3610 to an electronic device associated with the human channel indicated by the selected channel number, in response to the detected user action for selecting the channel number. The user action for selecting the broadcast program 3630 is, for example, touching a region where the broadcast program 3630 is displayed, pressing a predetermined button (e.g., a 'select' button) in a state in which an indicator is located at the region where the broadcast program 3630 is displayed, and pressing a predetermined button (e.g., a 'select' button) in a state in which the region where the broadcast program 3630 is displayed is focused. The user action for selecting the channel number is, for example, pressing a numeric key of a remote controller, touching the human channel listed in the human channel map 3620, pressing a predetermined button (e.g., a 'select' button) in a state in which an indicator is located at the human channel listed in the human channel map 3620, and pressing a predetermined button (e.g., a 'select' button) in a state in which the human channel listed in the human channel map 3620 is focused.

[0255] Figure 37 is a schematic diagram illustrating a configuration of another exemplary embodiment of a broadcast system in accordance with the present disclosure.

[0256] Referring to Figure 37, a broadcast system 3700 in accordance with the present disclosure may include the first server 10, the second server 20, the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130, the mobile terminal 140, a third digital TV 150 and a fourth digital TV 160. The first server 10, the second server 20, the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 respectively correspond to the first server 10, the second server 20, the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 and the mobile terminal 140 as described above with reference to Figure 1 and thus, a detailed description thereof is omitted. Even the third digital TV 150 and the fourth digital TV 160 correspond to the first digital TV 100 and thus, a detailed description thereof is omitted hereinafter.

[0257] The first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130, the mobile terminal 140, the third digital TV 150 and the fourth digital TV 160 may receive broadcast channels through different transmission media. The first digital TV 100 may receive broadcast channels through a satellite 3, the second digital TV 110 may receive broadcast channels through a terrestrial broadcast system 4, and the personal computer system 120 and the notebook computer 130 may receive broadcast channels through an IP network 5. Also, the mobile terminal 140 may receive broadcast channels through a Digital Multimedia Broadcasting (DMB) system 6, and the third digital TV 150 and the fourth digital TV 160 may receive broadcast channels through a cable 7.

[0258] The first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130, the mobile terminal 140, the third digital TV 150 and the fourth digital TV 160 may receive broadcast channels from different service providers respectively.

[0259] The first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130, the mobile terminal 140, the third digital TV 150 and the fourth digital TV 160 may receive broadcast channels from the same service provider, and kinds and range of broadcast channels transmitted from the service provider may be identical or different.

[0260] Even if the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130, the mobile terminal 140, the third digital TV 150 and the fourth digital TV 160 receive different kinds of broadcast services from different transmission media or service providers, the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130, the mobile terminal 140, the third digital TV 150 and the fourth digital TV 160 may search for a channel, which provides a broadcast program corresponding to the

received channel viewing request signal, using Electronic Program Guide (EPG) data and information included in the received channel viewing request signal, and may receive the broadcast program through the channel.

[0261] Figure 38 is a diagram illustrating a configuration of an exemplary embodiment for a channel invitation packet.

[0262] Referring to Figure 38, the transmitted channel viewing request signal may have a format 3800. The packet 3800 may include a Details_of_user field, a Physical_channel_details field, a Service_Name field, a Service_ID field, a Channel_number field, an Event_Name field, an Event_ID field, a Transport_Stream_ID field, a Network_ID field, a ServiceProvider field, an Originating_medium field and an Originating_Country field.

[0263] The Details_of_user field includes detailed user information. Specifically, the Details_of_user field includes detailed information about a user who sends a channel viewing request signal.

[0264] The Physical_channel_details field includes detailed information about a physical channel which transmits a broadcast program requested to view.

[0265] The Service_Name field includes a service name of a broadcast program requested to view.

[0266] The Service_ID field includes a service ID of a broadcast program requested to view.

[0267] The Channel_number field includes a channel number of a broadcast program requested to view.

[0268] The Event_Name field includes an event name of a broadcast program requested to view.

[0269] The Event_ID field includes an event ID of a broadcast program requested to view.

[0270] The Transport_Stream_ID field includes a transport stream ID of a broadcast program requested to view.

[0271] The Network_ID field includes a network ID of a broadcast program requested to view.

[0272] The ServiceProvider field includes information about a service provider for providing a broadcast program requested to view.

[0273] The Originating_medium field includes information about a transmission medium for transmitting a broadcast program requested to view.

[0274] The Originating_Country field includes information about a nation or an area (e.g., geographical area or region) from which a broadcast program, requested to view, is transmitted.

[0275] Figure 39 is a diagram illustrating an exemplary embodiment of a screen displayed when invitation to view a channel is made.

[0276] Referring to Figure 39, the display 302 may display a screen 3900. The screen 3900 displays a broadcast program 3910 and a menu map 3920. The screen 3900 also displays a guidance message 3930, which indicates a broadcast channel included in a broadcast viewing request signal, and a message 3940 which indicates a user who sends a broadcast viewing request signal. The guidance message 3930 may be displayed as a message associated with a TV menu item 3922.

[0277] The controller 340 controls displaying the guidance message 3930 and the message 3940 when receiving the broadcast viewing request signal.

[0278] Figure 40 is a diagram illustrating one exemplary embodiment of a guidance message with regard to invitation to view a channel.

[0279] Referring to Figure 40, the display 302 may display a guidance message 4010. If a broadcast viewing request signal is transmitted to the controller 340, the controller 340 may generate the guidance message 4010 and control displaying the generated guidance message 4010. In some embodiments, if the controller 340 detects a user action for selecting the guidance message 3930 illustrated in Figure 39, the controller 340 may control displaying the guidance message 4010 in response to the detected user action.

[0280] The guidance message 4010 informs of a user A who sends a broadcast viewing request signal and makes inquiry about whether or not to view a requested broadcast program (e.g., a dance show on ESPN). The guidance message 4010 includes a 'Yes' button 4012 for accepting viewing and a 'No' button 4014 for rejecting viewing. In one embodiment, the guidance message 4010 may also display other users who are currently viewing the broadcast program or users who have been invited to view the broadcast program.

[0281] If the controller 340 detects a user action for accepting invitation to view a channel, the controller 340 controls displaying the requested broadcast program, in response to the detected user action. The user action may be a user action of pressing the button 4012.

[0282] If the controller 340 detects a user action for rejecting the invitation to view a channel, the controller 340 controls a screen 4000 to continuously display the broadcast program 3910. The user action may be a user action of pressing the button 4014.

[0283] Figure 41 is a diagram illustrating another exemplary embodiment of a guidance message with regard to invitation to view a channel.

[0284] Referring to Figure 41, the display 302 may display a message 4110. The controller 340 may control displaying the message 4110 when receiving a broadcast viewing request signal. In some embodiments, if the controller 340 detects a user action for selecting the guidance message 3930 illustrated in Figure 39, the controller 340 may control displaying the guidance message 4110 in response to the detected user action.

[0285] The guidance message 4110 informs of a user A who sends a broadcast viewing request signal and makes

inquiry about whether or not to view a channel similar to a requested broadcast channel because the requested broadcast channel is not found. The guidance message 4110 includes a 'Yes' button 4112 for accepting viewing and a 'No' button 4114 for rejecting viewing.

[0286] If the controller 340 detects a user action for accepting invitation to view a channel, the controller 340 controls displaying a similar broadcast program, in response to the detected user action. The user action may be a user action of pressing the button 4112.

[0287] If the controller 340 detects a user action for rejecting invitation to view a channel, the controller 340 controls a screen 4100 to continuously display the broadcast program 3910. The user action may be a user action of pressing the button 4114.

[0288] Figure 42 is a diagram illustrating a further exemplary embodiment of a guidance message with regard to invitation to view a channel.

[0289] Referring to Figure 42, the display 302 may display a guidance message 4210. The controller 340 may control displaying a guidance message 4210 when receiving a broadcast viewing request signal. In some embodiments, if the controller 340 detects a user action for selecting the guidance message 3930 illustrated in Figure 39, the controller 340 may control displaying the guidance message 4210 in response to the detected user action.

[0290] The guidance message 4210 informs of a user A who sends a broadcast viewing request signal and also, informs that a channel, which is the same as or similar to a requested broadcast program, is not found. The guidance message 4210 includes an 'OK' button 4212.

[0291] If the controller 340 detects a user action for confirming that viewing of an invited channel is not possible, the controller 340 removes the guidance message 4210 from a screen 4200 in response to the detected user action and controls the screen 4200 to continuously display the broadcast program 3910. The user action may be a user action of pressing the button 4212.

[0292] Figures 43A and 43B are diagrams illustrating an exemplary embodiment of a screen displayed when invitation to view a channel is accepted.

[0293] Referring to Figures 43A and 43B, if Patrick accepts a viewing request of Susan, an electronic device of Susan may display a screen 4310 and an electronic device of Patrick may display a screen 4320. Patrick may accept the viewing request of Susan by pressing the button 4012 of the guidance message 4010 illustrated in Figure 40 or the button 4112 of the guidance message 4110 illustrated in Figure 41.

[0294] As Patrick accepts the viewing request, the electronic device of Patrick stops displaying the broadcast program 3910 and displays the broadcast program 3610 indicated by a broadcast viewing request signal. Thus, the electronic devices of Susan and Patrick display the same broadcast program 3610.

[0295] The screen 4310 displays a picture 4315 of Patrick who views the same broadcast, a chat input window 4318 and a chat window 4319. Susan may chat with Patrick using the chat input window 4318 and the chat window 4319.

[0296] The screen 4320 displays a picture 4325 of Susan who views the same broadcast, a chat input window 4328 and a chat window 4329. Patrick may chat with Susan using the chat input window 4328 and the chat window 4329.

[0297] Figure 44 is a diagram illustrating an exemplary embodiment of a channel matching table.

[0298] Referring to Figure 44, the server 10 may store a channel matching table 4400. The server 10 may match channels of electronic devices to each other using the channel matching table 4400. The server 10 matches a channel indicated by a broadcast viewing request signal to a channel which is receivable by an electronic device to which the broadcast viewing request signal is transmitted, using the channel matching table 4400.

[0299] A first electronic device receives a broadcast channel from a service provider 1 and a second electronic device receives a broadcast channel from a service provider 2. If the first electronic device transmits a channel viewing request signal for inviting a user to view a channel to a user of the second electronic device, the server 10 receives the channel viewing request signal and reads a channel 901 of the service provider 2, which matches to a channel 101 indicated by the channel viewing request signal, from the channel matching table 4400. The server 10 amends the channel viewing request signal so as to indicate the channel 901 and transmits the amended channel viewing request signal to the second electronic device.

[0300] If the channel viewing request signal has the format 3800 illustrated in Figure 38, the server 10 may confirm a service provider of the first electronic device based on information included in the ServiceProvider field. The server 10 may amend information, stored in the Physical_channel_detail field and in the Channel_number field, to detailed information (e.g., 11100 MHZ) about the physical channel 901 matching to the channel 101 indicated by the channel viewing request signal and the channel 901 respectively, and may transmit the amended channel viewing request signal to the second electronic device.

[0301] The channel matching table 4400 stores information in such a manner that the same channels of different service providers are associated with each other. If the channel 101 and the channel 202 of the service provider 1 are associated respectively with the channel 901 and the channel 345 of the service provider 2, the channel matching table 4400 may store the channel 910, the channel 101 and information associating the channels 101 and 910 with each other and also, may store the channel 202, the channel 345 and information associating the channels 202 and 234 with each

other

[0302] The channel matching table 4400 may store the frequency of each channel. In one example, the channel matching table 4400 stores the frequency of the channel 101 of 10800 MHZ and the frequency of the channel 901 of 11100 MHZ. The channel matching table 4400 may be stored on the originating electronic device (inviter), the destination electronic device (invitee), and/or a server.

[0303] Figure 45 is a diagram illustrating an implementation procedure of one exemplary embodiment for a method of making invitation to view a channel in accordance with the present disclosure.

[0304] Referring to Figure 45, Steps S900 to S940 correspond to Steps S700 to S740 and thus, a description with respect to Steps S900 to S940 refers to Steps S700 to S740 and is omitted hereinafter.

[0305] A first electronic device 4510 transmits a broadcast viewing request signal to a second electronic device 4520 in response to the received connection response signal transmitted in Step S940 (S945). The second electronic device 4520 receives the broadcast viewing request signal. The broadcast viewing request signal may be transmitted to a port indicated by a port number included in the connection response signal. The broadcast viewing request signal may have the format 3800 illustrated in Figure 38.

[0306] The second electronic device 4520 transmits a response signal with respect to the broadcast viewing request signal to the first electronic device 4510 in response to the received broadcast viewing request signal (S950). The first electronic device 4510 receives the response signal. The response signal may be one of a viewing acceptance signal, a viewing not possible signal and a viewing rejection signal.

[0307] The electronic device 4510 and the electronic device 4520 may receive broadcast services from the same service provider or different service providers. Even when the electronic devices 4510 and 4520 receive broadcast services from the same service provider, the electronic devices 4510 and 4520 may receive different kinds of broadcast services and broadcast channels. The electronic device 4520 may confirm whether or not it receives a broadcast service from the same service provider as that in the first electronic device 4510 using information about the service provider included in the broadcast viewing request signal and EPG data. The electronic device 4520 may also confirm that it can receive a viewing requested channel using EPG data and at least one of detailed information about physical channels, service names, service IDs, channel numbers, event names, transport stream IDs or network IDs included in the broadcast viewing request signal.

[0308] If it is confirmed that the electronic device 4520 receives broadcast services from the same service provider as that in the electronic device 4510, but cannot receive a viewing requested channel from the service provider, the electronic device 4520 may search for and display a similar channel using EPG data and at least one of detailed information about physical channels, service names, service IDs, channel numbers, event names, transport stream IDs or network IDs included in the broadcast viewing request signal.

[0309] If the electronic device 4520 and the electronic device 4510 receive broadcast services from different service providers, the electronic device 4520 searches for a channel, which is the same as or similar to a viewing requested channel, from among channels provided by other service providers, based on EPG data and at least one of detailed information about physical channels, service names, service IDs, channel numbers, event names, transport stream IDs, network IDs, nation information or local information included in the channel viewing request signal. The electronic device 4520 may display the located channel. The electronic device 4520 may display one of the guidance message 4010, the guidance message 4110 and the guidance message 4210 based on the search results.

[0310] The electronic device 4520 and the electronic device 4510 may receive broadcast services from different transmission media. The electronic device 4520 may confirm this kind of reception using information about a transmission medium included in a broadcast viewing request signal. If it is confirmed that the electronic device 4520 and the electronic device 4510 receive broadcast services from different transmission media, the electronic device 4520 searches for a channel, which is the same as or similar to a viewing requested channel, from among channels provided by other service providers, based on EPG data and at least one of detailed information about physical channels, service names, service IDs, channel numbers, event names, transport stream IDs, network IDs, nation information or local information included in the channel viewing request signal. The electronic device 4520 may display the located channel. The electronic device 4520 may display one of the guidance message 4010, the guidance message 4110 and the guidance message 4210 based on the search results.

[0311] If the response signal is a viewing acceptance signal, the first electronic device 4510 may display a screen on which a chat window and a chat input window are displayed, and the second electronic device 4520 may display a screen on which a chat window and a chat input window are displayed. The screen displayed by the first electronic device 4510 may be the screen 4310 and the screen displayed by the second electronic device 4520 may be the screen 4320.

[0312] If the response signal is a viewing not possible signal, the first electronic device 4510 may transmit a broadcast program invited to view to the second electronic device 4520.

[0313] Figure 46 is a flowchart illustrating an implement procedure of another exemplary embodiment for a method of making invitation to view a channel in accordance with the present disclosure.

[0314] Referring to Figure 46, the display 302 displays a human channel map (S1000). The human channel map may be the human channel map 3520 illustrated in Figure 35 or the human channel map 3620 illustrated in Figure 36.

[0315] The external signal input unit 325 receives a signal for requesting channel switch (S1010). The controller 340 detects the received channel switch request signal. The channel switch request signal may be generated when the user performs an action of pressing a predetermined key of a remote controller, or may be a video signal with regard to a spatial gesture for requesting channel switch.

[0316] The controller 340 controls a screen to display content of a requested channel in response to the detected channel switch request signal (S1020). The channel may be a broadcast channel, a human channel or an App channel. The screen may be the screen 1600 illustrated in Figure 16 or the screen 3500 illustrated in Figure 35.

[0317] The controller 304 detects a user action for requesting invitation to view a channel (S1030). The user action is, for example, an action of dragging a screen on which content is displayed and dropping the dragged screen onto a human channel listed in a human channel map. In one example, the controller 340 may drag the image 3630 illustrated in Figure 36 to the human channel '43' and may detect a user action for requesting invitation to view the human channel '43' when the image 3630 drops onto the human channel '43'. In another example, the user action may be a combination of a user action for selecting a displayed broadcast program and a user action for selecting a human channel (or a channel number).

[0318] The controller 340 transmits a channel viewing request signal in response to the detected user action (S1040). The channel viewing request signal may have the format 3800 illustrated in Figure 38.

[0319] In some embodiments, the controller 340 may control transmitting the channel viewing request signal to the electronic device which provides the human channel indicated by the channel number designated by the user action in Step S1030. The address of the electronic device may be acquired by the above described method as illustrated in Figures 19 to 21.

[0320] In some embodiments, the controller 340 may control transmitting the channel viewing request signal to a server. The server may be the server 10 illustrated in Figure 1.

[0321] The controller 340 receives a response signal with respect to the transmitted channel viewing request signal (S1050). The response signal may be one of a viewing acceptance signal, a viewing not possible signal and a viewing rejection signal.

[0322] If the response signal is a viewing acceptance signal, the controller 340 may display a screen on which a chat window and a chat input window are displayed. The screen may be the screen 4310 illustrated in Figures 43A and 43B.

[0323] If the response signal is a viewing not possible signal, the controller 340 may transmit a broadcast program invited to view to the electronic device which provides the human channel indicated by the channel number designated by the user action in Step S1030.

[0324] Figure 47 is a flowchart illustrating an implement procedure of an exemplary embodiment for a method of processing invitation to view a channel in accordance with the present disclosure.

[0325] Referring to Figure 47, the display 302 displays a broadcast program (S1100).

[0326] The network interface 302 receives a channel viewing request signal (S1110). The controller 340 generates a guidance message with regard to invitation to view a channel using information included in the received channel viewing request signal. The generated guidance message may be the message 3930 and the message 3940 illustrated in Figure 39, the guidance message 4010 illustrated in Figure 40, the guidance message 4110 illustrated in Figure 41, or the guidance message 4210 illustrated in Figure 42.

[0327] The controller 340 may confirm whether or not it can receive a viewing requested channel using information included in the channel viewing request signal. The controller 340 may confirm whether or not it can receive a viewing requested channel from a service provider using stored EPG data and information about the service provider included in the channel viewing request signal. The controller 340 generates a guidance message 4010 when it can receive the viewing requested channel from the service provider.

[0328] Even when the electronic device 300 can receive a broadcast service from a service provider indicated by the channel viewing request signal, the electronic device 300 may fail to receive the viewing requested channel from the service provider according to terms of a contract with the service provider. If this failure to receive the channel is confirmed, the controller 340 may search for a similar channel using EPG data and at least one of detailed information about physical channels, service names, service IDs, channel numbers, event names, transport stream IDs or network IDs included in the channel viewing request signal. If the electronic device 300 succeeds in searching for the similar channel, the controller 340 may generate the guidance message 4110 and if not, may generate the guidance message 4210.

[0329] If the controller 340 cannot receive the viewing requested channel from the service provider, the controller 304 confirms whether or not the viewing requested channel is receivable from another service provider. The controller 340 searches for the same channel as the viewing requested channel from among channels provided by another service provider based on EPG data and at least one of detailed information about physical channels, service names, service IDs, channel numbers, event names, transport stream IDs or network IDs included in the channel viewing request signal. If the channel is found, the controller 340 may generate the guidance message 4010. If the same channel is not found,

but a similar channel is found, the controller 340 may generate the guidance message 4110. If the same channel and the similar channel are not found, the controller 340 may generate the guidance message 4210. Here, another service provider may be a service provider which provides a broadcast service to the electronic device 300.

[0330] The controller 340 may confirm whether or not it can receive the viewing requested channel, using information about a transmission medium included in the channel viewing request signal. If the controller 340 receives a broadcast service from a transmission medium different from that indicated by the channel viewing request signal, the controller 340 searches for the same channel as the viewing requested channel from among channels provided by the different transmission medium, based on EPG data and at least one of detailed information about physical channels, service names, service IDs, channel numbers, event names, transport stream IDs or network IDs included in the channel viewing request signal. If the same channel is found, the controller 340 may generate the guidance message 4010. If the same channel is not found, but a similar channel is found, the controller 340 may generate the guidance message 4110. If the same channel and the similar channel are not found, the controller 340 may generate the guidance message 4210.

[0331] The display 302 displays the guidance message generated in Step S1110 on a screen (S1120). The screen may be one of the screen 3900, the screen 4000, the screen 4100 and the screen 4200 as illustrated in Figures 39 to 42. After the display 302 displays the screen 3900, one of the screen 4000, the screen 4100 and the screen 4200 may be displayed under control of the controller 340. If the controller 340 detects a user action for selecting the message 3930 in a state in which the screen 3900 is displayed, the controller 340 may control displaying one of the screen 4000, the screen 4100 and the screen 4200.

[0332] The controller 340 confirms whether or not a user action for accepting invitation to view a channel is detected (S1130). The controller 340 may detect a user action for rejecting invitation to view a channel and also, may detect a user action for confirming that viewing of an invited channel is not possible. The user actions may be performed according to the above described method as illustrated in Figures 40 to 42.

[0333] The controller 340 controls displaying content of a channel indicated by the channel viewing request signal in response to the detected user action for accepting invitation to view the channel (S1140). If the guidance message 4110 is displayed in Step S1120, the controller 340 controls displaying content of a channel similar to the channel indicated by the channel viewing request signal.

[0334] The controller 340 controls transmitting a response signal with respect to the channel viewing request signal to the electronic device which transmits the channel viewing request signal (S1150). The response signal may include a viewing acceptance signal, a viewing not possible signal or a viewing rejection signal. The controller 340 transmits the viewing acceptance signal when detecting a user action for accepting invitation to view a channel, the viewing rejection signal when detecting a user action for rejecting invitation to view a channel, and the viewing not possible signal when detecting a user action confirming that viewing of a channel is not possible.

[0335] When the viewing not possible signal is transmitted, the electronic device, which transmits the channel viewing request signal, may directly transmit the viewing requested broadcast program to the network interface 320. The controller 340 may control displaying the broadcast program received by the network interface 320.

[0336] Figure 48 is a diagram illustrating an embodiment of a screen on which content is displayed, Figure 49 is a diagram illustrating one embodiment of a screen on which content is displayed in a simultaneous viewing mode, and Figure 50 is a diagram illustrating another embodiment of a screen on which content is displayed in a simultaneous viewing mode.

[0337] Referring to Figures 48 to 50, the display 302 may display a screen 4800. The screen 4800 displays content.

[0338] If the controller 340 detects a user action for requesting display of content, the controller 340 may control displaying the screen 4800 in response to the detected user action. Also, if the controller 340 detects a user action for requesting a simultaneous viewing mode during display of the screen 4800, the controller 340 may control display of a screen 4900 or a screen 5000. The controller 340 may convert the screen 4900 to the screen 5000 or convert the screen 5000 to the screen 4900 according to a user action for requesting mode conversion.

[0339] The screen 4900 includes a content display region 4910 and a chat region 4920. The content display region 4910 displays content of the screen 4800, and the chat region 4920 includes a chat window 4930 and a chat input window 4940. The chat window 4930 shows a chat partner 4931 and a chat phrase 4932 input by a chat partner. The user can input a chat phrase into the chat input window 4940.

[0340] The screen 5000 may include a content display region 5010, a chat input window 5020, silhouette selecting marks 5021 to 5028, and silhouettes 5031, 5033, 5035 and 5037. The silhouettes 5031, 5033, 5035 and 5037 respectively represent chat partners. The silhouette 5031 represents a chat partner 'Arry', the silhouette 5033 represents a chat partner 'David', the silhouette 5035 represents the user who is in charge of the chat, and the silhouette 5037 represents a chat partner 'Susan'. A chat phrase may be displayed at a location associated with the user or the chat partner who inputs the chat phrase. For example, if the chat partner 'David' inputs a chat phrase 5043, the chat phrase 5043 is displayed at a location associated with the silhouette 5033 of 'David'.

[0341] If the controller 340 detects a user action for selecting one of the silhouette selecting marks 5021 to 5028, the controller 340 controls display of the silhouette 5035 of the user in response to the detected user action such that the

silhouette 5035 is converted to a silhouette image associated with the selected silhouette selecting mark. Additionally, the controller 340 may transmit a signal to request conversion to the silhouette image to the server 10, the server 20, or other electronic devices.

[0342] A human channel owner who is viewing the same content may be determined as a chat partner. More particularly, the human channel owner who is viewing the same content as that displayed on the screen 4800 may be automatically determined as a chat partner. In some embodiments, the controller 340 may confirm the owner based on information included in the above described channel guiding signal of Figure 35.

[0343] In some embodiments, the controller 340 may receive an owner list, including the human channel owner who is viewing the same content, from the server 10 and confirm the owner via the received owner list.

[0344] Figure 51 is a diagram illustrating a further embodiment of a screen on which content is displayed in a simultaneous viewing mode.

[0345] Referring to Figure 51, silhouettes 5110, 5120, 5130, 5140 and 5150 may be displayed as 3D images having a particular depth value 5160. More particularly, the silhouettes 5031, 5033, 5035 and 5037 of Figure 50 may be respectively displayed as the 3D images 5110, 5120, 5130 and 5140.

[0346] Figure 52 is a diagram explaining an embodiment of a method for confirming viewing of the same content.

[0347] Referring to Figure 52, a controller of an electronic device 5210 may control transmission of an image frame request signal 5221 to an electronic device 5250. The electronic device 5250 may be an electronic device associated with a human channel included in a human channel map that is stored in the electronic device 5210. The image frame request signal 5211 may be transmitted to the electronic device or the server according to a connection method associated with a channel number included in the human channel map.

[0348] The image frame request signal 5211 may be a signal to request that an image frame be displayed for a particular period of time M starting from a particular time T. The electronic device 5250 receives the image frame request signal 5211 and acquires an image frame 5253 to be displayed for a particular period of time M starting from a particular time T according to the received image frame request signal 5211. The controller of the electronic device 5210 controls acquisition of an image frame 5213 to be displayed for a particular period of time M starting from a particular time T.

[0349] The electronic device 5250 transmits an image frame transmission signal 5255 to the electronic device 5210. The image frame transmission signal 5255 includes the image frame 5253.

[0350] The electronic device 5210 receives the transmitted image frame transmission signal 5255 and executes a comparison algorithm 5215 to confirm whether or not the image frame 5253 included in the received image frame transmission signal 5255 is equal to the image frame 5213. If the two image frames are equal to each other, the controller of the electronic device 5210 confirms that an owner of a human channel associated with the electronic device 5210 is viewing the same content. If the two image frames are not equal to each other, the controller of the electronic device 5210 can confirm that the owner is not viewing the same content. The comparison algorithm 5215 can confirm the equality of image frames in sequence starting from a particular time T. In this case, if the image frames have different resolutions, confirmation of the equality may be performed after equalizing the resolutions of the image frame 5213 and the image frame 5253.

[0351] With the method for confirming viewing of the same content as described in relation to Figure 52, a controller of one electronic device can confirm whether or not content displayed thereon is equal to content displayed on another electronic device, irrespective of different service providers and transmission media.

[0352] Figure 53 is a diagram explaining a method for detecting user emotions.

[0353] Referring to Figure 53, while a viewer 5301 is viewing content 5300, the image capture device 301 may capture an image of the viewer 5301.

[0354] The controller 340 detects a face zone from the captured image frame of the viewer 5301 output by the image capture device 301. Then, the controller 340 confirms the emotions of the viewer 5301 based on the detected face zone. The controller 340 may produce emotion data indicating the confirmed emotions and then, control transmission of the produced emotion data to an electronic device of a chat partner.

[0355] The image capture device 301 may capture the image of the viewer 5301 at a preset interval. The controller 340 may confirm the emotions of the viewer 5301 at the preset interval and then, produce emotion data if emotion change occurs, thereby controlling transmission of the emotion data to the electronic device of the chat partner.

[0356] Figure 54 is a diagram illustrating the contour of a silhouette mapped to user emotions.

[0357] Referring to Figure 54, the storage unit 345 may store the contour of a silhouette associated with particular emotions. For example, the storage unit 345 may store the contour of a silhouette 5410 associated with sadness, the contour of a silhouette 5420 associated with anger, and the contour of a silhouette 5430 associated with happiness.

[0358] Figure 55 is a diagram illustrating an embodiment of a screen on which different silhouettes depending on user emotions are displayed.

[0359] Referring to Figure 55, the controller 340 may acquire the contour of a silhouette associated with the confirmed emotions from the storage unit 345 and control display of a silhouette of an owner of the electronic device 300 such that the silhouette is converted to the acquired contour of a silhouette. Also, the controller 340 may acquire the contour of a

silhouette, associated with emotions indicated by emotion data transmitted from the electronic device of the chat partner, from the storage unit 345 and control display of a silhouette of the chat partner such that the silhouette is converted to the acquired contour of a silhouette.

[0360] In one example, if it is confirmed that the owner of the electronic device 300 is angry, the controller 340 controls display of a silhouette 5520. If the controller 340 receives emotion data indicating sadness from an electronic device of a first chat partner, the controller 340 controls display of a silhouette of the first chat partner as a silhouette 5510. In addition, if the controller 340 receives emotion data indicating happiness from an electronic device of a second chat partner, the controller 340 controls display of a silhouette of the second chat partner as a silhouette 5530.

[0361] Figure 56 is a diagram explaining a procedure for registering a facial image, and Figure 57 is a diagram explaining a procedure for training a facial image.

[0362] Referring to Figures 56 and 57, the electronic device 300 may receive a user facial image 5620 on a per emotion basis registered by a user 5610. In one example, the electronic device 300 may receive an angry facial image 5710, a sad facial image 5720 and a happy facial image 5730, which are registered by the user 5610. The storage unit 345 may store the respective registered facial images 5710, 5720 and 5730 on a per emotion basis.

[0363] The controller 340 may compare the facial images on a per emotion basis stored in the storage unit 345 with a facial image 5740 detected from an image frame of a viewer which is captured while the viewer is viewing content and then, confirm one of the stored facial images that is most similar to the facial image 5740. The controller 340 may confirm the emotions of the confirmed facial image as the emotions of the viewer. Also, the controller 340 may store the facial image 5740 as a facial image having the confirmed emotions in the storage unit 345. In one example, if it is confirmed that the facial image 5740 is most similar to the facial image 5710, the controller 340 may add the facial image 5740 as an angry emotional facial image, similar to the facial image 5710, to the storage unit 345. With such addition of the facial image, the electronic device 300 can more accurately confirm the emotions of the viewer.

[0364] Figure 58 is a diagram explaining a method for detecting a user motion.

[0365] Referring to Figure 58, while a viewer 5801 is viewing content 5800, the image capture device 301 may capture an image of the viewer 5801.

[0366] The controller 340 detects a user motion 5810 from a captured image frame of the viewer 5801 output by the image capture device 301. Then, the controller 340 may produce motion data indicating the confirmed motion 5810 and then, control transmission of the produced motion data to the electronic device of the chat partner.

[0367] The image capture device 301 may capture the image of the viewer 5801 at a preset interval. The controller 340 may confirm the motion of the viewer 5801 at the preset interval and then, produce motion data if motion change occurs, thereby controlling transmission of the motion data to the electronic device of the chat partner.

[0368] The controller 340 may control display of a silhouette of the owner of the electronic device 300 such that the silhouette represents the confirmed motion 5810. Also, the controller 340 may control display of a silhouette of the chat partner such that the silhouette is converted to the contour of a silhouette representing a motion indicated by the motion data transmitted from the electronic device of the chat partner.

[0369] Figures 59A to 59D are diagrams explaining a method for reflecting a screen effect on content.

[0370] Referring to Figures 59A to 59D, a screen effect window 5910 may be displayed on a screen 5900. The screen effect window 5910 may include one or more screen effect selecting regions 5911, 5912 and 5913. The user may perform a user action for selecting one of the screen effect selecting regions 5911, 5912 and 5913, and the controller 340 may detect the user action as a user action for requesting a screen effect. The controller 340 may detect the user action for requesting a screen effect, produce screen effect data indicating the screen effect in response to the detected user action, and control transmission of the produced effect data to the electronic device of the chat partner. In one example, if the user performs a user action 5920 for selecting the screen effect selecting region 5911, the controller 340 may produce screen effect data indicating a screen effect of the screen effect selecting region 5911 and then, control transmission of the produced screen effect data to the electronic device of the chat partner.

[0371] In addition, if the user performs the user action 5920 for selecting the screen effect selecting region 5911, the controller 340 controls display of a mark 5930 indicating that the screen effect selecting region 5911 is selected and then, controls reflection of a screen effect 5940 of the screen effect selecting region 5911 on the displayed content 5900. Here, a position of the screen effect 5940 may be selected as the user clicks a corresponding region.

[0372] If the controller 340 receives the screen effect data from the electronic device of the chat partner, the controller 340 may control reflecting an effect indicated by the received screen effect data on the displayed content 5900.

[0373] The controller 340 may control the video decoder 330 to change pixel data of the image frame according to the screen effect. Additionally, the controller 340 may produce On Screen Display (OSD) according to the screen effect, thereby controlling display of the OSD on a content display region.

[0374] Figure 60 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for remotely viewing content at the same time.

[0375] Referring to Figure 60, the controller 340 detects a user action for requesting display of content (S1200).

[0376] The controller 340 confirms whether or not a viewing mode is a simultaneous viewing mode in response to the

detected user action (S1210). The simultaneous viewing mode may be setup by initial values, or may be setup by the user as necessary.

[0377] If the viewing mode is the simultaneous viewing mode, the controller 340 confirms the presence of a human channel owner who is viewing the requested content (S1220). Here, Step S1220 may include an implementation procedure of a method for confirming viewing of the same content that will be described hereinafter with reference to Figure 64 or 65.

[0378] The controller 340 controls display of content in the simultaneous viewing mode (S1230). The display 302 may display one of the screen 4900, the screen 5000 and the screen 5100. The screen 4900, the screen 5000 and the screen 5100 may represent the owner confirmed in Step S1220 as a chat partner. That is, the owner confirmed in Step S1220 becomes a chat partner.

[0379] If the viewing mode is not the simultaneous viewing mode, the controller 340 controls display of the requested content (S1240). The display 302 may display the screen 4800.

[0380] The method for remotely viewing content at the same time of Figure 60 may further include an implementation procedure of a method that will be described hereinafter with reference to Figures 67 to 70.

[0381] Figure 61 is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for remotely viewing content at the same time.

[0382] Referring to Figure 61, the display 302 displays content (S1300). The display 302 may display the screen 4800.

[0383] The controller 340 detects a user action for requesting a simultaneous viewing mode (S1310).

[0384] The controller 340 confirms the presence of a human channel owner who is viewing the displayed content in response to the detected user action (S1320). Here, Step S1320 may include the implementation procedure of the method for confirming viewing of the same content that will be described hereinafter with reference to Figure 64 or 65.

[0385] The controller 340 controls display of content in the simultaneous viewing mode (S1330). The display 302 may display one of the screen 4900, the screen 5000 and the screen 5100. The screen 4900, the screen 5000 and the screen 5100 may represent the owner confirmed in Step S1320 as a chat partner. That is, the owner confirmed in Step S1320 becomes a chat partner.

[0386] The method for remotely viewing content at the same time of Figure 61 may further include the implementation procedure of the method that will be described hereinafter with reference to Figures 67 to 70.

[0387] Figure 62 is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for remotely viewing content at the same time.

[0388] Referring to Figure 62, the display 302 displays content (S1400). The display 302 may display the screen 4800.

[0389] The controller 340 confirms the presence of a human channel owner who is viewing the displayed content (S1410). Here, Step S1410 may include the implementation procedure of the method for confirming viewing of the same content that will be described hereinafter with reference to Figure 64 or 65.

[0390] The controller 340 detects a user action for requesting a simultaneous viewing mode (S1420).

[0391] The controller 340 controls display of content in the simultaneous viewing mode in response to the detected user action (S1430). The display 302 may display one of the screen 4900, the screen 5000 and the screen 5100. The screen 4900, the screen 5000 and the screen 5100 may represent the owner confirmed in Step S1410 as a chat partner. That is, the owner confirmed in Step S1410 becomes a chat partner.

[0392] The method for remotely viewing content at the same time of Figure 62 may further include the implementation procedure of the method that will be illustrated hereinafter with reference to Figures 67 to 70.

[0393] Figure 63 is a flowchart illustrating an implementation procedure of a further exemplary embodiment in relation to a method for remotely viewing content at the same time.

[0394] Referring to Figure 63, the display 302 displays content (S1500). The display 302 may display the screen 1600, the screen 3500, or the screen 4800.

[0395] The controller 340 detects a user action for requesting invitation to view a channel (S1510). In one example, the user action may be an action for dragging a screen on which content is displayed and dropping the content to a human channel listed in a human channel map. More particularly, the controller 340 may detect the user action for requesting invitation to view a channel if the image 3630 illustrated in Figure 36 is dragged to and drops onto the human channel number '43'. In another example, the user action may be a combination of a user action for selecting a displayed broadcast program and a user action for selecting a human channel (or a channel number).

[0396] The controller 340 controls transmission of a channel viewing request signal in response to the detected user action (S1520). The channel viewing request signal may have the format 3800 illustrated in Figure 38.

[0397] In some embodiments, the controller 340 may control transmission of the channel viewing request signal to the electronic device which provides the human channel indicated by the channel number designated by the user action in Step S1510. An address of the electronic device may be acquired by the above described method of Figures 19 to 21.

[0398] In some embodiments, the controller 340 may control transmission of the channel viewing request signal to the server. The server may be the server 10 illustrated in Figure 1.

[0399] The network interface 320 receives a response signal with respect to the channel viewing request signal

(S1530). The response signal may be one of a viewing acceptance signal, a viewing not possible signal and a viewing rejection signal.

[0400] If the response signal is a viewing acceptance signal, the controller 340 controls display of content in the simultaneous viewing mode (S1540). The display 302 may display one of the screen 4900, the screen 5000 and the screen 5100. Also, the screen 4900, the screen 5000 and the screen 5100 may represent an owner of a human channel associated with the electronic device which has transmitted the viewing acceptance signal. The owner becomes a chat partner.

[0401] The method for remotely viewing content at the same time of Figure 63 may further include the implementation procedure of the method that will be described hereinafter with reference to Figures 67 to 70.

[0402] Figure 64 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for confirming viewing of the same content.

[0403] Referring to Figure 64, the controller 340 acquires an address of the electronic device based on a human channel map (S1600). The human channel map may be the human channel map 1210 of Figure 12, or may include the human channel map 1210, the first connection information map 1230, the second connection information map 1240, the third connection information map 1250, the fourth connection information map 1260 and the fifth connection information map 1270 as illustrated in Figure 12. The address of the electronic device may be acquired by the above described method of Figures 19 to 21. The electronic device may be limited to an online electronic device.

[0404] The controller 340 controls transmission of a viewing information request signal using the acquired address of the electronic device (S1610). The viewing information request signal may be the image frame request signal as described above in relation to Figure 52.

[0405] The network interface 320 receives a viewing information signal (S1620). In some embodiments, the viewing information signal may have the format 3800 illustrated in Figure 38. In some embodiments, the viewing information signal may be the image frame transmission signal as described above in relation to Figure 52.

[0406] The controller 340 confirms the presence of a human channel owner who is viewing the displayed content based on the received viewing information signal (S1630). In some embodiments, the controller 340 may confirm the owner by comparing the above described information of Figure 38. In some embodiments, the controller 340 may confirm the owner based on the above described comparison algorithm 5215 of Figure 52.

[0407] Figure 65 is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for confirming viewing of the same content.

[0408] Referring to Figure 65, the controller 340 controls transmission of an owner list request signal to the server (S1700). The transmitted owner list request signal may be a signal to request a list of owners who are viewing the displayed content. The server may be the server 10.

[0409] The network interface 320 receives an owner list from the server (S1710). The owner list includes owners who are viewing the displayed content. In some embodiments, the owner list may further include at least one of emotion data or motion data of owners included therein.

[0410] The controller 340 confirms the owners included in the received owner list as owners who are viewing the displayed content (S1720).

[0411] Figure 66 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for providing a viewing list.

[0412] Referring to Figure 66, the server 10 receives a channel viewing signal including content viewing information from the electronic device (S1800). The received content viewing information may include the above described information of Figure 38. In some embodiments, the content viewing information may further include at least one of emotion data or motion data of the owner of the human channel associated with the electronic device.

[0413] The server 10 constructs a viewing map using the received content viewing information (S1810). The constructed viewing map may include at least one of identification information about content that every human channel owner is viewing, emotion data, motion data or group information. The group information indicates a group of owners who are viewing the same content.

[0414] The server 10 receives an owner list request signal from the electronic device (S1820). The owner list request signal corresponds to the above described owner list request signal of Figure 65.

[0415] The server 10 constructs an owner list using the constructed viewing map (S1830). The owner list corresponds to the above described owner list of Figure 65. The server 10 may add owners having the same group information to the owner list.

[0416] The server 10 transmits the constructed owner list to the electronic device that has transmitted the owner list request signal (S1840).

[0417] Figure 67 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for displaying a silhouette.

[0418] Referring to Figure 67, the controller 340 detects a face zone of an owner from an image captured by the owner (S1900). The owner may be a human channel owner or a viewer who is viewing content. In one example, the owner

may be the viewer 5301 of Figure 53. The image capture device 301 may capture an image of the owner at a preset interval, and the controller 340 may detect a face of the owner from the captured image at the preset interval.

[0419] The controller 340 confirms the emotions of the owner based on the detected face zone (S1910). The controller 340 may confirm the emotions of the owner by the above described method of Figures 56 and 57. Then, the controller 340 may produce emotion data indicating the confirmed emotions. In some embodiments, the controller 340 may produce emotion data if emotion change occurs.

[0420] The controller 340 controls transmission of the emotion data indicating the confirmed emotions (S1920). In some embodiments, the controller 340 may control transmission of the emotion data if emotion change occurs.

[0421] The controller 340 controls change of the contour of a silhouette according to the confirmed emotions (S1930). The controller 340 may change the contour of a silhouette using the above described method of Figure 55.

[0422] The network interface 320 receives emotion data (S1940). In some embodiments, the emotion data may be transmitted from the electronic device of the chat partner. In some embodiments, the emotion data may be transmitted from the server 10.

[0423] The controller 340 controls change of the contour of a silhouette of an owner who has transmitted the emotion data according to the received emotion data (S1950). The controller 340 may change the contour of a silhouette using the above described method of Figure 55.

[0424] Figure 68 is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for displaying a silhouette.

[0425] Referring to Figure 68, the controller 340 detects a motion of an owner (S2000). The owner may be an owner of a human channel and may be a viewer who is viewing content. In one example, the owner may be the viewer 5801 of Figure 58, and the controller 340 may detect a motion of the owner by the above described method of Figure 58.

[0426] In some embodiments, the image capture device 301 may capture an image of the owner, and the controller 340 may detect a motion of the owner from an image frame included in the captured image of the owner.

[0427] The controller 340 produces motion data indicating the detected motion (S2010). In some embodiments, the controller 340 may produce motion data if motion change occurs.

[0428] The controller 340 controls transmission of the produced motion data (S2020). In some embodiments, the controller 340 may control transmission of the motion data if motion change occurs.

[0429] The controller 340 controls change of the contour of a silhouette according to the detected motion (S2030). The controller 340 may change the contour of a silhouette using the above described method of Figure 58.

[0430] The network interface 320 receives motion data (S2040). In some embodiments, the motion data may be transmitted from the electronic device of the chat partner. In some embodiments, the motion data may be transmitted from the server 10.

[0431] The controller 340 controls change of the contour of a silhouette of an owner who has transmitted motion data according to the received motion data (S2050). The controller 340 may change the contour of a silhouette using the above described method of Figure 58.

[0432] Figure 69 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for displaying a silhouette as a 3D image.

[0433] Referring to Figure 69, the controller 340 selects a silhouette image (S2100). The silhouette image may be selected by the above described method of Figure 67 or 68. More particularly, the silhouette image may be selected according to the detected emotions or emotions indicated by the received emotion data, or may be selected according to the detected motion or a motion indicated by the detected motion data.

[0434] The controller 340 produces a left view image and a right view image using the selected silhouette image (S2110). In one example, the produced left view image and the produced right view image may be utilized to display the silhouette 5110 of Figure 51.

[0435] The controller 340 controls mixing of each of the produced left view image and the produced right view image with an image frame of content to be displayed (S2120). The mixer 360 may mix the left view image with the image frame of the content to thereby produce a left view image frame, or may mix the right view image with the image frame of the content to thereby produce a right view image frame. In one example, the image frame may be the image frame displayed on the screen of Figure 51.

[0436] The formatter 370 may perform sampling of the left view image frame and the right view image frame output by the mixer 360 to obtain a 3D output format that can be displayed as a 3D image by the display 302.

[0437] The display 302 displays a mixed image frame (S2130). The mixed image frame may be an image frame having the 3D output format obtained by sampling the left view image frame and the right view image frame produced by the mixer 360 in Step S2120. In one example, the display 302 may display the screen 5100 in Step S2130.

[0438] Figure 70 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for sharing a screen effect.

[0439] Referring to Figure 70, the controller 340 detects a user action for requesting a screen effect (S2200). The user action may be a user action for selecting one of the screen effect selecting regions 5911, 5912 and 5913 of Figures 59A

to 59D.

[0440] The controller 340 produces screen effect data indicating the requested screen effect in response to the detected user action (S2210).

[0441] The controller 340 transmits the produced screen effect data to the electronic device of the chat partner or the server 10 (S2220).

[0442] The controller 340 controls reflection of the requested screen effect on the displayed content (S2230). The display 302 may display the screen 5900 of Figure 59D.

[0443] The network interface 320 receives screen effect data from the electronic device of the chat partner or the server 10 (S2240).

[0444] The controller 340 controls reflection of the screen effect indicated by the received screen effect data on the displayed content (S2250). The display 302 may display the screen 5900 of Figure 59D.

[0445] Figure 71 is a diagram illustrating a broadcast screen on which one exemplary embodiment of a channel map is displayed.

[0446] Referring to Figure 71, the display 302 may display a screen 7100. If the controller 340 detects a user action for requesting a channel map in a state in which a broadcast program 7110 is displayed on the screen 7100, the controller 340 controls displaying a broadcast channel map 7120 on the screen 7100 in response to the detected user action. In some embodiments, the user action for requesting the channel map may be an action in which the user presses a hot key for the channel map or a menu item for the channel map.

[0447] If the controller 340 detects a user action for requesting channel map switch in a state in which a human channel map 7220 illustrated in Figure 72 or an App channel map 7320 illustrated in Figure 73 is displayed, the controller 340 controls displaying the broadcast channel map 7120.

[0448] The broadcast channel map 7120 lists broadcast channels (e.g., CNN), today's broadcast content on broadcast channels (e.g., CNN News) and channel numbers associated with the broadcast channels (e.g., 39). With relation to the broadcast program 7110 being displayed, a corresponding broadcast channel 'NBC', broadcast program name or title 'Home' and channel number '37' are listed in a line indicated by an indicator. If the user performs a user action for selecting one of the broadcast channels listed in the broadcast channel map 7120, the controller 340 controls displaying a broadcast program of the selected broadcast channel.

[0449] Figure 72 is a diagram illustrating a broadcast screen on which another exemplary embodiment of a channel map is displayed.

[0450] Referring to Figure 72, the display 302 may display a screen 7200. If the controller 340 detects a user action for requesting channel map switch in a state in which the broadcast channel map 7120 illustrated in Figure 71 or the App channel map 7320 illustrated in Figure 73 is displayed, the controller 340 controls displaying the human channel map 7220. In some embodiments, the user action may be an action in which the user presses one of a left key and a right key of a remote controller.

[0451] During display of the human channel map 7220, the controller 340 may control displaying content of one human channel listed in the human channel map 7220. The content may be received according to Step S310 of Figure 18. The human channel map 7220 may be identical to the human channel map 1510 illustrated in Figure 15.

[0452] Figure 73 is a diagram illustrating a broadcast screen on which a further exemplary embodiment of a channel map is displayed.

[0453] Referring to Figure 73, the display 302 may display a screen 7300. If the controller 340 detects a user action for requesting channel map switch in a state in which the broadcast channel map 7120 illustrated in Figure 71 or the human channel map 7220 illustrated in Figure 72 is displayed, the controller 340 controls displaying the App channel map 7320. In some embodiments, the user action may be an action in which the user presses one of a left key and a right key of a remote controller.

[0454] The App channel map 7320 lists App channels (e.g., Netflix), App content and channel numbers associated with the App channels (e.g., 55). The controller 340 may control display of the App channel map 7320 in such a manner that a line, on which an App channel 'Google' which provides App content 'Google Earth', denoted by reference numeral 7310, displayed on the screen 7300, and a channel number '56' are listed, is indicated by an indicator. The controller 340 may control display of the App channel map 7320 in such a manner that App content of one App channel listed in the App channel map 7320 is displayed. If the user performs a user action for selecting one of the App channels listed in the App channel map 7320, the controller 340 may control displaying App content of the selected App channel.

[0455] Figure 74 is a diagram illustrating a screen on which one exemplary embodiment of a full channel map is displayed.

[0456] Referring to Figure 74, the display 302 may display a screen 7400. If the controller 340 detects a user action for requesting a full channel map, the controller 340 may control displaying a full channel map on the screen 7400 in response to the detected user action. The full channel map may be a channel map that is displayed in a full channel mode, for example, on the entire display area or a full screen image. In some embodiments, the user action may be an action in which the user presses a hot key for the full channel map or a menu item for the full channel map.

[0457] The full channel map 7400 may display multiple channels maps corresponding to different types of content, for example, broadcast content, SNS content, and application content. The different types of content may be associated with different types of channels. The full channel map 7400 includes a line 7410 on which at least one broadcast channel is listed, a line 7420 on which at least one human channel is listed and a line 7430 on which at least one App channel is listed. These lines 7410, 7420 and 7430 are respectively provided at the first cell thereof with a mark 7411, 7421, 7431 indicating which one of the broadcast channel, human channel or App channel is listed. The mark 7411, 7421, 7431 may be an icon or a selectable link, and may include an image representative of the type of channel. In one embodiment, a selection of a mark may display a channel map of the corresponding type on the full screen. For example, if the mark 7411 for broadcast channel is selected, each of the three rows 7410, 7420, 7430 may broadcast channels.

[0458] In some embodiments, the full channel map may be organized in such a manner that at least one broadcast channel is listed on one line, at least one human channel is listed on another line and at least one App channel is listed on the other line.

[0459] In the full channel map 7400, movement between channels in the same line may depend upon input of a left key or a right key, and movement between different lines may depend upon input of an up key or a down key. If the user performs a user action for designating one of the channels listed in the full channel map 7400, the controller 340 may control displaying content of the designated channel. The content may be received according to Step S310 illustrated in Figure 18.

[0460] Figure 75 is a diagram illustrating a screen on which another exemplary embodiment of a full channel map is displayed.

[0461] Referring to Figure 75, the display 302 may display a screen 7500. If the controller 340 detects a user action for requesting a full channel map, the controller 340 may control displaying a full channel map on the screen 7500 in response to the detected user action. In some embodiments, the user action may be an action in which the user presses a hot key for the full channel map or a menu item for the pull channel map.

[0462] The full channel map 7500 lists broadcast channels 7510, human channels 7520 and 7530 and App channels 7540. The full channel map 7500 may list these channels in order of channel numbers. The full channel map 7500 may be sorted alphabetically, by user rating (e.g., favorites), based on type of channel, or the full channel map 7500 may be displayed in a custom order as set by a user. In the example as illustrated in Figure 75, in the full channel map 7500, a broadcast channel 'Star Plus' corresponding to a channel number '20' is located at an uppermost position, a radio channel 'MTV Radio' corresponding to a channel number '21' is located immediately below the broadcast channel 'Star Plus', and a human channel 'Brandon' corresponding to a channel number '22' is located immediately below the radio channel 'MTV Radio'. An App channel 'Picasa' corresponding to a channel number '26' is located at a lowermost position. Channels of different types may be assigned the same channel numbers (e.g., SNS channel 26 for Susan and App Channel 26 for Picasa). In this case, channels may be sorted based on type as predetermined or set by the user.

[0463] When the user inputs a particular number, channel numbers associated with the particular number may be listed in the full channel map 7500. A region 7505 of the full channel map 7500 shows a number input by the user. In the drawing, as the region 7505 shows "2-", channels, which have channel numbers in a range of 20 to 29 associated with "2-", are displayed on the full channel map 7500.

[0464] If the user performs a user action for designating one of the channels listed in the full channel map 7500, the controller 340 may control displaying content of the designated channel. The content may be received according to Step S310 illustrated in Figure 18.

[0465] Figure 76 is a diagram illustrating a screen on which another exemplary embodiment of a full channel map is displayed.

[0466] Referring to Figure 76, the display 302 may display a full channel map 7600. If the controller 340 detects a user action for requesting a full channel map, the controller 340 may control displaying a full channel map 7600 on a screen in response to the detected user action. In some embodiments, the user action may be an action in which the user presses a hot key for the full channel map or a menu item for the full channel map.

[0467] The full channel map 7600 includes a broadcast channel sheet (or page), a human channel sheet and an App channel sheet. The broadcast channel sheet, human channel sheet and App channel sheet may be selected respectively using a sheet tab 7601, a sheet tab 7602 and a sheet tab 7603. Specifically, if the user performs an action of pressing one of the sheet tabs 7601, 7602 and 7603, the controller 340 may control displaying a sheet associated with the pressed sheet tab.

[0468] During display of the full channel map 7600 on the screen, the controller 340 may control displaying one of the broadcast channel sheet, human channel sheet and App channel sheet. In Figure 76, a broadcast channel sheet 7610 is displayed. The broadcast channel sheet 7610 may include a mark 7612 indicating that the broadcast channel is a TV channel and a mark 7614 indicating that the broadcast channel is a radio channel. Each cell of the broadcast channel sheet 7610 includes a broadcast channel (e.g., Colors) and a channel number (e.g., T01) associated with the broadcast channel. If the user performs an action of pressing one of cells on the broadcast channel sheet 7610, the controller 340 controls displaying a broadcast program on the broadcast channel of the pressed cell.

[0469] Figure 77 is a diagram illustrating a screen on which the human channel sheet of the full channel map of Figure 76 is displayed.

[0470] Referring to Figure 77, if the user performs a user action for selecting the sheet tab 7602, the controller 340 detects the user action and controls displaying a human channel sheet 7710 of the full channel map 7700 in response to the detected user action.

[0471] Each cell of the human channel sheet 7710 includes a human channel (e.g., Brandon) and a channel number (e.g., 22) associated with the human channel. If the user performs an action of pressing one of cells on the human channel sheet 7710, the controller 340 may control displaying content of the human channel of the pressed cell. The content may be received according to Step S310 illustrated in Figure 18.

[0472] Figure 78 is a diagram illustrating a screen on which the App channel sheet of the full channel map of Figure 76 is displayed.

[0473] Referring to Figure 78, if the user performs an action for selecting the sheet tab 7603, the controller 340 detects the user action and controls displaying an App channel sheet 4210 on the full channel map 7800 in response to the detected user action.

[0474] Each of the App channel sheet 7810 includes an App channel (e.g., NFS9) and a channel number (e.g., 01) associated with the App channel. If the user performs an action of pressing one of cells on the App channel sheet 7810, the controller 340 may control displaying content of the App channel of the pressed cell.

[0475] Figure 79 is a diagram illustrating a screen on which an exemplary embodiment of a recently viewed channel map is displayed.

[0476] Referring to Figure 79, the display 302 may display a recently viewed channel map 7900. If the controller 340 detects a user action for requesting a recently viewed channel map, the controller 340 may control displaying the recently viewed channel map 7900 on a screen in response to the detected user action. In some embodiments, the user action may be an action in which the user presses a hot key for the recently viewed channel map or a menu item for the recently viewed channel map.

[0477] The recently viewed channel map 7900 lists broadcast channels, human channels and App channels displayed within a preset period. The preset period may be 1 day, 7 days, 10 days, 15 days and 30 days. The preset period may be an initially set value, or may be set by the user.

[0478] The recently viewed channel map 7900 displays channels on a per line basis. The first cell of each line indicates that the channel corresponds to which one of the broadcast channel, human channel and App channel. For example, a mark 'TV' on the first cell indicates a broadcast channel, a mark 'Radio' indicates a radio channel, a mark 'SNS' indicates a human channel and a mark 'APP' indicates an App channel.

[0479] The recently viewed channel map 7900 may list the channels in reverse order of displayed time. For example, in the recently viewed channel map 7900, a broadcast channel 'Set Max', which was broadcast before a broadcast channel 'Star Plus', is located behind the broadcast channel 'Start Plus'.

[0480] If the user performs a user action of pressing one of the lines listed in the recently viewed channel map 7900, the controller 340 may control displaying content of the channel indicated by the pressed line. The content may be received according to Step S310 illustrated in Figure 18.

[0481] Figure 80 is a diagram illustrating a screen on which a further exemplary embodiment of a full channel map is displayed.

[0482] Referring to Figure 80, the display 302 may display a full channel map 8000. If the controller 340 detects a user action for requesting a full channel map, the controller 340 may control displaying the full channel map 8000 on a screen in response to the detected user action. The user action may be an action in which the user presses a hot key for the full channel map or a menu item for the full channel map.

[0483] The full channel map 8000 has the same configuration as the full channel map 7400 and further includes connection state marks 8050 and 8055 (also status indicator) for indicating the online state of an owner of a human channel. A first connection state mark 8050 indicates a first online state which represents whether or not the owner of the human channel is online via an electronic device. A second connection state mark 8055 indicates a second online state which represents whether or not the owner is logged in to a server. The server may be the server 10 or the server 20 illustrated in Figure 1, and the electronic device may be the first digital TV 100, the second digital TV 110, the personal computer system 120, the notebook computer 130 or the mobile terminal 140 illustrated in Figure 1. That the owner is online via the electronic device means that another electronic device is connectable to the electronic device through a human channel. That the owner is logged in to the server means that another owner may communicate with the owner through the network 1. For example, if the first connection state mark 8050 is inactive (off) and the second connection state mark 8055 is active (on), the owner is not connected through their digital TV but is connected through their SNS account.

[0484] Information about the online state of the owner may be received from the electronic device or the server. The electronic device may periodically receive information about the first online state or information about the second online state from the server.

[0485] The electronic device may transmit information about the first online state to an electronic device or server associated with the human channel stored in the human channel map. In some embodiments, the electronic device may transmit information about the first online state to all electronic devices associated with the human channel. In some embodiments, the electronic device may transmit information about the first online state to an electronic device which is online, among the electronic devices associated with the human channel.

[0486] Figures 81A to 81D are diagrams illustrating the online state of the owner of the human channel.

[0487] The online state of the owner of the human channel may be illustrated as in Figures 81A to 81D. The human channel map 8000 may provide human channels listed therein with connection state marks as illustrated in Figures 81A to 81D.

[0488] In Figure 81A, a connection state mark 8111 indicates the first online state for representing that the owner of the human channel is not online, and a connection state mark 8115 indicates the second online state for representing that the owner is not logged in to the server.

[0489] In Figure 81B, a connection state mark 8121 indicates the first online state for representing that the owner of the human channel is online, and a connection state mark 8125 indicates the second online state for representing that the owner is not logged in to the server.

[0490] In Figure 81C, a connection state mark 8131 indicates the first online state for representing that the owner of the human channel is not online, and a connection state mark 8135 indicates the second online state for representing that the owner is logged in to the server.

[0491] In Figure 81D, a connection state mark 8141 indicates the first online state for representing that the owner of the human channel is online, and a connection state mark 8145 indicates the second online state for representing that the owner is logged in to the server.

[0492] Figure 82 is a flowchart illustrating an implement procedure of an exemplary embodiment for a method of providing a channel map service in accordance with the present disclosure.

[0493] Referring to Figure 82, the display 302 displays a broadcast channel map including at least one broadcast channel on a screen on which content is being displayed (S2300). The broadcast channel map may be the broadcast channel map 7120 illustrated in Figure 71.

[0494] The controller 340 detects a first user action for requesting channel map switch (S2305). In some embodiments, the first user action may be an action in which the user presses one of an up key, a down key, a left key and a right key of a remote controller.

[0495] The controller 340 switches the displayed broadcast channel map to a human channel map including at least one human channel in response to the detected first user action (S2310). The controller 340 may control displaying content of one of human channels included in the human channel map on the screen. The selected human channel may have a first channel number, a medium channel number or a last channel number, and may be a human channel more recently displayed than other human channels. The human channel map may be the human channel map 7220 illustrated in Figure 72.

[0496] The controller 340 detects a second user action for requesting channel switch (S2315). In some embodiments, the second user action may be an action in which the user presses one of an up key, a down key, a left key and a right key of a remote controller. In some embodiments, if the first user action for requesting channel map switch is an action of pressing the left key or right key of a remote controller, the second user action for requesting channel switch may be an action of pressing the up key or down key of the remote controller.

[0497] The controller 340 switches a selected human channel to another human channel in the human channel map in response to the detected second user action (S2320).

[0498] The controller 340 controls displaying content of the switched human channel (S2325). The content may be received according to Step S310 in Figure 18.

[0499] The controller 340 detects a third user action for requesting channel map switch (S2330).

[0500] The controller 340 switches the human channel map to an App channel map including at least one App channel in response to the detected third user action (S2335). The App channel map may be the App channel map 7320 illustrated in Figure 73.

[0501] The controller 340 detects a fourth user action for requesting a full channel map (S2340). In some embodiments, the fourth user action may be an action in which the user presses a hot key for the full channel map or a menu item for the full channel map.

[0502] The controller 340 controls displaying a full channel map including the at least one broadcast channel, the at least one human channel and the at least one App channel in response to the detected fourth user action (S2345). The full channel map may be one of the full channel map 7400 illustrated in Figure 74, the full channel map 7500 illustrated in Figure 75, the full channel map 7600 illustrated in Figure 76 and the full channel map 8000 illustrated in Figure 80.

[0503] The controller 340 detects a fifth user action for requesting a recently viewed channel map (S2350). In some embodiments, the fifth user action may be a user action of pressing a hot key for the recently viewed channel map or a menu item for the recently viewed channel map.

[0504] The controller 340 controls displaying the recently viewed channel map including broadcast channels, human channels and App channels displayed within a preset period in response to the detected fifth user action (S2355). The recently viewed channel map may be the recently viewed channel map 7900 illustrated in Figure 79. The preset period may be 1 day, 7 days, 10 days, 15 days and 30 days. The preset period may be an initially set value, or may be set by the user.

[0505] Figure 83 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a user registration method in accordance with the present disclosure.

[0506] Referring to Figure 83, the controller 340 controls display of a GUI for reception of user registration information (S2400). The GUI may be displayed upon initial execution (booting) of the electronic device 300 or upon receiving a user request. The user registration information may include at least one of a device serial number, a user name, a user ID, a password, connection information, gender information, the date of a birth, nation information or locale information. The connection information may include at least one of an e-mail address, an SIP address, an IP address, a port number, a MAC address, an SNS account or URL.

[0507] Figure 84 is a diagram illustrating an embodiment of a GUI for reception of user registration information.

[0508] Referring to Figure 84, the display 302 may display a GUI 8400 in Step S2400. The GUI 8400 serves to receive user registration information. The GUI 8400 includes input boxes to input a user ID, a password, a first name and a last name, check boxes to select gender information and list boxes to select the date of a birth. A 'Next' button serves to display a next screen, an 'Exit' button serves to end the user registration method. The controller 340 may control display of a screen of a next step in response to a detected user action pushing the 'Next' button, and may control end of the user registration method in response to a detected user action pushing the 'Exit' button.

[0509] The controller 340 controls display of a GUI for selection of an SNS site (S2410). If the controller 340 detects a user action for pushing the 'Next' button, the controller 340 may control display of the GUI in response to the detected user action. A list of SNS sites may be previously stored and the controller 340 may control display of the previously stored list on the GUI.

[0510] Figure 85 is a diagram illustrating an embodiment of a GUI for selection of an SNS site.

[0511] Referring to Figure 85, the display 302 may display a GUI 8500 in Step S2410. The GUI 8500 includes SNS sites 8511 to 8519, check boxes 8521 to 8529 to select the SNS sites 8511 to 8519 respectively, and a check box 8530 to select the SNS sites 8511 to 8519 in all. A list of the SNS sites 8511 to 8519 may be previously stored in the storage unit 345. Also, the list of the SNS sites 8511 to 8519 may be updated.

[0512] The controller 340 controls display of a GUI for reception of SNS site authentication information (S2420). If the controller 340 detects a user action for pushing the 'Next' button, the controller 340 may control display of the GUI in response to the detected user action. The authentication information may include a user ID and a password. The user ID may be an e-mail address registered in an SNS site.

[0513] The number of the GUI to be displayed may be equal to the number of SNS sites selected in Step S2410. That is, the GUI for reception of authentication information with respect to each selected SNS site may be displayed.

[0514] Figure 86 is a diagram illustrating an embodiment of a GUI for reception of authentication information for an SNS site.

[0515] Referring to Figure 86, the display 302 may display a GUI 8600 in Step S2420. The GUI 8600 includes an icon 8610, and input boxes to input an e-mail ID and a password for an SNS site indicated by the icon 8610.

[0516] The controller 340 controls display of a GUI for confirmation of channel scan execution (S2430). If the controller 340 detects a user action for pushing the 'Next' button, the controller 340 may control display of the GUI in response to the detected user action.

[0517] Figure 87 is a diagram illustrating an embodiment of a GUI for confirmation of channel scan execution.

[0518] Referring to Figure 87, the display 302 may display a GUI 8700 in Step S2430. The GUI 8700 includes a guidance phrase 8710 to ask whether or not to execute a channel scan, a 'Yes' button to select execution of a channel scan, and an 'Exit' button to prevent execution of the channel scan. The controller 340 may control the progress of a method for providing a channel scan interface of Figure 88 in response to a detected user action selecting the 'Yes' button.

[0519] The user registration information and the SNS site authentication information, which are input during implementation of the user registration method of Figure 83, may be transmitted to the server 10 in each input step and may be transmitted to the server 10 after completion of Step S2430.

[0520] Figure 88 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for providing a channel scan interface in accordance with the present disclosure.

[0521] Referring to Figure 88, the controller 340 controls display of a GUI for selection of a scan method (S2500). The GUI may be displayed automatically or by a user request after implementation of a server registration method. Alternatively, the GUI may be displayed at an optional time by a user request, or may be displayed during update. The scan method may include at least one of auto scan or manual scan. The GUI may include a scan method option to select at least one scan method.

[0522] Figure 89 is a diagram illustrating an embodiment of a GUI for selection of a scan method.

[0523] Referring to Figure 89, the display 302 may display a GUI 8900 in Step S2500. The GUI 8900 includes a scan method option 8910 to select auto scan and a scan method option 8920 to select manual scan.

[0524] The controller 340 confirms whether or not the scan method option is selected (S2510).

5 [0525] If the scan method option indicating auto scan is selected, the controller 340 controls display of a GUI for selection of a service type (S2520). The GUI may include a service type option to select at least one service type. The service type indicates one of a broadcast channel, an App channel or a human channel.

[0526] Figure 90 is a diagram illustrating an embodiment of a GUI for selection of a service type.

10 [0527] Referring to Figure 90, the display 302 may display a GUI 9000 in Step S2520. The GUI 9000 may include a service type option 9010 (TV) to select a channel scan of a broadcast channel, a service type option 9020 (APPS) to select a channel scan of an App channel, and a service type option 9030 (Human) to select a channel scan of a human channel.

[0528] The controller 340 confirms whether or not a particular service type option among the service type options provided by the GUI 9000 for selection of a service type option is selected (S2530).

15 [0529] If the particular service type option is selected, the controller 340 controls execution of a channel scan with respect to a channel associated with the selected service type option (S2540). In one example, if the service type option 9010 is selected, the controller 340 controls execution of a channel scan with respect to a broadcast channel. If the service type option 9030 is selected, the controller 340 controls execution of a channel scan with respect to a human channel.

20 [0530] Figure 91 is a diagram illustrating an embodiment of a screen, which displays the progress of a human channel scan.

[0531] Referring to Figure 91, the display 302 may display a screen 9100 in Step S2540. The screen 9100 displays a status bar 9110 representing the degree of progress of the human channel scan. The screen 9100 displays a list 9120 of SNS sites as an object of the human channel scan. The SNS sites included in the SNS site list 9120 may be SNS sites selected during implementation of the user registration method of Figure 83. The screen 9100 may further display a region 9130 to display the result of scan up to now. In the screen 9100, a 'Skip' button serves to stop a channel scan and select display of the result of scan up to that time, and an 'Exit' button serves to select end of a channel scan. The controller 340 may stop channel scan in response to a detected user action selecting the 'Skip' button and then, proceed to Step 2550. Also, the controller 340 controls end of a channel scan in response to a detected user action selecting the 'Exit' button.

30 [0532] The controller 340 controls display of the result of a channel scan (S2550). The controller 340 may control display of the result of a channel scan if channel scan is completed.

[0533] If the controller 340 detects a user action for selecting the 'Skip' button of the screen 9100, the controller 340 may control display of the result of a channel scan in response to the detected user action. The displayed result of a channel scan is the result of channel scan up to a time when the channel scan is stopped. In one embodiment, the 'Skip' button may be configured to skip current SNS service provider to scan the next SNS service provider, rather than skipping all remaining SNS service providers.

35 [0534] Figure 92 is a diagram illustrating an embodiment of a screen, which displays the result of a human channel scan.

[0535] Referring to Figure 92, the display 302 may display a screen 9200 in Step S2550. The screen 9200 displays the result of a human channel scan.

40 [0536] The screen 9200 displays an SNS account selecting region 9210, an update statistical information region 9220, a channel input box 9230, an SNS site selecting region 9250, an icon 9201 to display a selected SNS site, an 'Add' button, a 'Back' button and a 'Home' button. The SNS account selecting region 9210 includes a picture 9211 of a selected SNS account, a button 9213 to select a previous SNS account, a button 9215 to select a next SNS account, and a mark 9217 to display the total number of SNS accounts scanned in a selected SNS site and the order of a selected SNS account.

45 [0537] The update statistical information region 9220 displays update statistical information about the selected SNS account 9211. The update statistical information may include at least one of the number of updated videos, the number of updated pictures or the number of updated messages.

[0538] The channel input box 9230 displays a channel number assigned to the selected SNS account 9211. If a channel number is not assigned to the selected SNS account 9211, the channel input box 9230 may be a blank. The user may input a channel number to be assigned to the selected SNS account 9211 into the channel input box 9230. In one embodiment, a selection of channel input box 9230 may display a pop-up window to display available channel number from which to choose from to assign to the SNS account.

50 [0539] The SNS site selecting region 9250 displays icons of SNS sites or SNS providers. If the user selects any one of the icons displayed on the SNS site selecting region 9250, the controller 340 controls selection of SNS accounts, scanned in the SNS site indicated by the selected icon, from the SNS account selecting region 9210.

55 [0540] The icon 9201 displays a selected SNS site. The user may select an SNS account, scanned in the SNS site indicated by the icon 9201, from the SNS account selecting region 9210.

[0541] The 'Add' button serves to receive a request for construction of a channel map, the 'Back' button serves to

receive a request for display of a previous screen, and the 'Home' button serves to receive a request for display of a home page.

[0542] Figure 93 is a diagram illustrating another embodiment of a screen which displays the result of a human channel scan.

[0543] Referring to Figure 93, the display 302 may display a screen 9300 in Step S2550. The screen 9300 is a screen to display the result of a human channel scan. The screen 9300 may include a friend list (or contact list) region 9310, a mutual friend list region 9320, a scan result statistical information region 9330 and an SNS site selecting region 9350.

[0544] The SNS site selecting region 9350 is a region corresponding to the SNS site selecting region 9250 of Figure 92 and thus, a detailed description thereof is substituted by the description of Figure 92. The friend list region 9310 displays a list of friends registered in an SNS site selected from the SNS site selecting region 9350. The user can select a particular friend (or contact) from the friend list region 9310. For example, a pointer 9360 may be used to select an icon 9317 for Iva's SNS account. The friend list region 9310 may display SNS accounts of the friends.

[0545] Connection state marks 9311 and 9315 serve to display whether or not a corresponding friend is connected. More particularly, the connection state mark 9311 may represent an online state displayed by one of the connection state marks 8111, 8121, 8131 and 8141 of Figure 81, and the connection state mark 9315 may represent an online state displayed by one of the connection state marks 8115, 8125, 8135 and 8145 of Figure 81.

[0546] The mutual friend list region 9320 displays a list of mutual friends of the friend selected from the friend list region 9310. The mutual friend list region 9320 may display SNS accounts of the mutual friends. For example, if icon 9317 for Iva's SNS account is selected, mutual friends of both Iva and John may be displayed in the mutual friend list region 9320.

[0547] In one embodiment, region 9320 may display a list of SNS accounts for friends of the friends for whom the information is requested. For example, referring to Figure 93, if icon 9317 is selected for Iva's SNS account (e.g., Hi5 account) region 9320 may display a list of potential or possible friends between John and Iva's friends, e.g., a list of friends of friends. The icons for these friends may also include connection state marks 9311, 9315 to indicate whether the users are online using their electronic device or logged in to their SNS account at a server. In one embodiment, the list of mutual friends and the list of friends of friends may list only those users who have registered to use their electronic device to access human channels, e.g., their SNS accounts through a channel on their multi-purpose display device, or the list may include only those users who are currently logged in. These preference settings for the user may store the configuration and other settings for the display regions.

[0548] The information region 9330 displays a message 9331 for representing whether or not a human channel of the friend selected from the friend list region 9310 is available, a message 9333 for representing a human channel number assigned to the selected friend, and a message 9335 for representing the number of mutual friends of the selected friend. For example, if the icon 9317 for Iva's SNS account is selected, the scan result statistical information region 9330 may display information related to Iva's account. In this Example, Iva has 12 friends in common with John's SNS account and Iva's SNS account is accessible on channel number 27 of the electronic device 100.

[0549] The user may select a particular SNS account from among SNS accounts displayed on the friend list region 9310 and the mutual friend list region 9320 and then, assign a channel number to the selected particular SNS account.

[0550] The controller 340 constructs a channel map (S2560). The controller 340 may proceed to Step S2560 if the controller 340 detects a user action for requesting assignment of a channel with respect to the particular SNS account from a screen on which the result of a channel scan is displayed. The user action may be a user action for selecting the 'Add' button of Figure 92.

[0551] If the controller 340 detects the user action for selecting the 'Add' button of Figure 92, the controller 340 assigns a channel number, which has input into the channel input box 9230, to the selected SNS account 9211 in response to the detected user action. The controller 340 may store the selected SNS account 9211, the channel number input into the channel input box 9230 and information associating the selected SNS account 9211 and the channel number input into the channel input box 9230 with each other. The human channel map may be a human channel map illustrated in Figure 12, or may be a human channel map illustrated in Figure 97 that will be described hereinafter.

[0552] Step S2560 may include the implementation procedure of the method for constructing a human channel map in relation to Figure 13 or the implementation procedure of the method for constructing a human channel map in relation to Figures 34A and 34B. The screen 9200 of Figure 92 and the screen 9300 of Figure 93 may be a first GUI for designation of the human address in Step S100. The SNS accounts displayed on the SNS account selecting region 9210, the friend list region 9320 and the mutual friend list region 9330 may be selectable human addresses listed in the first GUI.

[0553] Figure 94 is a flowchart illustrating an implementation procedure of an exemplary embodiment in relation to a method for scanning a human channel in accordance with the present disclosure.

[0554] Referring to Figure 94, an electronic device 9410 transmits a friend information request signal to request information about friends to a relay server 9420 (S2600). The information about friends may include, for example, a list of new or potential friends, mutual friends, or updates for existing friends such as status updates, newly uploaded content, whether they are using human channel services, or another appropriate type of information. The transmission of the

friend information request signal may be performed in Step S2540 of Figure 88 to scan one or more SNS servers for friend information. Step S2540 may include the implementation procedure of the method for scanning a human channel in relation to Figure 94. The friend information request signal may include a user ID. The user ID may be an account of the relay server 9420, or may be information registered in the server 10 during implementation of the user registration method of Figure 83. In some embodiments, the friend information request signal may further include a single or a plurality of SNS accounts, passwords with respect to the included SNS accounts and site names of the SNS sites.

[0555] The relay server 9420 transmits the friend information request signal to request friend information to a first SNS server 9430 (S2610). The server 9420 may be the server 10, and the transmitted friend information request signal may include an account information for an account on the first SNS server 9430 and may further include a password for the account. The account information on the first SNS server 9430 and the password for the account may be previously stored in the relay server 9420, may have been transmitted to the server 10 during implementation of the user registration method of Figure 83, or may be included in the friend information request signal transmitted in Step S2600.

[0556] The relay server 9420 may associate a single or a plurality of SNS accounts with user IDs and store the associated information. If the relay server 9420 receives the friend information request signal from the electronic device 9410, the relay server 9420 may search for a user ID and an associated SNS account, and then, transmit the friend information request signal to an SNS server including the searched SNS account.

[0557] For example, the relay server 9420 may request information from multiple SNS servers if the request for friend information from the electronic device 9410 (or the user account associated with the user ID received from the electronic device 9410) includes SNS accounts served on multiple servers (e.g., facebook, twitter). the relay server 9420 transmits the friend information request signal to request friend information to the second SNS server 9440 (S2620). The transmitted friend information request signal may include account information for an account on the second SNS server 9440 and may further include a password for this account. The account information for the account on the second SNS server 9440 may be stored in the relay server 9420, received from another server, or included in the friend information request.

[0558] The first SNS server 9430 transmits a friend information signal including friend information to the relay server 9420 (S2630). The friend information may include SNS accounts with respect to friends included in the friend information request signal transmitted in Step S2610. The friend information may further include at least one of names of the friends, SNS site IP addresses, port numbers, SNS site names or update information about SNS accounts. The first SNS server 9430 may be the server 20, or may be one of SNS servers selected during implementation of the user registration method of Figure 83. Additionally, the first SNS server 9430 may have an SNS site name included in the friend information request signal transmitted in Step S2600.

[0559] The second SNS server 9440 transmits a friend information signal including friend information to the relay server 9420 (S2640). The friend information may include SNS accounts with respect to friends included in the friend information request signal transmitted in Step S2620. The friend information may further include at least one of names of the friends, SNS site IP addresses, port numbers, SNS site names or update information about SNS accounts. The second SNS server 9440 may be the server 20, or may be one of SNS servers selected during implementation of the user registration method of Figure 83. Additionally, the second SNS server 9440 may have an SNS site name included in the friend information request signal transmitted in Step S2600.

[0560] The relay server 9420 combines the received friend information (S2650). The relay server 9420 may combine the friend information transmitted from the first SNS server 9430 with the friend information transmitted from the second SNS server 9440. In addition, the relay server 9420 may combine previously stored information with the friend information transmitted from the first SNS server 9430 or the friend information transmitted from the second SNS server 9440. Here, the previously stored information may be the SNS site authentication information and the user registration information transmitted by the electronic device 300 during the user registration method of Figure 83. The relay server 9420 may combine the previously stored information and the received friend information with each other based on names or SNS accounts.

[0561] The relay server 9420 transmits the friend information signal including the friend information to the electronic device 9410 (S2660). The friend information may be information combined in Step 2650, or may be information selected from the combined information. In some embodiments, the friend information may include at least one of names of friends, SNS site names, SNS accounts or user IDs. In some embodiments, the friend information may include names of friends, connection information and user IDs. In some embodiments, the friend information may include names of friends, connection information, SNS site names, SNS accounts and user IDs.

[0562] The electronic device 9410 stores the received friend information (S2670). The electronic device 9410 may temporarily or permanently store the received friend information. The stored information may be displayed as the result of a channel scan in Step S2550 of Figure 88.

[0563] The electronic device 9410 may construct a human channel map using the received friend information. Information included in the connection information maps 1230, 1240, 1250, 1260 and 1270 of Figure 97 may be acquired from the received friend information.

[0564] In some embodiments, the relay server 9420 may perform Step S2650 and Step 2660 whenever the friend

information is received. For example, the relay server 9420 may perform Step S2640 and Step S2660 using the friend information received in Step S2630, or may perform Step S2640 and Step S2660 using the friend information received in Step S2640. Steps S2640 and S2660 may be initiated based on friend information received within a predetermined period of time of each other, for example.

[0565] Figure 95 is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for constructing a channel map in accordance with the present disclosure.

[0566] Referring to Figure 95, the display 302 displays a GUI for designation of a human address (S2700). The GUI may be one of a Web page of Figure 4, the GUI 910 of Figure 9, the GUI 1010 of Figure 10, the GUI 1110 of Figure 11, the GUI 2700 of Figure 27, the GUI 2900 of Figure 29, the GUI 3100 of Figure 31, the screen 9200 of Figure 92 and the screen 9300 of Figure 93.

[0567] The controller 340 detects a first user action for designation of a human address (S2710) of a friend or contact.

[0568] The controller 340 confirms whether or not a channel number assigned to the friend who is associated with the designated human address is present, in response to the detected first user action (S2720).

[0569] If the channel number is present, the controller 340 displays the channel number (S2730). In one example, the channel number may be displayed on the input box 9230 of Figure 92, may be displayed on the input box 9333 of Figure 93, or may be displayed on a separately displayed message. The channel number may be highlighted among the channel numbers listed in the channel number region 2710 of the GUI 2700 of Figure 27 or among the channel numbers listed in the channel number region 2910 of the GUI 2900 of Figure 29, or may be displayed on the channel number region 3140 of the GUI 3100 of Figure 31.

[0570] The controller 340 detects a second user action for designation of a channel number (S2740). In the embodiment of the screen 9200 of Figure 92, the second user action may be a user action for pushing the 'Add' button. In the embodiment of the screen 9300 of Figure 93, the second user action may be a user action for pushing a button for completing input of a channel number into the input box 9333 (for example, an 'OK' button on a remote controller). In the embodiments of the GUI 2700 of Figure 27, the GUI 2900 of Figure 29 and the GUI 3100 of Figure 31, the second user action may be a user action including the second user action of Step S802 of Figures 34A and 34B and the third user action of Step S803. The channel number may be equal to the channel number searched in Step S2720.

[0571] The controller 340 stores the human address, the channel number and information associating the human address and the channel number with each other in a human channel map in response to the detected second user action (S2750). If the channel number is equal to the channel number searched in Step S2720, a plurality of human addresses of a single person is assigned to a single channel number.

[0572] The controller 340 confirms whether or not other human addresses of the friend who is associated with the designated human address are present (S2760). For example, the friend may have multiple SNS accounts such as a human address corresponding to a facebook account and another human address corresponding to an MSN account.

[0573] If other human addresses are present, the controller 340 controls display of the other human addresses (S2770).

[0574] Figure 96 is a diagram illustrating an embodiment of a GUI for display of other human addresses of a friend who has a human address associated with a channel number.

[0575] Referring to Figure 96, the display 302 may display a message 9600 in Step S2770. The message 9600 lists SNS accounts of the other human addresses. In this example, it may be assumed that the human address designated in Step S2710 is a human address of Lisa. The message 9600 may list SNS accounts 9601, 9603, 9605 and 9607 as the other human addresses of Lisa, and may include a button 9610 to add additional addresses and a button 9620 to cancel the process. In Step S2770, check boxes 9631, 9633, 9635 and 9637 need not be displayed.

[0576] The controller 340 displays a GUI for designation of a human address (S2780). The GUI may be displayed if the controller 340 detects a user action for pushing the button 9610 of Figure 96. The display 302 may display the message 9600 including the SNS accounts 9601, 9603, 9605 and 9607, the check boxes 9631, 9633, 9635 and 9637, the button 9610 and the button 9620.

[0577] In some embodiments, Step S2770 and Step S2780 may be combined into a single step for displaying a GUI for provision of other human addresses and designation of a particular human address among the other human addresses. The GUI may be the message 9600 including the SNS accounts 9601, 9603, 9605 and 9607, the check boxes 9631, 9633, 9635 and 9637, the button 9610 and the button 9620.

[0578] The controller 340 detects a third user action for designation of a human address (S2790). The third user action may be a user action for pushing the button 9610 of the message 9600 displayed in Step S2780.

[0579] The controller 340 stores the human address, the channel number and information associating the human address and the channel number with each other in the human channel map in response to the detected third user action (S2795). The human address may be a human address checked in the check boxes 9631, 9633, 9635 and 9637, and the channel number may be the channel number stored in Step S2750.

[0580] Figure 97 is a diagram illustrating another exemplary embodiment for a human channel map.

[0581] The human channel map 1210 of Figure 97 further includes a channel number '80' associated with a plurality of human addresses. The channel number '80' is associated with the friend 'Lisa', and the friend 'Lisa' has a plurality of

human addresses (Lisa@TV.com, Lisa@SNS.com and Lisa@facebook.com). That is, the channel number '80' is assigned to each of Lisa@TV.com, Lisa@SNS.com and Lisa@facebook.com.

[0582] If a pointer indicates a particular table, the controller 340 can confirm that a corresponding channel number is associated with a plurality of human addresses. In one example, if a pointer 9701 of the channel number '80' indicates

[0583] The table 9700 includes the human addresses, i.e. Lisa@TV.com, Lisa@SNS.com and Lisa@facebook.com, associated with the channel number '80', and pointers respectively corresponding to Lisa@TV.com, Lisa@SNS.com and Lisa@facebook.com. The pointers may indicate positions where information associated with the human addresses is stored.

[0584] The pointer 9711 indicates a position where information associated with Lisa@TV.com is stored. More particularly, the pointer 9711 indicates the third row of the third connection information map 1250. An IP address associated with Lisa@TV.com is 207.63.107.105, and a port number and an account associated with Lisa@TV.com are 80 and Lisa, respectively. Connection to a channel of Lisa@TV.com may be implemented by the access method denoted by type 3.

[0585] The pointer 9712 indicates a position where information associated with Lisa@facebook.com is stored. More particularly, the pointer 9712 indicates the fourth row of the third connection information map 1250. An IP address associated with Lisa@facebook.com is 204.62.101.95, and a port number and an account associated with Lisa@facebook.com are 80 and Lisa, respectively. Connection to a channel of Lisa@facebook.com may be implemented by the method denoted by type 3.

[0586] The pointer 9713 indicates a position where information associated with Lisa@SNS.com is stored. More particularly, the pointer 9713 indicates the fifth row of the third connection information map 1250. An IP address associated with Lisa@SNS.com is 205.52.108.96, and a port number and an account associated with Lisa@SNS.com are 80 and Lisa, respectively. Connection to a channel of Lisa@SNS.com may be implemented by the access method denoted by type 3.

[0587] In the present disclosure, the pointers 9711, 9712 and 9713 are not limited to the embodiments indicating the rows of the third connection information map 1250, and may indicate rows of different connection information maps. In one embodiment, channel 80 may be linked to human addresses for a plurality of different individuals. For example, the human address 'Lisa' may be replaced by human address 'family' representing a group of individuals. The human addresses in table 9700 may be linked to an SNS account of each of the individual in the group, e.g., human addresses dad and me, in tables 1240 and 1230, respectively.

[0588] Figure 98 is a flowchart illustrating an implementation procedure of another exemplary embodiment in relation to a method for providing a human channel service in accordance with the present disclosure.

[0589] Referring to Figure 98, the controller 340 detects a user action for requesting conversion to a human channel mode (S2800) (or social network channel mode). In some embodiments, the user action may be a user action for pushing one of an up key, a down key, a right key or a left key of a remote controller, or may be a user action for pushing a mode conversion key (for example, a colored button) of the remote controller.

[0590] The controller 340 controls display of a human channel map in response to the detected user action (S2810). The display 302 may display the human channel map 7220 illustrated in Figure 72.

[0591] The controller 340 detects a user action for designation of a channel number (S2820).

[0592] The controller 340 confirms whether or not a plurality of human addresses is associated with the channel number in response to the detected user action (S2830). The controller 340 can confirm whether or not the plurality of human addresses is associated with the channel number by use of the human channel map. In one example, if a channel number '77' is designated in Step S2820, it can be confirmed from the human channel map of Figure 97 that the channel number '77' is associated with a single human address. If a channel number '80' is designated in Step S2820, it can be confirmed from the human channel map of Figure 97 that the channel number '80' is associated with the plurality of human addresses (i.e. Lisa@TV.com, Lisa@SNS.com and Lisa@facebook.com).

[0593] If the plurality of human addresses is present, the controller 340 controls display of a GUI for designation of a human address (S2840).

[0594] Figure 99 is a diagram illustrating an embodiment of a GUI for designation of a human address.

[0595] Referring to Figure 99, the display 302 may display a GUI 9900 as the GUI for designation of the human address if the user action for designating the channel number '80' is detected in Step S2820. The GUI 9900 lists the human addresses Lisa@TV.com, Lisa@SNS.com and Lisa@facebook.com associated with the channel number '80'.

[0596] The controller 340 detects a user action for designation of a human address (S2850). In one example, the user action may be a user action for pushing a particular key (for example, an 'OK' key) on a remote controller in a state in which an indicator 9901 of Figure 99 is located at a particular human address. The user action designates a human address where the indicator 9901 is located.

[0597] The controller 340 performs connection to the human address (S2860). If a plurality of human addresses is not associated with the channel number designated in Step S2820, the controller 340 performs connection to the human

address associated with the channel number designated in Step S2820. Also, if a plurality of human addresses is associated with the channel number designated in Step S2820, the controller 340 performs connection to the human address designated in Step S2850.

[0598] The controller 340 may display at least one of a Web page associated with the SNS account of the SNS server, a screen captured by the electronic device, a broadcast channel that the user of the electronic device is viewing, content or content list stored in the electronic device, based on the result of connection. The Web page associated with the SNS account of the SNS server may be a home page.

[0599] Step S2860 may include at least one step included in the implementation procedure of the method for receiving content of a human channel in relation to Figures 19 to 21, and may include at least one step included in the implementation procedure of the method for setting connection between electronic devices of Figure 26.

[0600] Figure 100 is a diagram illustrating another embodiment of a screen on which a human channel map and content of a selected human channel are displayed.

[0601] Referring to Figure 100, the controller 340 may control display of a screen 10000 based on the result of connection of Step S2860. The screen 10000 is a screen on which a Web page received from the SNS server is displayed.

[0602] The screen 10000 may include a list region 10010, a user information region 10020, a statistical information region 10030, a friend list region 10040, a video link 10051, a picture link 10053 and a message link 10054. The list region 10010 displays a user question and answers of friends with respect to the question, the user information region 10020 displays brief introduction information with respect to the user, and the statistical information region 10030 displays statistical information. The friend list region 10040 displays a number of followers (other users who are registered to receive information about the user) and following (other users whom the user is registered to receive information about), the video link 10051 is a connection link for a Web page on which unloaded video files can be seen, the picture link 10053 is a connection link for a Web page on which uploaded pictures can be seen, and the message link 10054 is a connection link for a Web page on which messages between the user and the friend(s) can be seen.

[0603] Figure 101 is a diagram illustrating an embodiment of a screen on which an Electronic Program Guide (EPG) for a human channel in accordance with the present disclosure is displayed.

[0604] Referring to Figure 101, the controller 304 may control display of an electronic program guide 10100 for a human channel. The electronic program guide 10100 may be displayed if a user action for requesting the EPG is detected during display of the human channel. If the user action for requesting the EPG is detected during display of a broadcast channel, the controller 340 may control display of an EPG for the broadcast channel.

[0605] The remote controller 304 may include a button for requesting the electronic program guide 10100 for the human channel. If the controller 340 detects a user action for pushing the button, the controller 340 may control display of the electronic program guide 10100 in response to the detected user action. In one embodiment, the button for requesting the EPG 10100 for the human channel may be a dedicated button. In this case, the EPG for the human channel may be displayed regardless of the type of content that is being displayed, e.g., broadcast, application, or human channel content. Alternatively, the button may be configured to display a particular type of EPG corresponding to the type of content being displayed, e.g., human channel type EPG.

[0606] The EPG 10100 may be configured as a grid or calendar. The EPG 10100 may include a human indicating cell 10111 at the first row of the first column and a human channel indicating cell 10112 at the first row of the second column, and the other columns of the first row may include date cells 10113 to 10118. The human indicating cell 10111 displays information indicating that human cells are listed in the first column, the human channel indicating cell 10112 displays information indicating that channel cells are listed in the second column, and the date cells 10113 to 10118 display dates.

[0607] In some embodiments, if there is no event associated with a particular date, a date cell displaying the particular date need not be displayed. In addition, date cells may be orderly displayed from the date cell 10113 representing a present date to the date cell 10114 representing a future date.

[0608] The electronic program guide 10100 includes human cells 10121, 10131 and 10141 in the other rows of the first column, channel cells 10122, 10132 and 10142 in the other rows of the second column and event cells 10123 and 10134 in the other rows of the other columns. The human cells 10121, 10131 and 10141 display information associated with owners of the respective human channels. Here, the human cells may display pictures of the owners of the human channels. The channel cells 10122, 10132 and 10142 display human channel numbers respectively (e.g., channel numbers 101, 110, and 116). The channel cells 10122, 10132 and 10142 may further display human addresses of the owners of the human channels (e.g., Mike, Miranda, and Sweetie). In some embodiments, the human cells 10121, 10131 and 10141 need not be displayed.

[0609] The event cells are associated, according to positions thereof, with particular human cells, particular channel cells and particular date cells. More particularly, each event cell is associated with a human cell and a channel cell of the same row and is also associated with a date cell of the same column. The event cell is associated with an event, which is associated with a date displayed by the date cell of the same column, from among events associated with the human channel having the channel number displayed by the channel cell of the same row.

[0610] The event cell may display at least a part of event information, i.e. information about an associated event. The

event information may include an SNS account associated with an event, information about an SNS site to which the event has been uploaded, information about the type of the event, the title of the event, the date of the event and detailed information about the event. The event may include at least one of a schedule, a function, a memorial day or holiday, content, or the like. The content may be a multimedia content such as a picture or video, or the content may be a message or note, for example.

[0611] The event cells may display at least one of event titles 10151, 10152 and 10153, event icons 10161 and 10162 or event source marks 10171, 10172 and 10173. The event cells may further display a reminder mark 10191 (or indicia). The reminder mark 10191 may be displayed in the case where a reminder for an event is set up. If the reminder is set up, an alarm for the event may be displayed as a message, for example, on the multi-functional display device or may be transmitted to a mobile appliance, an email address, or the like. The reminder may be set up according to a user request.

[0612] If one event cell is associated with a plurality of events, event information about the plurality of events may be displayed respectively. For example, an event cell 10134 displays a plurality of events 10172 and 10173.

[0613] Figure 102 is a diagram illustrating an embodiment of a screen in which detailed information of an event is displayed on an electronic program guide in accordance with the present disclosure.

[0614] Referring to Figure 102, the controller 340 may detect a user action for selecting a date cell of the electronic program guide 10200, for example, using a cursor or an arrow as illustrated. The controller 340 may control display of detailed information 10210 of an event associated with the date cell in response to the detected user action. In one example, if the controller 340 detects a user action for selecting a date cell 10243, the controller 340 controls display of the detailed information 10210 about a "Match" event associated with the date cell 10243 in response to the detected user action.

[0615] Figure 103 is a diagram illustrating an embodiment of a screen in which channel numbers are selected on an electronic program guide in accordance with the present disclosure.

[0616] Referring to Figure 103, the controller 340 may detect a user action for selecting a human cell of the electronic program guide 10300. The controller 340 may control display of content of a human channel of a person indicated by the human cell in response to the detected user action. In one example, if the controller 340 detects a user action for selecting a human cell 10341, the controller 340 controls display of content of a human channel of a person 'Sweety' indicated by the human cell 10341 in response to the detected user action.

[0617] Figure 104 is a diagram illustrating an embodiment of a screen on which content of a human channel is displayed.

[0618] Referring to Figure 104, if the controller 340 detects a user action for selecting the human cell 10341, the controller 340 may control display of content 10400 of a human channel of an owner 'Sweety' indicated by the human cell 10341 in response to the detected user action. The screen 10400 may further display a picture 10410 of the owner 'Sweety', a human address 10420 of the owner 'Sweety' and a channel number 10430 of the human channel of the owner 'Sweety'.

[0619] If the content 10400 is a video file, the controller 340 may further display a time guidance graph 10450 which represents a displayed time of the entire playing time of the video file. In the time guidance graph 10450, a region 10451 means a displayed amount, a region 10453 means an amount to be displayed, and a divider 10455 represents a position of an image being displayed.

[0620] Figures 105 to 107 are diagrams illustrating an embodiment in which an electronic program guide in accordance with the present disclosure is dragged.

[0621] Referring to Figures 105 to 107, in a state in which a pointer 10501 is located at the third row of the electronic program guide 10500, if the controller 340 detects a down event and subsequently, detects at least one drag event, the controller 340 moves the pointer 10501 to a position 10601 in response to the detected down event and the detected drag event. Then, the controller 340 controls display of a part of a date cell 10610 indicating a date after a certain time corresponding to a movement distance of the pointer 10501 has elapsed and at least a part of an event cell 10620 associated with an event of the date. The down event may be a user action for selecting a channel cell 10513, or may be a user action for selecting one of event cells 10523, 10533 and 10543.

[0622] If the controller 340 detects an up event after detection of the at least one drag event, the controller 340 controls display of an electronic program guide 10700 including an added column 10710. The added column 10710 includes a date cell 10713 representing a particular date after the certain time has elapsed and event cells 10723, 10724 and 10743 associated with the event of the particular date. The event cell 10723 displays content 10751 and 10752 uploaded at the corresponding date. The number of columns that are added (and the corresponding dates which are displayed) may correspond to an amount in which the cell is dragged in a prescribed direction. Additionally, the direction in which a cell is dragged may determine whether previous or later dates are added to the EPG. For example, dragging a cell to the right in the EPG may display columns for later dates.

[0623] In one embodiment, a date range for the dates included in the EPG may be entered to display events corresponding to the entered date range. A scroll bar may be provided to scroll the EPG to the desired date range. Moreover, a scroll bar may also be provided to scroll the EPG vertically to display additional channels assigned to different users and their respective SNS accounts. In one embodiment, each channel as well as a particular date (e.g., each row or

column of the EPG) may be hidden based on a manual designation or based on user preferences or filters (e.g., friend lists). For example, the entire row for channel number 110 corresponding to Miranda may be hidden in the EPG.

[0624] Figure 108 is a diagram illustrating an embodiment of a screen in which a content list is displayed on an electronic program guide in accordance with the present disclosure.

[0625] Referring to Figure 108, the controller 340 may detect a user action for selecting an event cell 10823 of an electronic program guide 10800. The controller 340 may control display of a content list 10850 associated with the event cell 10823 in response to the detected user action. The content list 10850 may be a list of events associated with the event cell 10823, or may be a list of content uploaded to the server on a date associated with the event cell 10823. The server may be the server 10 or the server 20, and the content may be content uploaded to the server belonging to an account associated with a human channel having a channel number '101'. The account may be an SNS account.

[0626] Figure 109 is a diagram illustrating an embodiment of a screen on which a preview of content selected from among the content list of Figure 108 is displayed.

[0627] Referring to Figure 109, the controller 340 may detect a user action for selecting a particular item from among items 10911, 10913 and 10915 included in a content list 10910 displayed on the electronic program guide 10900. The controller 340 may control display of a preview 10950 of content indicated by the selected particular item. The preview may be prepared independently of the content, may be a part of the content, or may be the entire content.

[0628] In one example, if the controller 340 detects a user action for selecting an item 10914, the controller 340 controls display of a preview of content indicated by the item 10914 in the region 10950 in response to the detected user action. If the controller 340 detects a user action for selecting the region 10950 where the preview will be displayed, the controller 340 may control display of the content indicated by the item 10914 over the entire screen. In this case, the content may overlap over the electronic program guide 10900, or the electronic program guide 10900 may temporarily disappear from the screen during display of the content. In one embodiment, if the controller 340 detects a prescribed type of selection on an item 10911, 10913, 10914 (e.g., a double click or selection of a prescribed button on the remote controller), the content may be immediately displayed without displaying a preview of the item in region 10950.

[0629] Figure 110 is a diagram illustrating an embodiment of a screen on which a graphical user interface to produce an event is displayed.

[0630] Referring to Figure 110, the controller 340 may detect a user action for selecting a cell included in a row associated with a user human channel on an electronic program guide 11000. The controller 340 may control display of a graphical user interface 11010 to produce an event in response to the detected user action. In one example, an event cell 11024 is located on the same row as a channel cell 11022 indicating a channel number '0', a human channel having the channel number '0' means a human channel of the owner of the electronic device 300, and the channel cell 11022 further indicates a human address 'Mike' and therefore, the owner of the electronic device 300 is Mike. If the controller 340 detects a user action for selecting the event cell 11024, the controller 340 controls display of the graphical user interface 11010 in response to the user action.

[0631] The graphical user interface 11010 may include a first region 11011 used to input the title (or subject) of an event, a second region 11013 used to input the date of an event, and a third region 11015 used to input detailed information about an event.

[0632] Figure 111 is a diagram illustrating an embodiment of a screen on which an event input into the graphical user interface of Figure 110 is displayed.

[0633] Referring to Figure 111, a first region 11111 of the graphical user interface 11010 receives the title of an event "Match", a second region 11113 receives the date of the event "12 Mar '11", and a third region 11115 receives detailed information about the event "I am going to watch the India-Aus Match from 3:00 PM. You guys are invited to my place. I have..."

[0634] Figures 112A and 112B are diagrams illustrating a screen on which an electronic program guide in accordance with the present disclosure, which reflects the event input in Figure 111, is displayed.

[0635] Referring to Figures 112A, if the input of the event illustrated in Figure 111 is completed, the controller 340 controls display of at least a part of the event information input in Figure 111 on an event cell 11224 associated with the date "12 Mar '11" of the electronic program guide 11200. The event cell 11224 is located on the row indicated by the human channel of the owner 'Mike' of the electronic device 300.

[0636] If the input of the event illustrated in Figure 111 is completed, the controller 340 may control transmission of the event information input in Figure 111 to the server 10, the server 20 and other electronic devices. The controller 340 may detect an SNS account associated with Mike from the human channel map and then, control upload of the event information to the detected SNS account. In addition, the controller 340 may acquire an address of the electronic device transmitted to each human channel of the human channel map and then, control transmission of the event information to the acquired address.

[0637] As shown in Figure 112B, an electronic program guide 11201 is displayed on the electronic device of Molly. The event information input in Figure 111 is displayed on an event cell 11234 associated with the date "12 Mar '11" at the row indicating the human channel of Mike. The electronic device of Molly may directly receive the event information

from the electronic device of Mike, or may indirectly receive the event information through the server 10 or the server 20.

[0638] Figure 113 is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for providing service information in accordance with the present disclosure.

[0639] Referring to Figure 113, the controller 340 controls display of content of a human channel. The display 302 may display the screen 1500 of Figure 15, the screen 1600 of Figure 16, the screen 1700 of Figure 17, the screen 10000 of Figure 100 and the screen 10400 of Figure 104.

[0640] The controller 340 detects a user action for requesting service information (S2910).

[0641] The controller 340 constructs service information in response to the detected user action (S2920). The constructed service information may be event information and information associated with the event information and the human channel. The constructed service information may be stored in the storage unit 345.

[0642] In some embodiments, Step S2920 may include an implementation procedure of a method for constructing service information in relation to Figure 114.

[0643] The controller 340 controls display of the constructed service information (S2930). The display 302 may display the electronic program guide 10100 of Figure 101. The constructed service information may be displayed in the form of the electronic program guide 10100.

[0644] In some embodiments, Step S2930 may include an implementation procedure of a method for displaying service information in relation to Figure 115 as described hereinafter.

[0645] The controller 340 controls production of an event and transmission of the produced event (S2940).

[0646] In some embodiments, step S2940 may include an implementation procedure of a method for producing an event in relation to Figure 116 as described hereinafter.

[0647] In some embodiments, Step S2920 may be performed before Step S2910, the service information constructed in Step S2920 may be stored in the storage unit 345, and Step S2930 may be performed after Step S2910. In this case, the stored service information may be displayed in Step S2930.

[0648] Step S2920 may be initially performed, may be performed when an event is additionally produced or received, or may be executed at a predetermined interval. The service information stored in the storage unit 345 may be updated upon execution of Step S2920.

[0649] Figure 114 is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for constructing service information in accordance with the present disclosure.

[0650] Referring to Figure 114, the controller 340 controls transmission of an event information request signal to request event information (S3000). The controller 340 may request event information on a per human channel basis or on a per SNS account basis, or may request event information with respect to a human channel included in a human channel map using a single signal. The controller 340 may transmit the event information request signal to at least one of the server 10, the server 20 or the electronic device.

[0651] The network interface 320 receives an event signal including the event information in response to the event information request signal (S3010). The event signal may be received from at least one of the server 110, the server 20 or the electronic device.

[0652] The event information may include information about at least one event. For example, the event information may include the event 10152 and the event 10123 associated with the channel cell 10122 of Mike in Figure 101 and the event 10153 associated with the channel cell 10132 of Miranda.

[0653] The event information includes an SNS account associated with the event, and may further include at least one of information about the SNS site to which the event has been uploaded, information about the type of the event, the title of the event, the date of the event or detailed information about the event. The event may be an event uploaded to a site including the SNS account.

[0654] The controller 340 maps the event and the channel number to each other (S3020). By using a channel map including at least one channel number and at least one SNS account assigned to the at least one channel number and also, using an SNS account included in the received event information, the controller 340 may map one of the at least one event or one or more events to one of the at least one channel number. The channel map, which includes at least one channel number and at least one SNS account assigned to the at least one channel number, may be a human channel map, and the human channel map may be the human channel map illustrated in Figure 12 or the human channel map illustrated in Figure 97.

[0655] The controller 340 maps the event to the channel number if the SNS account of the event is equal to the SNS account assigned to the channel number. In one example, the event 10123 and the event 10152 assigned with the channel cell 10122 of Mike in Figure 101 may be mapped to the channel number '101', and the event 10153 associated with the channel cell 10132 of Miranda may be mapped to a channel number '110'.

[0656] The controller 340 constructs a guide screen to display the channel numbers and the events mapped to the channel numbers (S3030). The controller 340 may align the channel numbers and the mapped events in the order of dates of the events, or may align the events in the order of the channel numbers mapped to the events. The controller 340 may select and process event information to be displayed on event cells. The event information to be displayed on

the event cells may be the titles of the events and may include at least one of icons indicating SNS sites to which the events have been uploaded or event icons.

[0657] Figure 115 is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for displaying service information in accordance with the present disclosure.

[0658] Referring to Figure 115, the controller 340 controls display of an electronic program guide (S3100). The display 302 may display the electronic program guide 10100 of Figure 101.

[0659] The controller 340 detects a user action for selecting an event cell (S3105).

[0660] The controller 340 displays detailed information about an event associated with the selected event cell in response to the detected user action (S3110). The display 302 may display the detailed information 10210 of Figure 102.

[0661] The controller 340 detects a user action for selecting a human cell or a channel cell (S3115).

[0662] The controller 340 controls display of content of the human channel indicated by the channel number associated with the selected human cell or the selected channel cell in response to the detected user action (S3120). The display 302 may display the content 10400 of Figure 104.

[0663] The controller 340 detects a user action for selecting a date cell or an event cell (S3125). The user action for selecting the date cell or the event cell may be a down event.

[0664] The controller 340 detects a user action for dragging the cell selected in Step S3125 (S3130). The display 302 may display the electronic program guide 10600 of Figure 106.

[0665] The controller 340 detects a user action for dropping the dragged cell (S3135). The user action for dropping the dragged cell may be an up event.

[0666] The controller 340 displays the event cell and the date cell, associated with a particular date after a certain time has elapsed, on the electronic program guide in response to the detected user action (S3140). The display 302 may display the electronic program guide 10700 of Figure 107.

[0667] The controller 340 detects a user action for selecting the event cell associated with the particular date after a certain time has elapsed (S3145).

[0668] The controller 340 displays a list of content associated with the selected event cell in response to the detected user action (S3150). The display 302 may display the content list 10850 of Figure 108.

[0669] The controller 340 detects a user action for selecting one of items included in the content list (S3155).

[0670] The controller 340 controls display of content associated with the selected item (S3160). The controller 340 may display a preview of the content. The content may be displayed over the entire screen, or may be displayed on a certain region on the electronic program guide. In one example, the content may be displayed on the region 10950 of Figure 109.

[0671] Figure 116 is a diagram illustrating an implementation procedure of an exemplary embodiment in relation to a method for producing an event in accordance with the present disclosure.

[0672] Referring to Figure 116, the controller 340 detects a user action for selecting an event cell associated with a channel number indicating a user human channel (S3200). For example, the event cell associated with a channel number indicating a user human channel may be the event cell 11024 of Figure 110.

[0673] The controller 340 controls display of a graphical user interface to produce an event in response to the detected user action (S3210). The display 302 may display the graphical user interface 11010 of Figure 110.

[0674] The controller 340 maps the event indicated by the event information input via the graphical user interface to the channel number indicating the user human channel (S3220).

[0675] The controller 340 transmits the input event information and an SNS account assigned to the user human channel to the server (S3230). The server may be a server including the SNS account or may be the server 10. If the input event information and the SNS account are transmitted to the server 10, the server 10 transmits the event information and the SNS account assigned to the user human channel to the SNS site including the SNS account.

[0676] The controller 340 displays at least a part of the input event information on an event cell that is associated with the mapped channel number and a date included in the input event information (S3230). The display 302 may display the electronic program guide 11200 of Figures 112A and 112B.

[0677] Configurations of the electronic device and operating methods thereof in accordance with the present disclosure are not limited to the above described embodiments, and all or a part of the embodiments may be selectively combined to realize various modifications thereof.

[0678] The present disclosure may be implemented as code that can be written on a computer-readable recording medium and can thus be read by a computer. The computer-readable recording medium includes all types of recording devices in which data is stored in a computer-readable manner. Examples of the computer-readable recording medium include a ROM, a RAM, a CD-ROM, a magnetic tape, a floppy disc, an optical data storage, and a carrier wave (e.g., data transmission through the Internet). The computer-readable recording medium can be distributed over a plurality of computer devices connected through a network so that computer-readable code is written thereto and executed therefrom in a decentralized manner.

[0679] As is apparent from the above description, with an electronic device, a method of providing a human channel

service, a method of constructing a human channel map and a method of relaying a human channel in accordance with the present disclosure, on-line networks between designated individuals can be accomplished using channel numbers. A user can communicate with a designated person by selecting a channel number assigned to the designated person, which assures convenient and easy utilization of a social network service. Further, according to the present disclosure, by allowing the user to acquire an address of an electronic device using a human address independent of an IP address as well as the IP address, the user can utilize the electronic device for a social network service even when the electronic device has a dynamic IP address or a private IP address. Furthermore, according to the present disclosure, the user can conveniently and easily access a social network service anytime and anywhere. Moreover, according to the present disclosure, by allowing a user to access an acquaintance connected to a social network through a human channel, the user and the acquaintance can easily view the same broadcast channel through human channels thereof.

[0680] The present disclosure provides a chat screen for allowing the user to confirm a friend who is viewing the same content as the user using a human channel map and to chat with the confirmed friend, whereby the user can view a broadcast while chatting with the friend who is viewing the same content.

[0681] Moreover, according to the present disclosure, as a result of providing a variety of kinds of channel maps and a user interface for assisting channel map switch, the user can easily select a variety of kinds of channel maps. Further, allowing the user to select a variety of kinds of channels listed in a channel map can further facilitate easy user selection of a variety of kinds of channels.

[0682] The present disclosure provides a menu for the scan of an App service and an SNS service, similar to a broadcast channel scan menu, which can allow the user not only to easily operate a scan menu, but also to easily set an App channel and a human channel based on the result of scan.

[0683] In addition, the present disclosure provides event information about friends in the form of an Electronic Program Guide (EPG), which can allow the user to easily acquire and manage information about friends, to easily produce a user event and to easily share the produced event with friends.

[0684] As embodied and broadly described herein, the present disclosure is directed to an electronic device, a method of providing a human channel service, a method of constructing a human channel map and a method of relaying a human channel, a method for inviting to view channel, a method for remotely viewing content at the same time, a method for providing channel map service, a method for providing a channel scan interface and a method for providing service information that substantially obviate one or more problems due to limitations and disadvantages of the related art.

[0685] One object of the present disclosure is to provide an electronic device, a method of providing a human channel service, a method of constructing a human channel map and a method of relaying a human channel, which enable a user to more conveniently and easily use a social network service.

[0686] Another object of the present disclosure is to provide an electronic device, a method of providing a human channel service, a method of constructing a human channel map and a method of relaying a human channel, which enable a user to use a social network service anywhere and anytime.

[0687] Another object of the present disclosure is to provide an electronic device, a method of providing a human channel service, a method of constructing a human channel map and a method of relaying a human channel, which enable a social network service between electronic devices even when the electronic devices have dynamic Internet Protocol (IP) addresses.

[0688] Another object of the present disclosure is to provide an electronic device, a method of providing a human channel service, a method of constructing a human channel map and a method of relaying a human channel, which enable a social network service between electronic devices even when the electronic devices have private IP addresses.

[0689] A further object of the present disclosure is to provide an electronic device and a method of making invitation to view a channel, which enable a user to invite an acquaintance connected to a social network to view a broadcast channel that the user is viewing.

[0690] Another object of the present disclosure is to provide an electronic device, which enables a user to view a broadcast while chatting with a friend who views the same content, and a method for remotely viewing content at the same time.

[0691] Another object of the present disclosure is to provide an electronic device and a method of providing a channel map service, which provide a variety of kinds of channel maps and enable a user to easily select a variety of kinds of channel maps.

[0692] A further object of the present disclosure is to provide an electronic device and a method of providing a channel map service, which provide a variety of kinds of channels and enable a user to easily select a variety of kinds of channels.

[0693] Another object of the present disclosure is to provide an electronic device, which can easily perform a channel scan with respect to various kinds of services and can provide a menu to perform a channel scan with respect to various kinds of services, similar to a conventional broadcast channel scan menu, and a method for providing a channel scan interface.

[0694] A further object of the present disclosure is to provide an electronic device, which provides information about friends in a social network, and a method for providing service information.

[0695] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, a method of providing a human channel service may include detecting a user action for designating a channel number, reading a human address associated with the designated channel number from a human channel map in response to the detected user action, acquiring an address of an electronic device to access based on the read human address, receiving content from the electronic device using the acquired address, and displaying the received content. The human address may include at least one of an e-mail address, an account name, a family name (or surname), a Session Initiation Protocol-Uniform Resource Locator (SIP-URL), or another appropriate type of identifier or address.

[0696] The address of the electronic device may include at least one of a Media Access Control (MAC) address, an Internet Protocol (IP) address, a port number, a Domain Name System (DNS) name or a Uniform Resource Locator (URL).

[0697] The acquiring the address of the electronic device may include reading the address of the electronic device based on the human address from a storage unit.

[0698] The acquiring the address of the electronic device may include transmitting a connection request signal including the human address to a server, and receiving the address of the electronic device from the server.

[0699] The human channel map may include a channel number, a human address and information associating the channel number and the human address with each other.

[0700] In one embodiment, a method of constructing a human channel map may include displaying a first Graphical User Interface (GUI) for designation of a human address, detecting a first user action for designating a human address, displaying a second GUI for designation of a channel number in response to the detected first user action, detecting a second user action for designating a channel number, and storing the channel number, the human address and information associating the channel number and the human address with each other in the human channel map in response to the detected second user action. The displayed first GUI may list at least one selectable human address. The displayed second GUI may list a plurality of selectable channel numbers.

[0701] In this embodiment, the human channel map constructing method may further include receiving the at least one human address from a server.

[0702] The human channel map constructing may further include displaying a Web page of a Social Network Service (SNS) server, the displayed Web page listing at least one human address, detecting a third user action for selecting one of the listed at least one human address, and displaying the first GUI in response to the detected third user action.

[0703] In one embodiment, a method of relaying a human channel may include receiving a first registration request signal, including a first human address and an address of a first electronic device, from the first electronic device, storing the first human address and the address of the first electronic device in response to the received first registration request signal, receiving a second registration request signal, including a second human address and an address of a second electronic device, from the second electronic device, storing the second human address and the address of the second electronic device in response to the received second registration request signal, receiving a connection request signal including the second human address from the first electronic device, and transmitting a response signal including the address of the second electronic device to the first electronic device in response to the received connection request signal, and transmitting a response signal including the address of the first electronic device to the second electronic device.

[0704] In one embodiment, an electronic device may include a controller configured to detect a user action for designating a channel number, read a human address associated with the designated channel number from a human channel map in response to the detected user action, and control acquisition of an address of an electronic device to access, based on the read human address, and a network interface configured to receive content from the electronic device using the acquired address.

[0705] The electronic device may further include a display configured to display the received content. Moreover, the controller may be configured to control transmitting a connection request signal including the human address to a server, and control receiving the address of the electronic device from the server.

[0706] In one embodiment, an electronic device may include an interface configured to receive a user action, a controller configured to detect a first user action for designating a human address, control displaying a second GUI for designation of a channel number in response to the detected first user action, detect a second user action for designating a channel number, and control storing the human address, the channel number, and information associating the human address and the channel number with each other in a human channel map in response to the detected second user action, and a storage device configured to store the human channel map.

[0707] The interface may include at least one of an image capture device, a touch screen, a touch pad, or a remote controller receiver.

[0708] In one embodiment, a method of constructing a human channel map may include displaying a GUI for setting up a channel, the displayed GUI including a human channel region listing at least one human address and a channel region listing at least one channel number, detecting a first user action for selecting one of the at least one human address, detecting a second user action for dragging the selected human address, detecting a third user action for

selecting one of the at least one channel number, and storing the selected human address, the selected channel number, and information associating the channel number and the human address with each other in the human channel map in response to the detected third user action. The displayed GUI may further include a broadcast channel region including at least one broadcast channel and an App channel region including at least one App channel.

5 **[0709]** In this embodiment, the human channel map constructing method may further include confirming whether or not a human address associated with the selected channel number is present in the human channel map, in response to the detected third user action, and deleting the associated human address, the selected channel number and information associating the associated human address and the selected channel number with each other from the human channel map if the associated human address is present.

10 **[0710]** In accordance with another aspect of the present disclosure, a method of making invitation to view a channel includes detecting a first user action for selecting a displayed broadcast program, detecting a second user action for selecting one of at least one channel number included in a displayed human channel map, and transmitting a channel viewing request signal for requesting viewing of the selected broadcast program to an electronic device or a server associated with the selected channel number, in response to the second user action, and the transmitted channel viewing request signal includes at least one of detailed user information, detailed information about a physical channel for transmitting the broadcast program, a service name of the broadcast program, a service Identifier (ID) of the broadcast program, a channel number of the broadcast program, an event name of the broadcast program, a transport stream ID of the broadcast program, a network ID of the broadcast program, information about a service provider providing the broadcast program, information about a transmission medium for transmitting the broadcast program or information about a nation or an area where the service provider is located. The displayed human channel map may further include at least one of a channel name, event name or residual broadcast time of the broadcast program displayed by the electronic device associated with the channel number.

15 **[0711]** The method may further include transmitting a channel guiding signal, including at least one of the channel name, event name or residual broadcast time of the broadcast program, to the electronic device or the server according to an access method associated with the channel number included in the human channel map.

20 **[0712]** The method may further include receiving a channel viewing request signal from the electronic device, and confirming whether or not a broadcast service is receivable from a service provider indicated by information included in the received channel viewing request signal.

25 **[0713]** The method may further include searching for a channel, which broadcasts the broadcast program indicated by information included in the received channel viewing request signal, from stored Electronic Program Guide (EPG) data based on information included in the channel viewing request signal, if reception of the broadcast service from the service provider is not possible.

30 **[0714]** The method may further include receiving a channel viewing request signal from a server, receiving a broadcast program of a channel indicated by information included in the received channel viewing request signal, and displaying the received broadcast program. Information included in the channel viewing request signal may be information obtained as the server amends information included in the channel viewing request signal received from the electronic device according to a difference of at least one of the service provider providing the broadcast service, transmission medium or area.

35 **[0715]** The transmitting the signal to the electronic device may include reading a human address associated with the channel number from a stored human channel map, acquiring an address of the electronic device based on the read human address, and transmitting the channel viewing request signal using the acquired address. The human address may include at least one of an e-mail address, an account name, a family or and a Session Initiation Protocol-Uniform Resource Locator (SIP-URL). The address of the electronic device may include at least one of a Media Access Control (MAC) address, an Internet Protocol (IP) address, a port number, a Domain Name System (DNS) name or a Uniform Resource Locator (URL).

40 **[0716]** In accordance with a further aspect of the present disclosure, an electronic device includes an interface configured to receive a user action, a controller configured to control displaying a broadcast program and a human channel map including at least one channel number, detect a first user action for selecting the broadcast program, detect a second user action for selecting one of the at least one channel number, and control transmitting a channel viewing request signal for requesting viewing of the selected broadcast program to an electronic device or a server associated with the selected channel number in response to the detected second user action, and a network interface configured to output the channel viewing request signal, and the transmitted channel viewing request signal includes at least one of detailed user information, detailed information about a physical channel for transmitting the broadcast program, a service name of the broadcast program, a service Identifier (ID) of the broadcast program, a channel number of the broadcast program, an event name of the broadcast program, a transport stream ID of the broadcast program, a network ID of the broadcast program, information about a service provider providing the broadcast program, information about a transmission medium for transmitting the broadcast program or information about a nation or an area where the service provider is located. The human channel map may further include at least one of a channel name, event name or residual

broadcast time of the broadcast program displayed by the electronic device associated with the channel number.

[0717] The controller may be configured to control transmitting a channel guiding signal, including at least one of the channel name, event name or residual broadcast time of the broadcast program, to the electronic device or the server according to an access method associated with the channel number included in the human channel map.

[0718] The network interface may be configured to receive a channel viewing request signal from an electronic device, and the controller is configured to confirm whether or not a broadcast service is receivable from a service provider indicated by information included in the received channel viewing request signal.

[0719] The controller may be configured to search for a channel, which broadcasts the broadcast program indicated by information included in the received channel viewing request signal, from stored Electronic Program Guide (EPG) data based on information included in the channel viewing request signal, if reception of the broadcast service from the service provider is not possible.

[0720] The network interface may be configured to receive a channel viewing request signal from a server, and the controller may be configured to control receiving a broadcast program of a channel indicated by information included in the received channel viewing request signal. Information included in the channel viewing request signal may be information obtained as the server amends information included in the channel viewing request signal received from the electronic device according to a difference of at least one of the service provider providing the broadcast service, transmission medium or area.

[0721] The controller may be configured to read a human address associated with the channel number from a stored human channel map, acquire an address of the electronic device based on the read human address, and control transmitting the channel viewing request signal using the acquired address. The human address may include at least one of an e-mail address, an account name, a family name or a Session Initiation Protocol-Uniform Resource Locator (SIP-URL). The address of the electronic device may include at least one of a Media Access Control (MAC) address, an Internet Protocol (IP) address, a port number, a Domain Name System (DNS) name or a Uniform Resource Locator (URL).

[0722] In accordance with another aspect of the present disclosure, a method for remotely viewing content at the same time includes displaying content, detecting a user action for requesting a simultaneous viewing mode, confirming the presence of an owner who is viewing the displayed content from among owners of human channels included in a human channel map in response to the detected user action, and displaying a silhouette of the confirmed owner. The displayed silhouette may be changed and displayed according to the emotions of the owner. The displayed silhouette may be changed and displayed according to a motion of the owner. The silhouette may be displayed as a 3D image. A chat phrase of the owner may be displayed at a location associated with the silhouette.

[0723] The method for remotely viewing content at the same time may further include reflecting a screen effect requested by the owner on the displayed content.

[0724] The confirming the presence of the owner may include transmitting an image frame request signal to request an image frame at a particular time, acquiring the image frame at the particular time from among image frames of the displayed content, receiving an image frame transmission signal including the image frame at the particular time, and comparing the acquired image frame with the image frame included in the received image frame transmission signal so as to confirm the presence of the owner.

[0725] The confirming the presence of the owner may include transmitting an owner list request signal including information about the content to a server, receiving an owner list from the server, and confirming an owner included in the owner list as the owner who is viewing the displayed content. The information about the content may include at least one of detailed user information, detailed information about a physical channel that transmits the content, a service name of the content, a service ID of the content, a channel number of the content, an event name of the content, a transport stream ID of the content, a network ID of the content, information about a service provider to provide the content, information about transmission media to transmit the content or information about a nation or locale where the service provider is located.

[0726] The human channel map may include a channel number, a human address and information associating the channel number and the human address with each other. The human address may be an identification mark given to the owner.

[0727] In accordance with another aspect of the present disclosure, an electronic device includes an interface configured to receive a user action for requesting a simultaneous viewing mode, and a controller configured to confirm the presence of an owner who is viewing content from among owners of human channels included in a human channel map in response to the user action if the user action is detected during display of the content and to control display of a silhouette of the confirmed owner.

[0728] The controller may control change of the displayed silhouette according to the emotions of the owner and display of the changed silhouette.

[0729] The controller may control change of the displayed silhouette according to a motion of the owner and display of the changed silhouette.

[0730] The controller may control display of a chat phrase of the owner at a location associated with the silhouette.

[0731] The controller may control reflection of a screen effect requested by the owner on the displayed content.

[0732] The controller may control display of the silhouette as a 3D image.

[0733] The controller may control transmission of an image frame request signal for requesting an image frame at a particular time, acquiring the image frame at the particular time from among image frames of the displayed content, and if an image frame transmission signal including the image frame at the particular time is received, comparing the acquired image frame with the image frame included in the received image frame transmission signal so as to confirm the presence of the owner.

[0734] The controller may control transmission of an owner list request signal including information about the content to a server, and if an owner list is received from the server, confirming an owner included in the owner list as the owner who is viewing the displayed content.

[0735] The information about the content may include at least one of detailed user information, detailed information about a physical channel to transmit the content, a service name of the content, a service ID of the content, a channel number of the content, an event name of the content, a transport stream ID of the content, a network ID of the content, information about a service provider to provide the content, information about a transmission media to transmit the content or information about a nation or locale where the service provider is located.

[0736] The human channel map may include a channel number, a human address and information associating the channel number and the human address with each other. The human address may be an identification mark given to the owner.

[0737] In accordance with another aspect of the present disclosure, a method of providing a channel map service includes displaying a first channel map on a screen on which content is being displayed, detecting a first user action for requesting channel map switch, and switching the displayed first channel map to a second channel map, in response to the detected first user action. One of the first channel map and the second channel map is a human channel map including at least one human channel. The first user action may be an action in which a user presses one of directional keys of a remote controller.

[0738] The switching to the human channel map may include displaying content of one of human channels included in the human channel map.

[0739] The channel map service providing method may further include detecting a third user action for requesting channel switch in a state in which the human channel map is displayed, switching a selected human channel to another human channel in the human channel map in response to the detected third user action, and displaying content of the switched human channel.

[0740] The displaying may include reading a human address associated with a channel number of the human channel, acquiring an address of an electronic device to access, based on the read human address, receiving the content from the electronic device using the acquired address, and displaying the received content.

[0741] The channel map service providing method may further include detecting a second user action for requesting channel map switch, and switching the displayed second channel map to a third channel map in response to the detected second user action.

[0742] The channel map service providing method may further include detecting a third user action for requesting a full channel map, and displaying a full channel map including the at least one human channel, in response to the detected third user action.

[0743] The displayed full channel map may further include at least one broadcast channel and at least one App channel.

[0744] The displayed full channel map may include a sheet on which the at least one human channel is marked, and the sheet is selected by a sheet tab.

[0745] The full channel map may include sheets on which the at least one broadcast channel and the at least one App channel are marked respectively.

[0746] The channel map service providing method may further include detecting a third user action for requesting a recently viewed channel map, and displaying a recently viewed channel map including a broadcast channel, a human channel and an App channel displayed within a preset period, in response to the detected third user action.

[0747] In accordance with another aspect of the present disclosure, a method of providing a channel map service includes detecting a first user action for requesting a channel map, and displaying a channel map including at least one human channel in response to the detected first user action. The channel map may include a connection state mark indicating an online state of an owner of the at least one human channel. The channel map may further include at least one broadcast channel and at least one App channel.

[0748] The connection state mark may include a first connection state mark indicating a first online state for representing whether or not the owner is online via an electronic device, and a second connection state mark indicating a second online state for representing whether or not the owner is logged in to a server. Information about the first online state may be received from the electronic device or the server.

[0749] The channel map service providing method may further include transmitting information, indicating that the owner of the human channel is online via the electronic device, to at least one electronic device associated with the at

least one human channel or to the server.

[0750] The transmitting to the electronic device may include reading a human address associated with a channel number from a stored human channel map, acquiring an address of the electronic device based on the read human address, and transmitting information, indicating that the owner is online, using the acquired address. The human address may include at least one of an e-mail address, an account name, a family name or a Session Initiation Protocol-Uniform Resource Locator (SIP-URL). The address of the electronic device may include at least one of a Media Access Control (MAC) address, an Internet Protocol (IP) address, a port number, a Domain Name System (DNS) name or a Uniform Resource Locator (URL).

[0751] In accordance with a further aspect of the present disclosure, an electronic device includes an interface configured to detect a user action, and a controller configured to control displaying a first channel map on a screen on which content is being displayed, detect a first user action for requesting channel map switch, and switch the displayed first channel map to a second channel map in response to the detected first user action, and one of the first channel map and the second channel map is a human channel map including at least one human channel.

[0752] In accordance with another aspect of the present disclosure, a method for providing a channel scan interface includes displaying a plurality of menu items to select service types, detecting a user action for selecting one of the plurality of displayed menu items, scanning information to construct a channel of the service type indicated by the selected menu item in response to the detected user action, and displaying the result of scan. One of the service types may be a human channel. The service types may further include at least one of a broadcast channel or an App channel.

[0753] The scanning may include transmitting a signal to request information about a friend to a server and receiving the information about the friend from the server. The information about the friend may include a single SNS account, or may include one or more SNS accounts.

[0754] The displaying the result of scan may include displaying the single SNS account, or displaying at least one of the one or more SNS accounts.

[0755] The method for providing the channel scan interface may further include assigning a first channel number to the single SNS account or to one of the one or more SNS accounts.

[0756] The method for providing the channel scan interface may further include assigning the first channel number to at least one SNS account among other SNS accounts of a friend associated with the SNS account to which the first channel number has been assigned.

[0757] The first channel number may be equal to a channel number assigned to another SNS account of the friend associated with the single SNS account. The first channel number may be a channel number assigned to a broadcast channel or an App channel.

[0758] In accordance with another aspect of the present disclosure, an electronic device includes a controller configured to control display of a plurality of menu items for selecting service types, detect a user action for selecting one of the plurality of displayed menu items, control scan of information to construct a channel of the service type indicated by the selected menu item in response to the detected user action, and a display to display the result of scan. One of the service types may be a human channel.

[0759] In accordance with another aspect of the present disclosure, a method for providing service information, includes receiving event information including information about at least one event, mapping one of the at least one events or one or more events to one of at least one channel numbers by use of a channel map including the at least one channel number and at least one Social Network Service (SNS) account assigned to the at least one channel number and an SNS account included in the received event information, and displaying one of the at least one channel numbers or one or more channel numbers and at least a part of information about the event mapped to one of the at least one channel numbers or the one or more channel numbers. The event may be uploaded to an SNS site including the SNS account. The event may include at least one of a schedule, a function, a memorial day or content. The event information may include an SNS account associated with the event, and further includes at least one of information about an SNS site to which the event has been uploaded, information about the type of the event, the title of the event, the date of the event or detailed information about the event. The channel map may be a human channel map. At least a part of the displayed information may be the title of the event. The method may further include displaying at least one of an icon indicating an SNS site to which the mapped event has been uploaded or an icon of the mapped event.

[0760] A broadcast channel may be further assigned to one of the at least one channel numbers or the one or more channel numbers. A plurality of SNS accounts may be assigned to one of the at least one channel numbers or the one or more channel numbers.

[0761] One of the at least one events or one or more events may be mapped to a channel number, to which an SNS account associated with the event is assigned.

[0762] One of the at least one channel numbers or the one or more channel numbers and at least a part of the displayed information may be displayed in a calendar form.

[0763] The calendar form may be configured such that the displayed one channel number or one or more channel numbers are listed in columns, dates are listed in rows, and at least a part of the displayed information is displayed on

a corresponding region on the basis of the channel number columns and the date rows. At least a part of information about a plurality of events may be separately displayed on the region. A reminder mark may be further displayed on the region.

[0764] The method for providing service information may further include detecting a first user action for selecting the region or a region on which the date is displayed, detecting a second user action for dragging the selected region, detecting a third user action for dropping the dragged region, and displaying a particular date after a certain time has elapsed in response to the detected third user action and at least a part of information about an event of the date.

[0765] The method for providing service information may further include detecting a user action for selecting a region located at a row, containing a region on which a user channel number is displayed, from among a region on which one of the at least one channel numbers or the one or more channel numbers are displayed, and displaying a graphical user interface to produce an event in response to the detected user action.

[0766] The method for providing service information may further include detecting a user action for selecting a region on which at least a part of information about the mapped event is displayed, and displaying detailed information about the event in response to the detected user action.

[0767] The method for providing service information may further include detecting a user action for selecting a region on which one of the at least one channel numbers or the one or more channel numbers are displayed, and displaying content of a human channel indicated by the channel number in response to the detected user action.

[0768] The method for providing service information may further include detecting a user action for selecting a region on which at least a part of information about the mapped event is displayed, and displaying a list of at least one piece of content associated with the event in response to the detected user action.

[0769] In accordance with a further aspect of the present disclosure, an electronic device includes a network interface configured to receive event information including information about at least one event, a storage unit configured to store at least one channel number and at least one SNS account assigned to the at least one channel number, and a controller configured to map one of the at least one events or one or more events to one of the at least one channel numbers by use of the stored SNS account and an SNS account included in the received event information and to construct a guide screen for displaying one of the at least one channel numbers or the one or more channel numbers and at least a part of information about the event mapped to one of the at least one channel numbers or the one or more channel numbers.

[0770] Any reference in this specification to "one embodiment," "an embodiment," "example embodiment," etc., means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. The appearances of such phrases in various places in the specification are not necessarily all referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with any embodiment, it is submitted that it is within the purview of one skilled in the art to effect such feature, structure, or characteristic in connection with other ones of the embodiments.

[0771] Although embodiments have been described with reference to a number of illustrative embodiments thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of the principles of this disclosure. More particularly, various variations and modifications are possible in the component parts and/or arrangements of the subject combination arrangement within the scope of the disclosure, the drawings and the appended claims. In addition to variations and modifications in the component parts and/or arrangements, alternative uses will also be apparent to those skilled in the art.

Claims

1. A method for displaying event information in a multi-functional display device, the method comprising:

receiving information related to at least one event;
mapping the at least one event to a channel number using a channel map; and
displaying at least a portion of the event information and the corresponding channel number on a display,
wherein the channel map includes a first channel number for displaying broadcast programs and a second
channel number for displaying content associated with a Social Network Service (SNS) account, and
wherein the event information is mapped to the second channel number and the SNS account associated with
the second channel number.

2. The method of claim 1, further comprising:

detecting a selection of the displayed event information associated with the SNS account;
tuning the multi-functional display device to the second channel; and displaying the event information on the
display.

3. The method of claim 1, wherein the event is received from an SNS server or a associated with the SNS account.
4. The method of claim 1, wherein the event includes at least one of a schedule, a function, a holiday, or multimedia content.
- 5 5. The method of claim 1, wherein the event information includes account information for the SNS account associated with the event, and at least one of an SNS server address, an event type information, a title of the event, a date of the event, or a description about the event.
- 10 6. The method of claim 1, wherein the first channel number and the second channel number are the same channel number.
7. The method of claim 1, wherein a plurality of SNS accounts are assigned to the second channel number.
- 15 8. The method of claim 1, wherein the portion of the information related to the at least one event is a title of the event.
9. The method of claim 1, wherein the mapped event information and the corresponding channel number are displayed in a calendar.
- 20 10. The method of claim 1, wherein the mapped event information and the corresponding channel number are displayed in an electronic programming guide (EPG).
11. The method of claim 1, wherein the mapped event information and the corresponding channel number are displayed in a grid, and wherein the channel numbers are listed in a first column of the grid, dates are listed in a first row of the grid, and the event information is displayed in a region of the grid that corresponds to the channel number and date associated with the event.
- 25 12. The method of claim 11, further comprising:
30 detecting an input on the grid to select and drag the grid in a prescribed direction; and
displaying one or more columns corresponding to one or more additional dates based on the selection.
13. The method of claim 11, further comprising:
35 detecting a selection of a second region on the grid;
displaying a graphical user interface (GUI) to create an event based on the selection;
associating the new event to a channel number and date; and
transmitting information associated with the new event to an SNS server associated with the new event.
- 40 14. The method according to claim 11, further comprising:
detecting a selection of the displayed event information on the grid; and
displaying additional information related to the selected event in response to the detected selection.
- 45 15. A multi-functional display device comprising:
a display for displaying broadcast programs or data;
a network interface configured to receive event information associated with a social network service (SNS) account for an individual or entity;
50 a storage device configured to store at least one channel number and at least one SNS account information assigned to the at least one channel number; and
a controller configured to map the event information to one of the at least one channel numbers and to construct an electronic programming guide (EPG) that includes the mapped event information and the corresponding channel number for display on the display.
- 55

FIG. 1

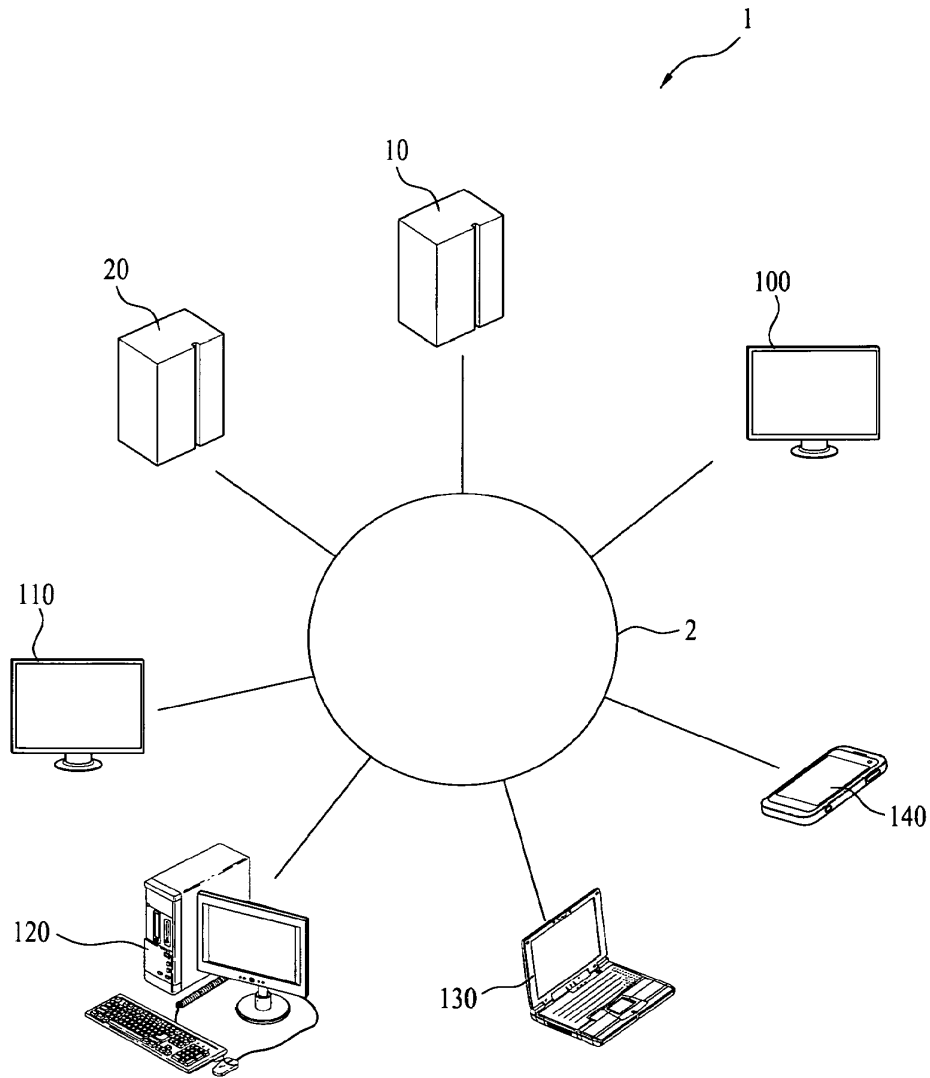


FIG. 2

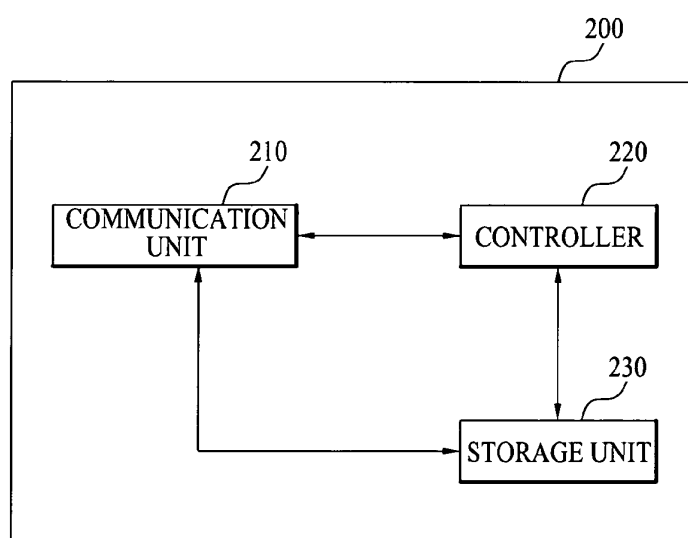


FIG. 3

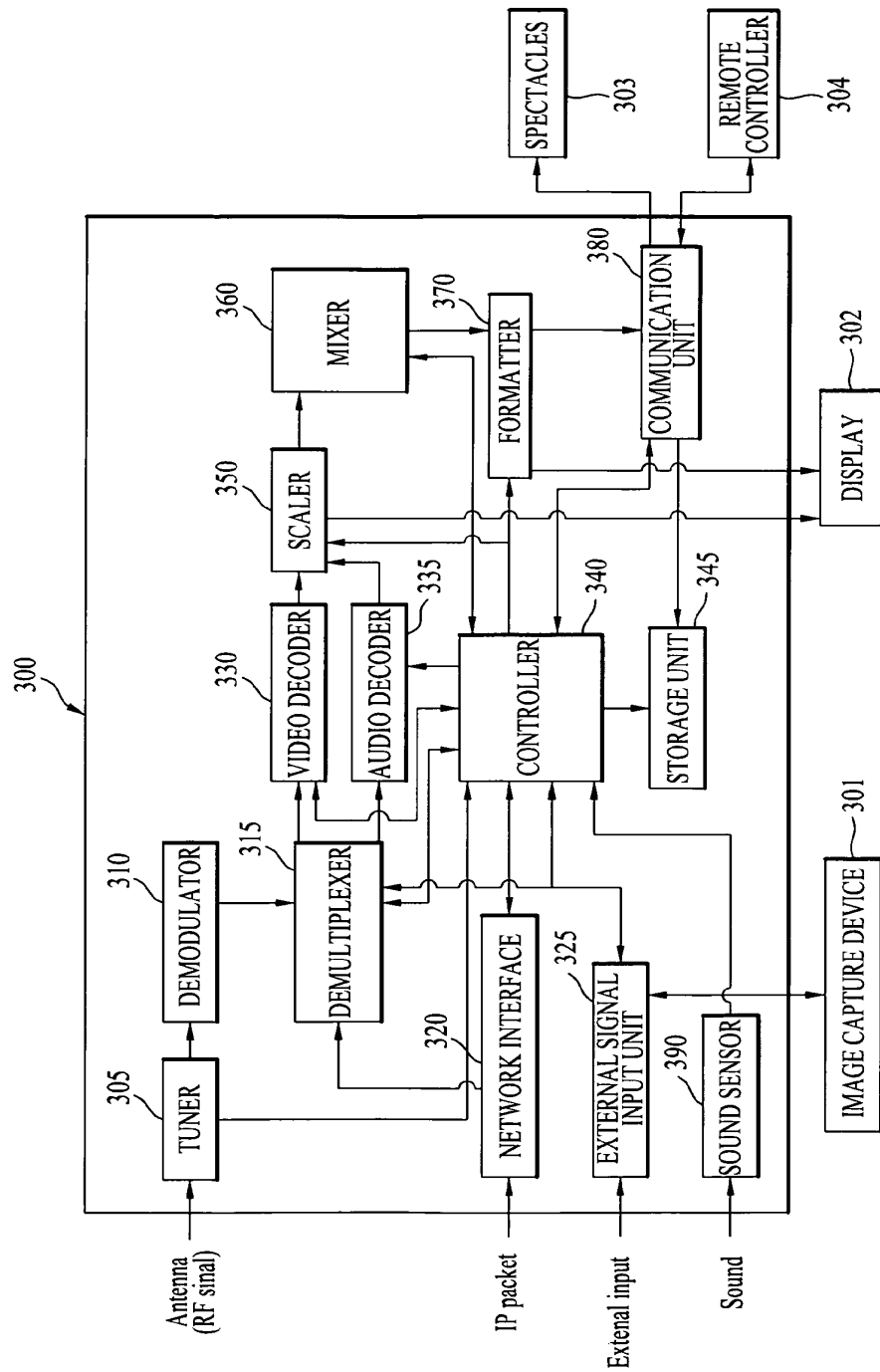


FIG. 4

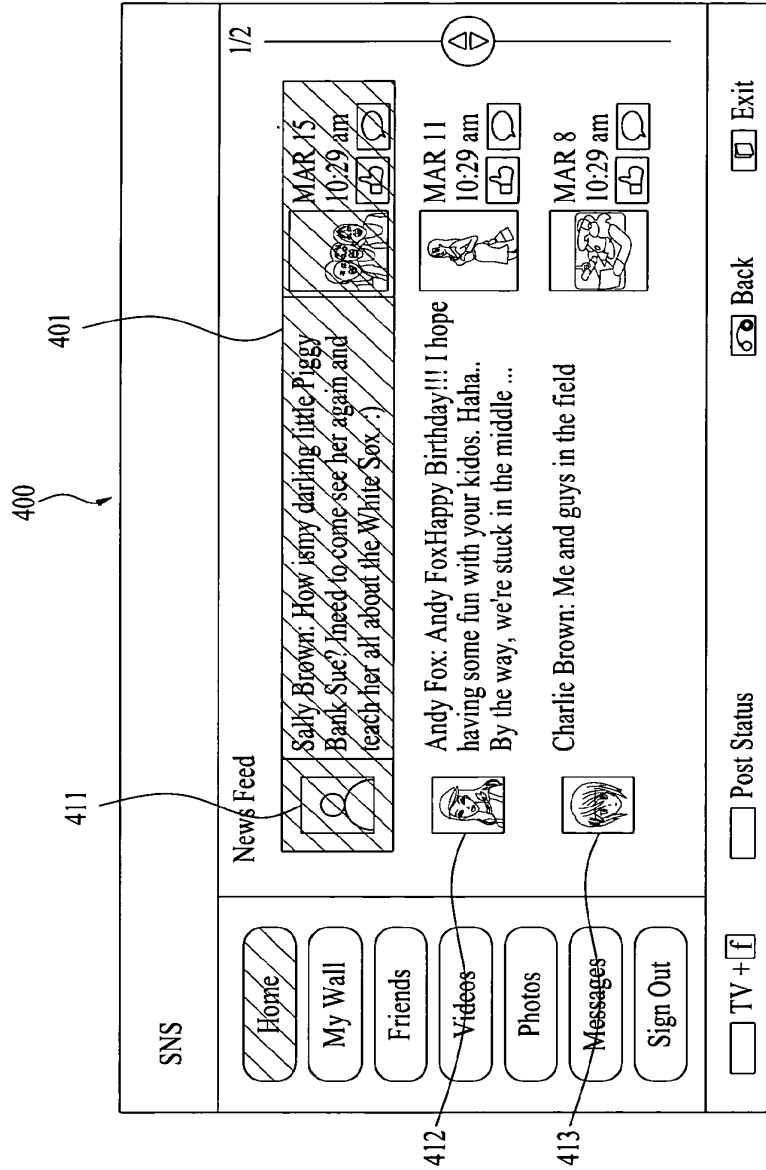


FIG. 5

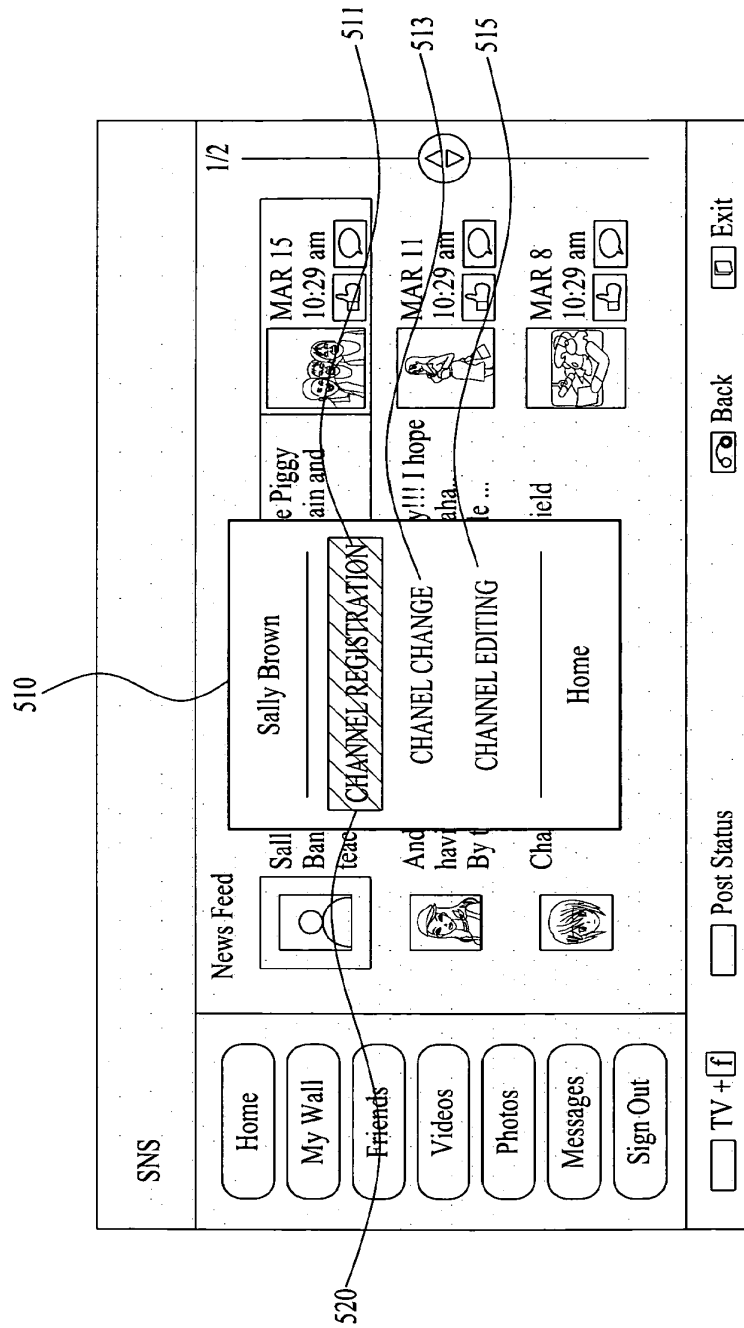


FIG. 6

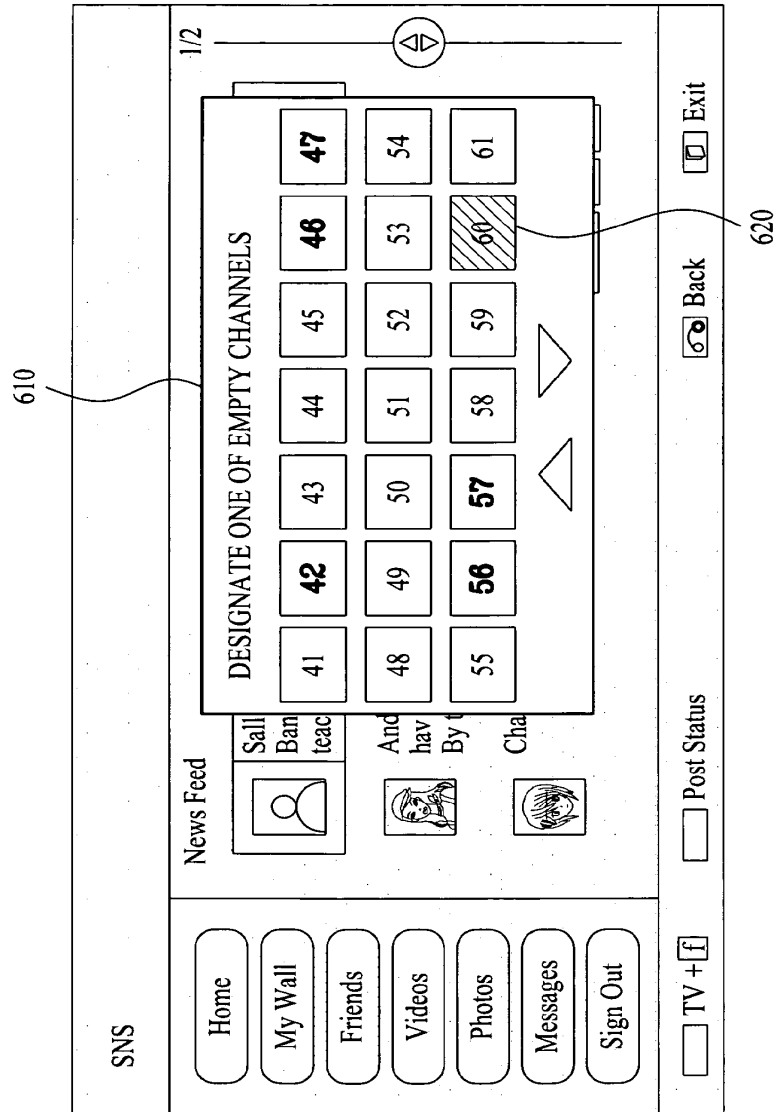


FIG. 7

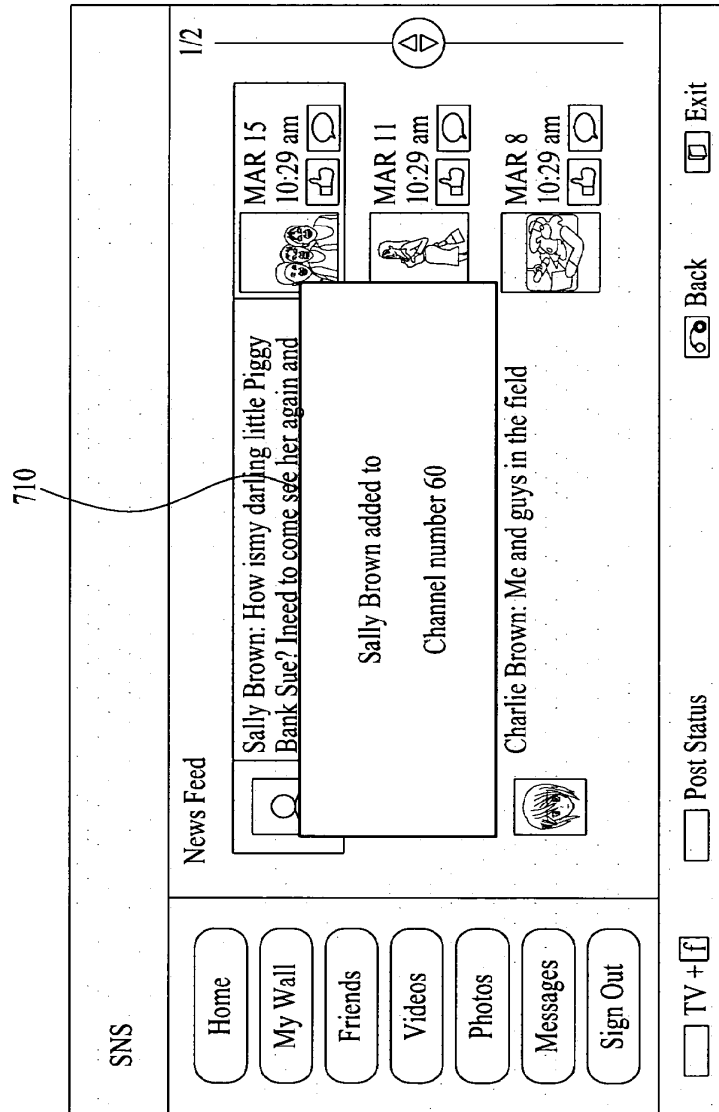


FIG. 8

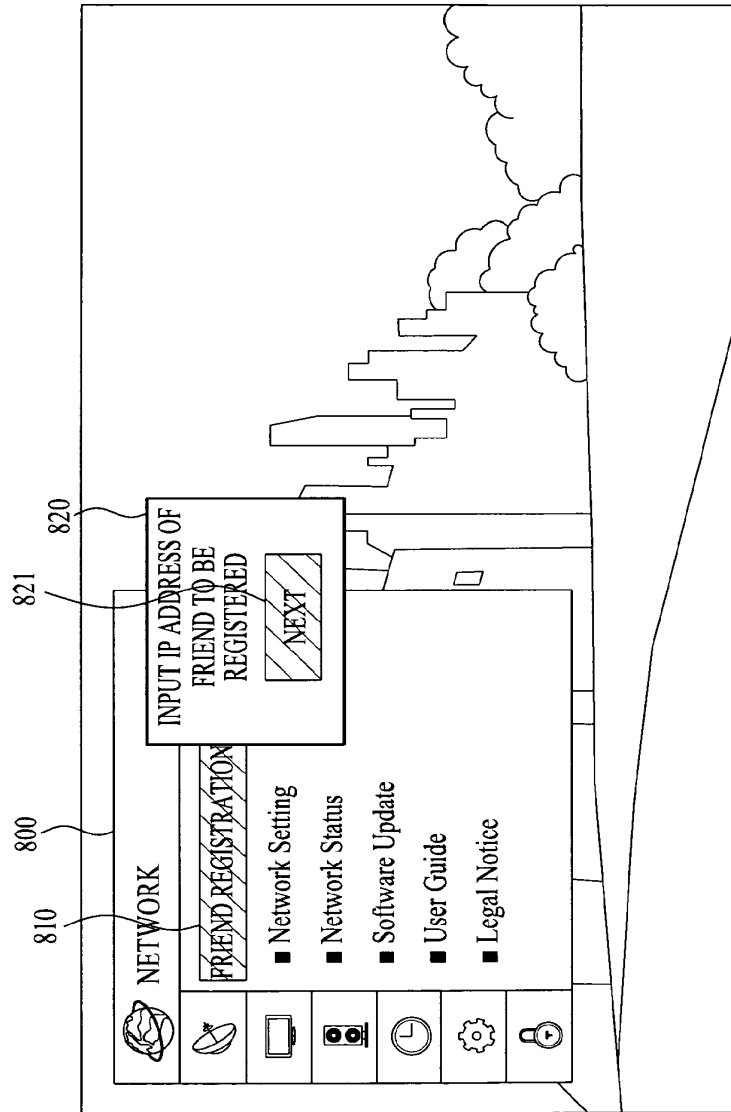


FIG. 9

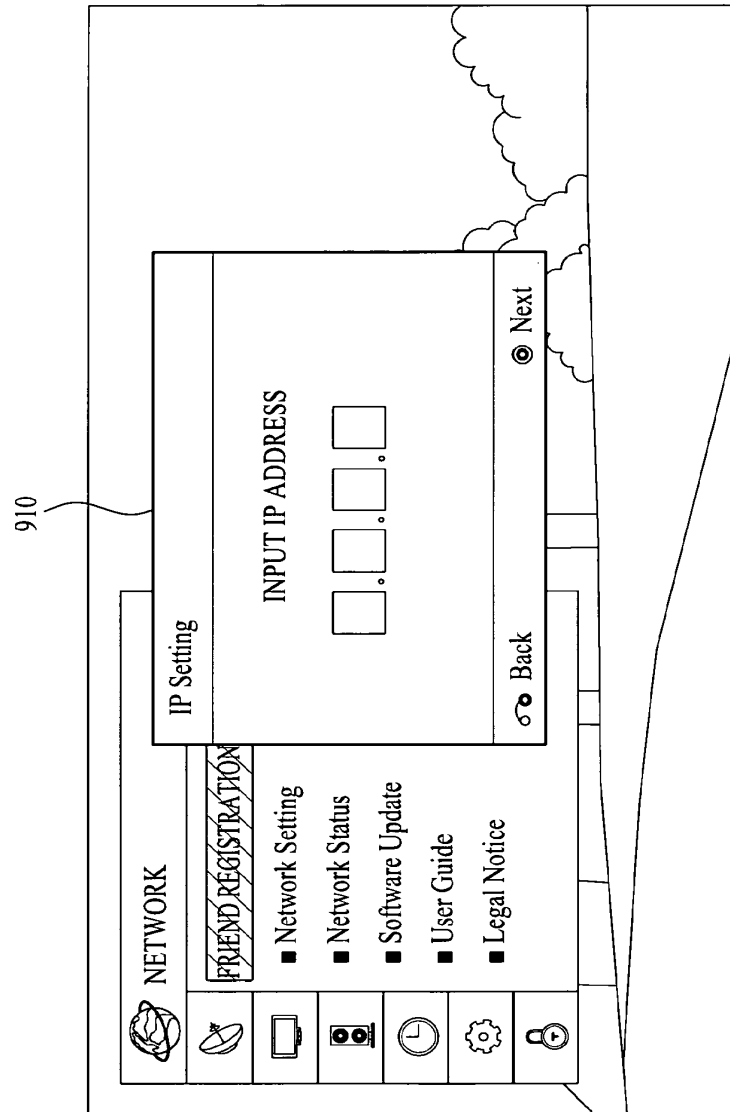


FIG. 10

1010

NETWORK

FRIEND REGISTRATION

■ Network Setting

■ Network Status

■ Software Update

■ User Guide

■ Legal Notice

INPUT ID OF FRIEND REGISTERED IN TV SERVER

0

INPUT 10-DIGIT AND
25-DIGIT HEXADECIMAL
(0-9,A-F) OR 5-DIGIT OR
13-DIGIT ASCII

1

2

3

4

5

6

7

8

9

0

#

@./

ghi

pqrs

*

abc

jkl

tuv

]

def

mno

wxyz

#

aA

←

↩

↪

OK

Cancel

Back

Next

FIG. 11

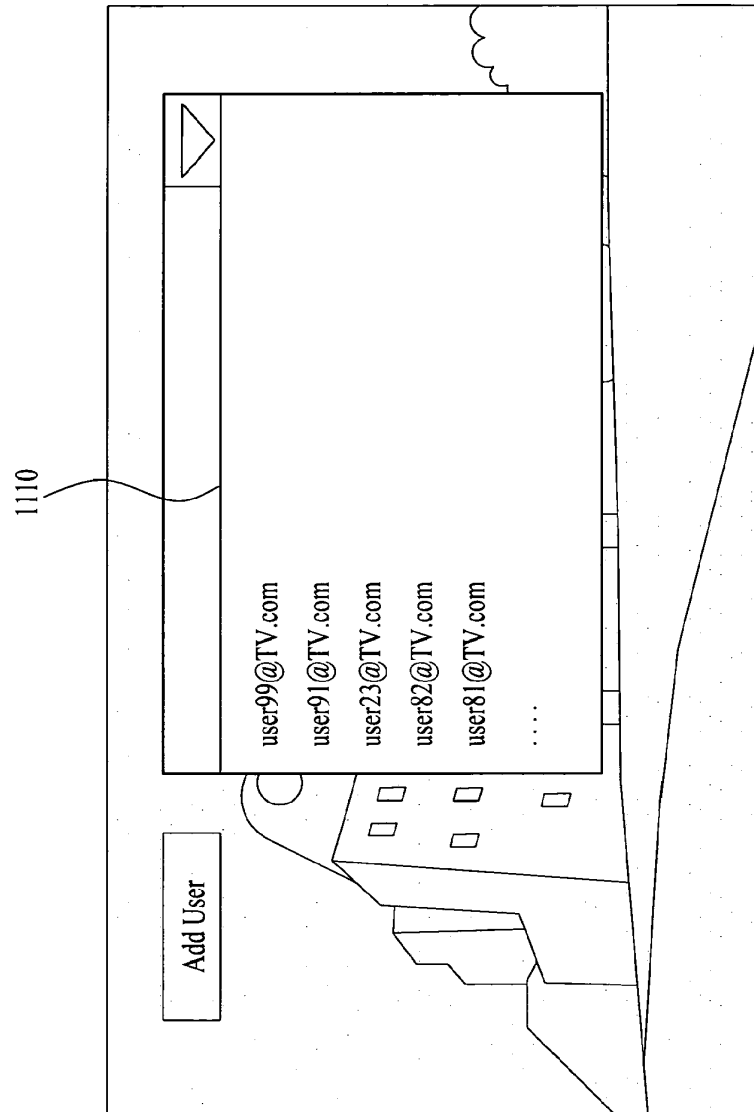


FIG. 12

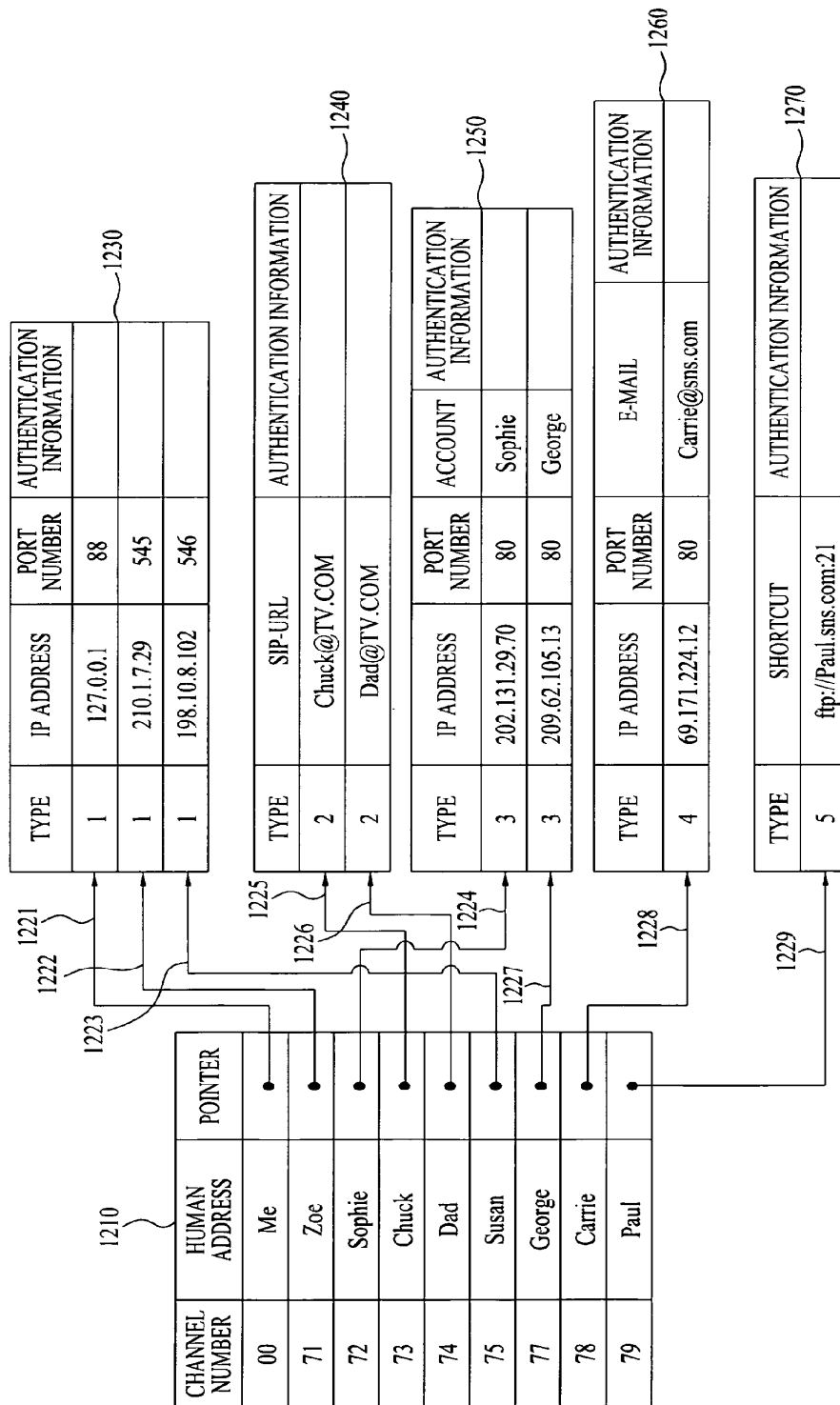


FIG. 13

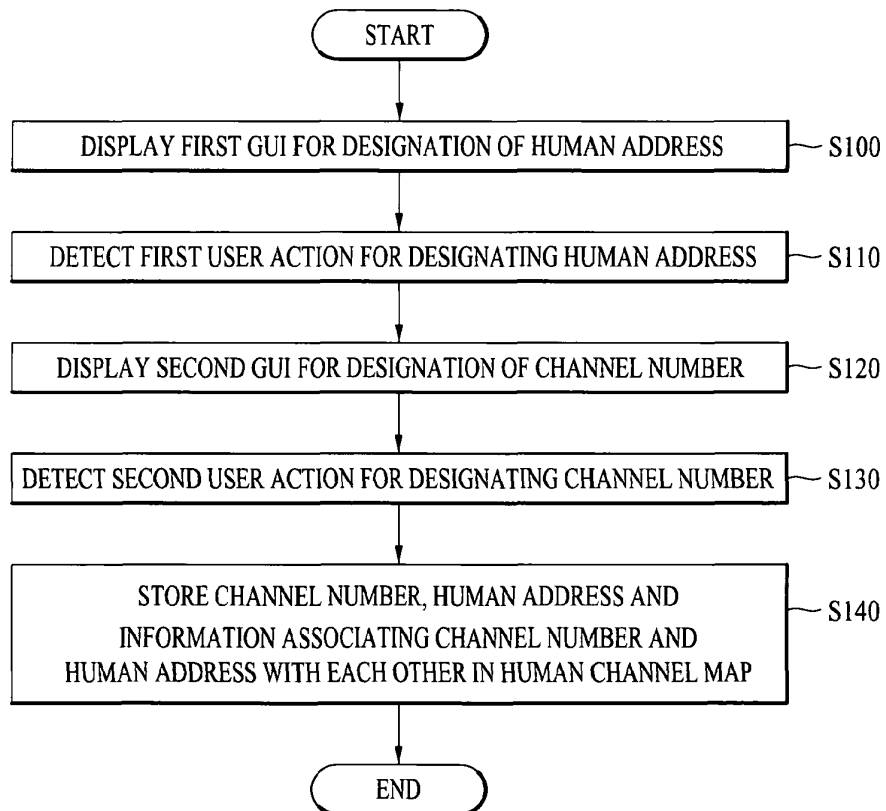


FIG. 14

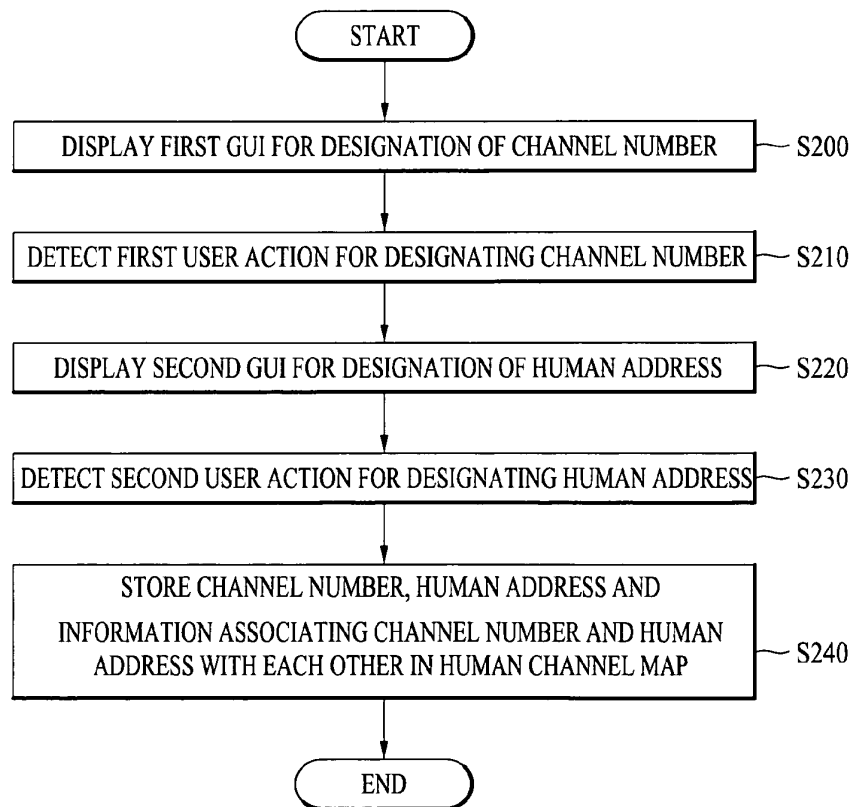


FIG. 15

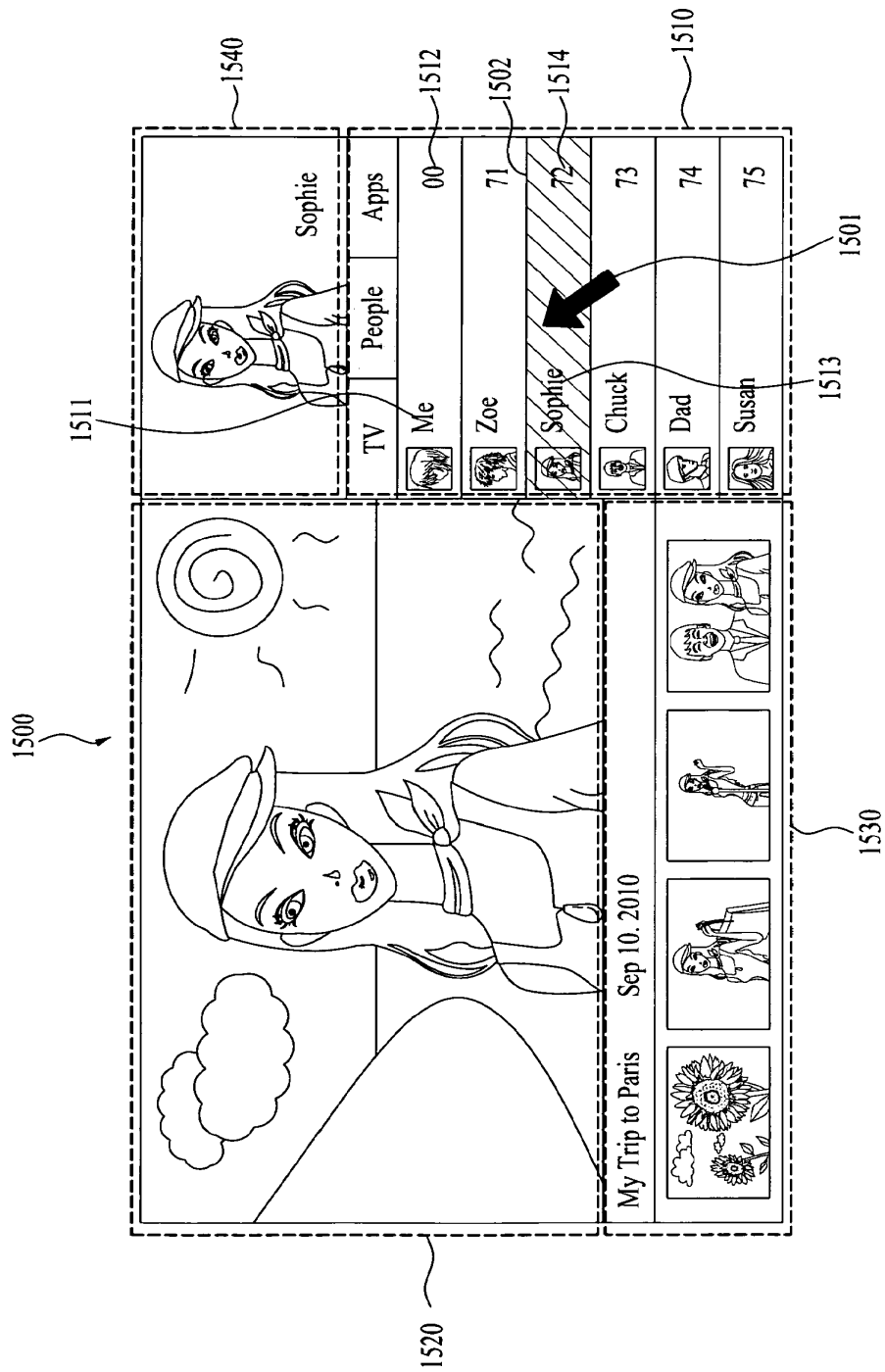


FIG. 16

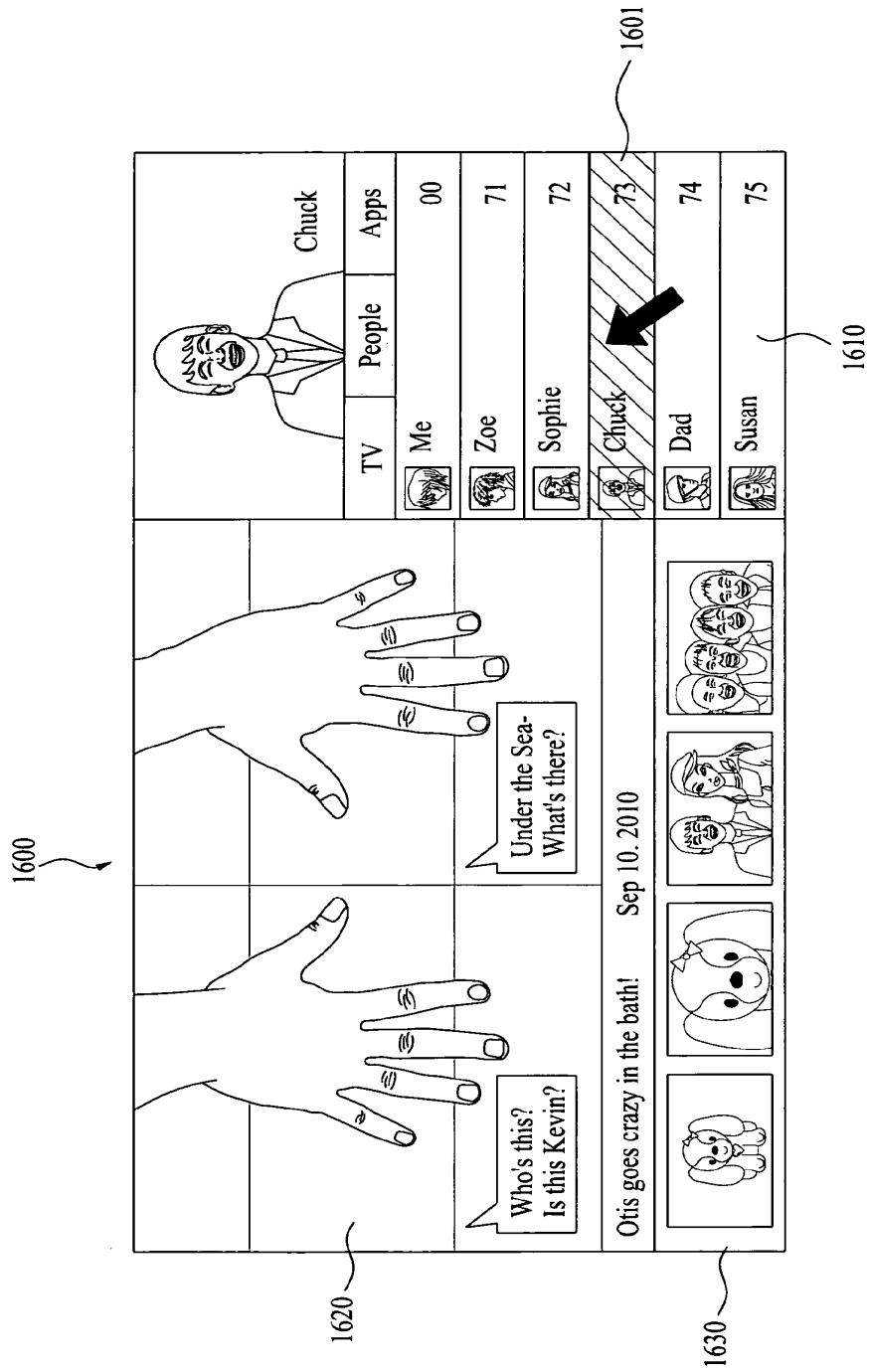


FIG. 17

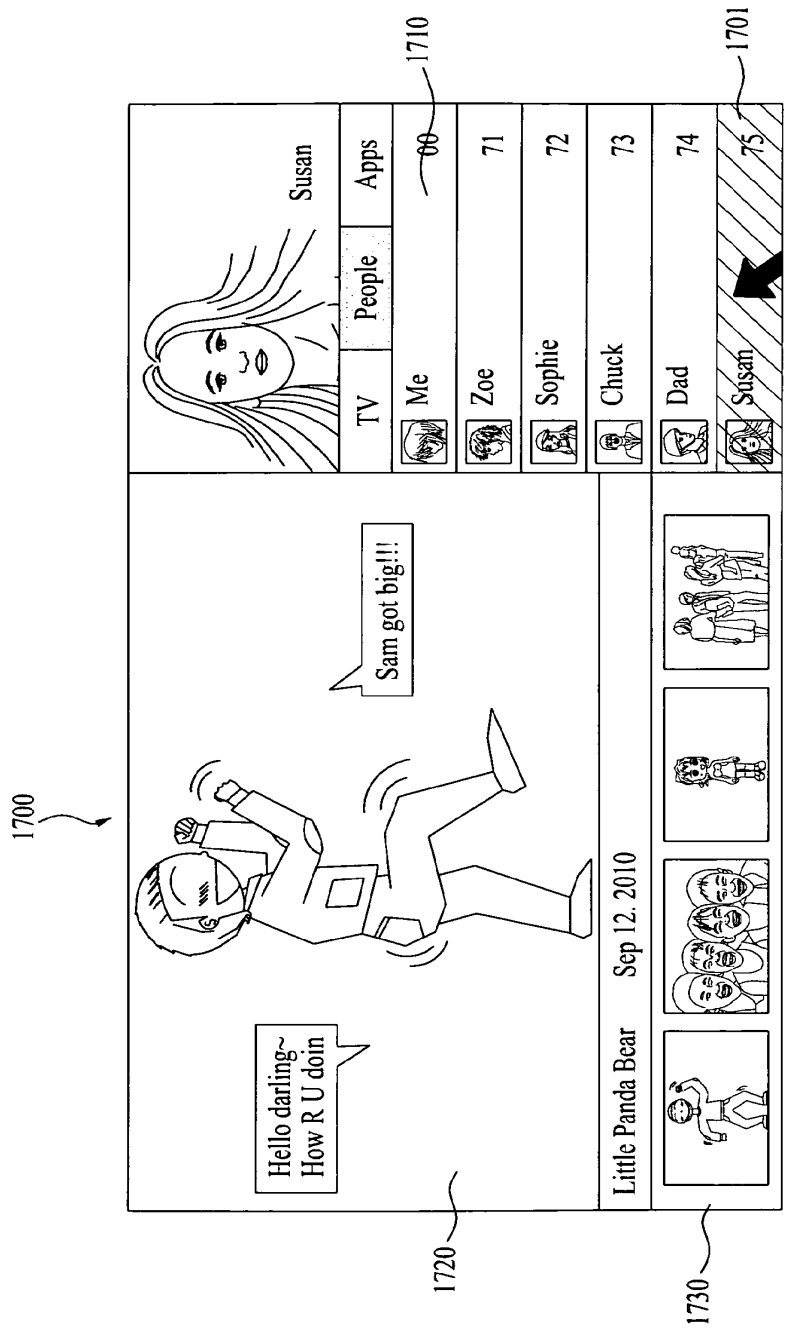


FIG. 18

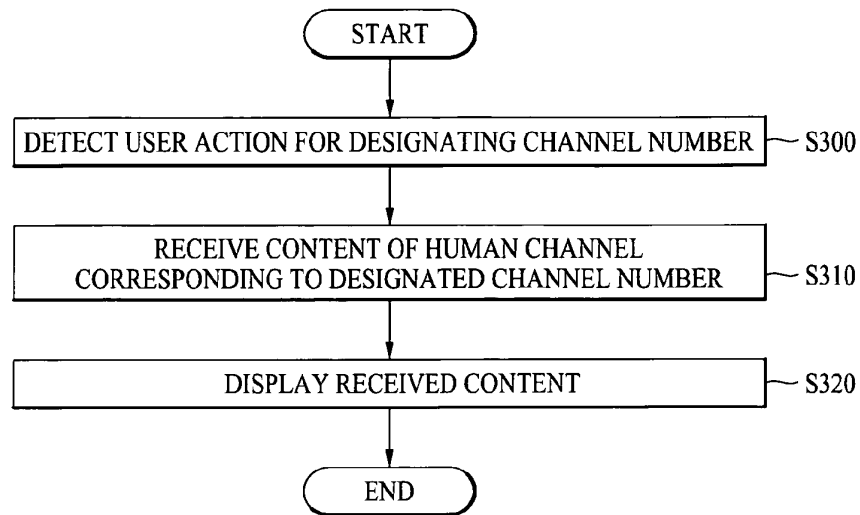


FIG. 19

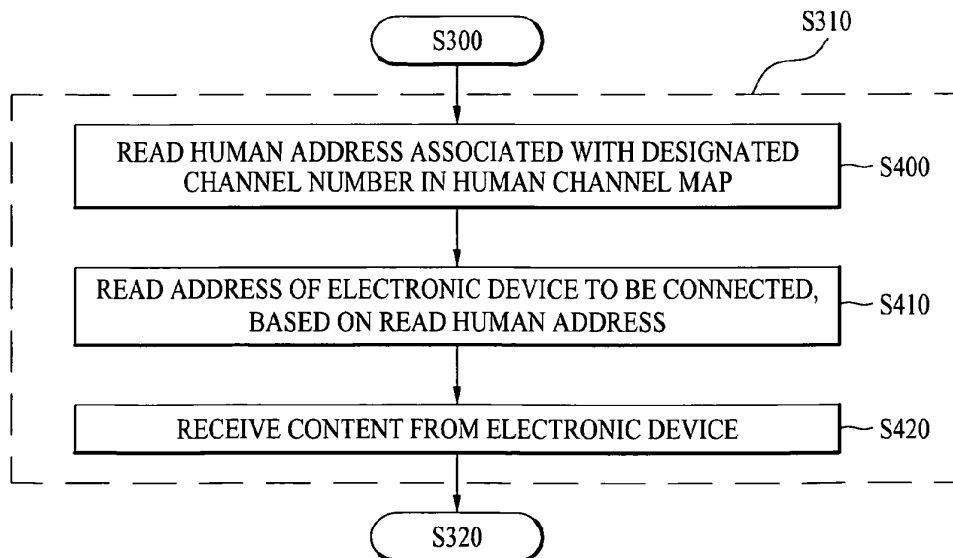


FIG. 20

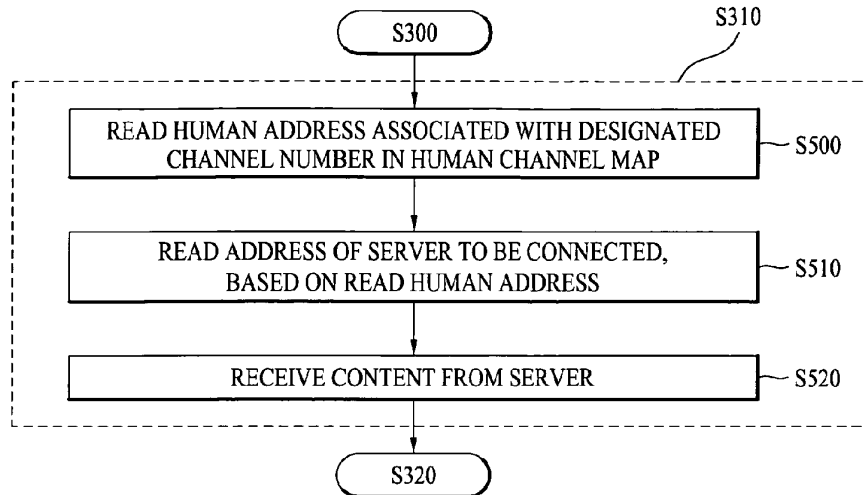


FIG. 21

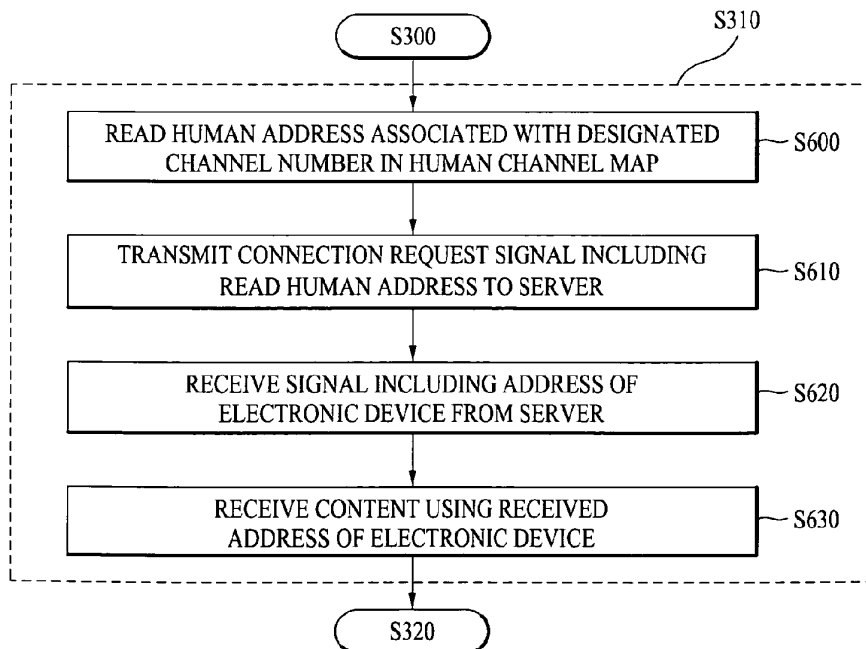


FIG. 22

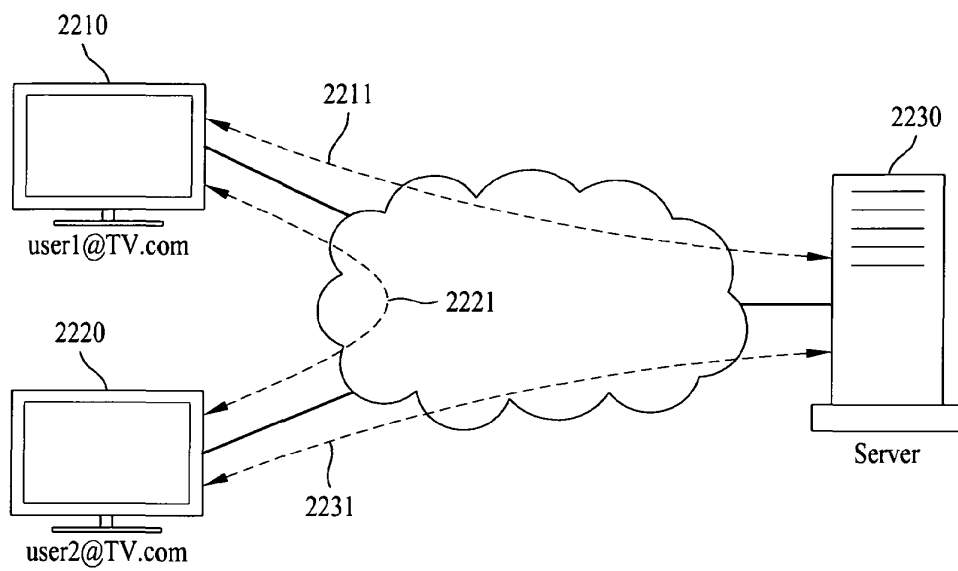


FIG. 23

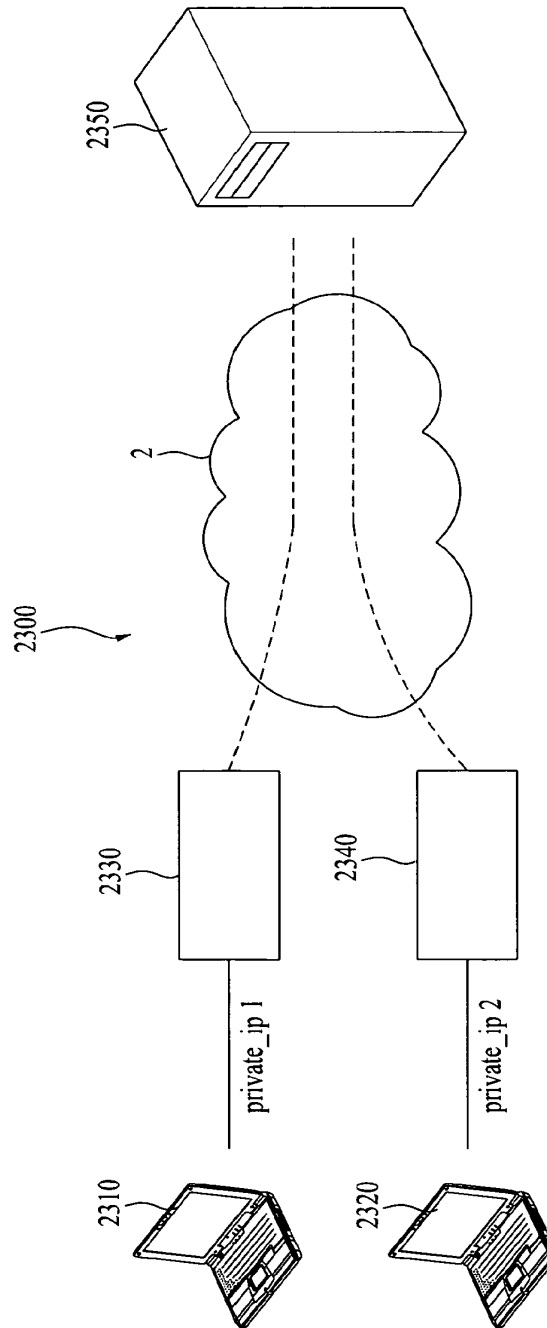


FIG. 24

2400

FIRST ELECTRONIC DEVICE	private_ip 1	public_ip 1
SECOND ELECTRONIC DEVICE	private_ip 2	public_ip 2

FIG. 25

2500

HUMAN ADDRESS 1	public_ip 1
HUMAN ADDRESS 2	public_ip 2

FIG. 26

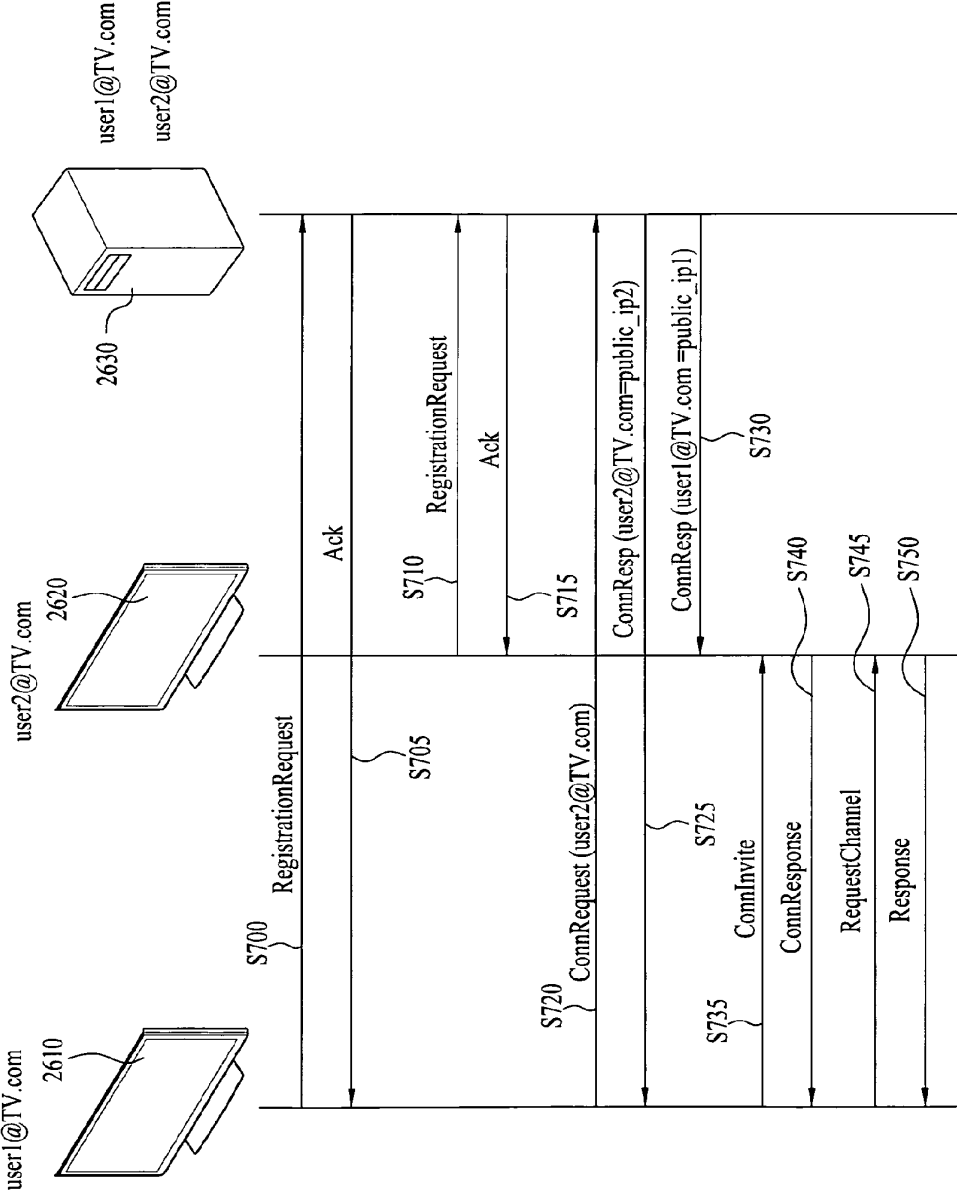


FIG. 27

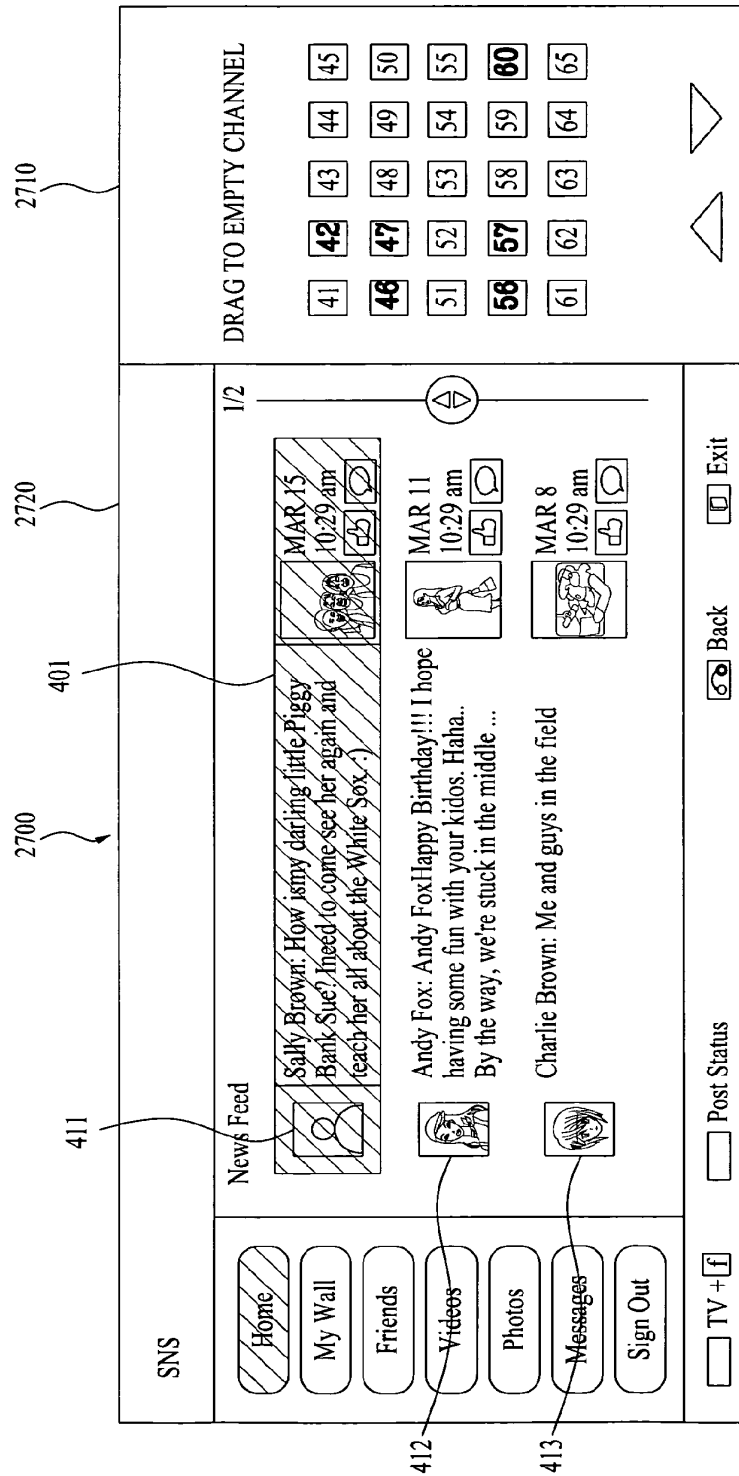


FIG. 28

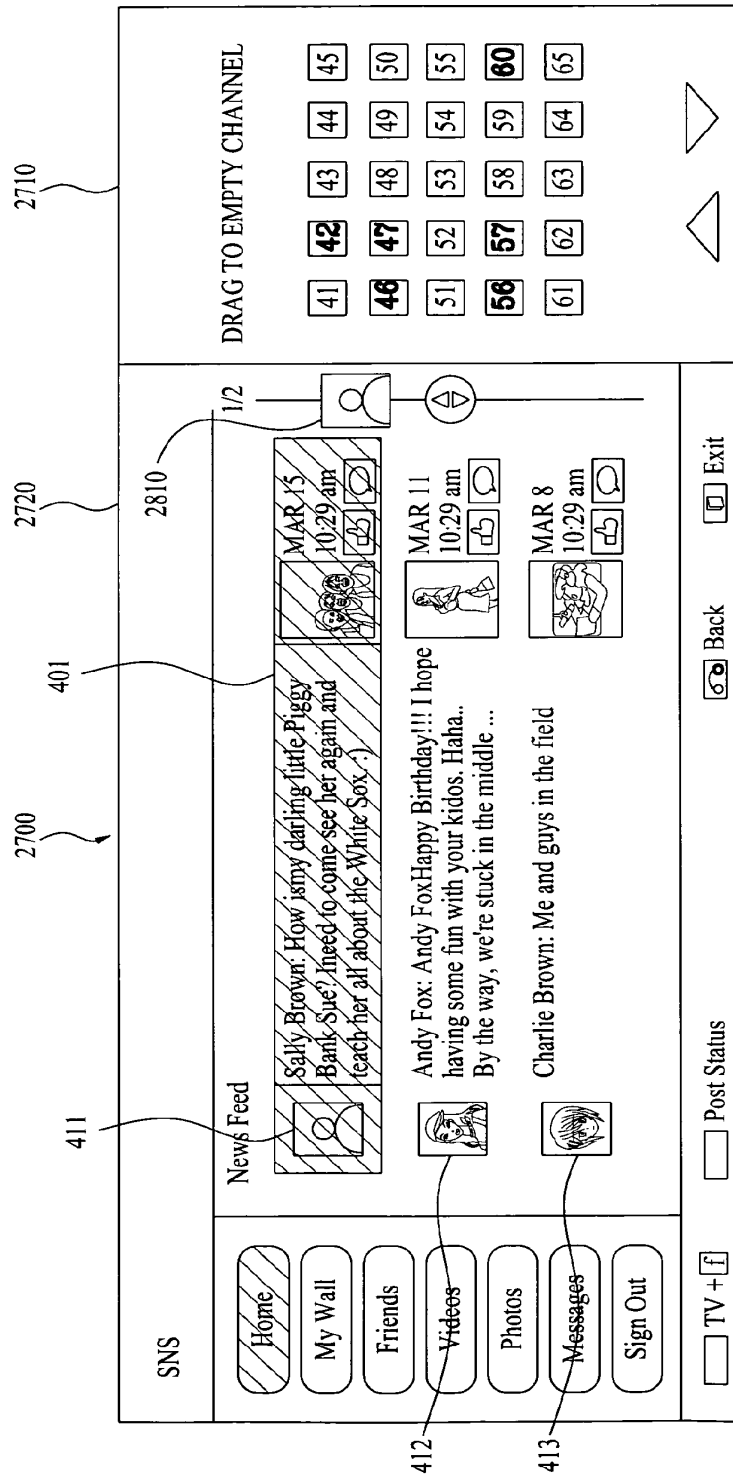


FIG. 29

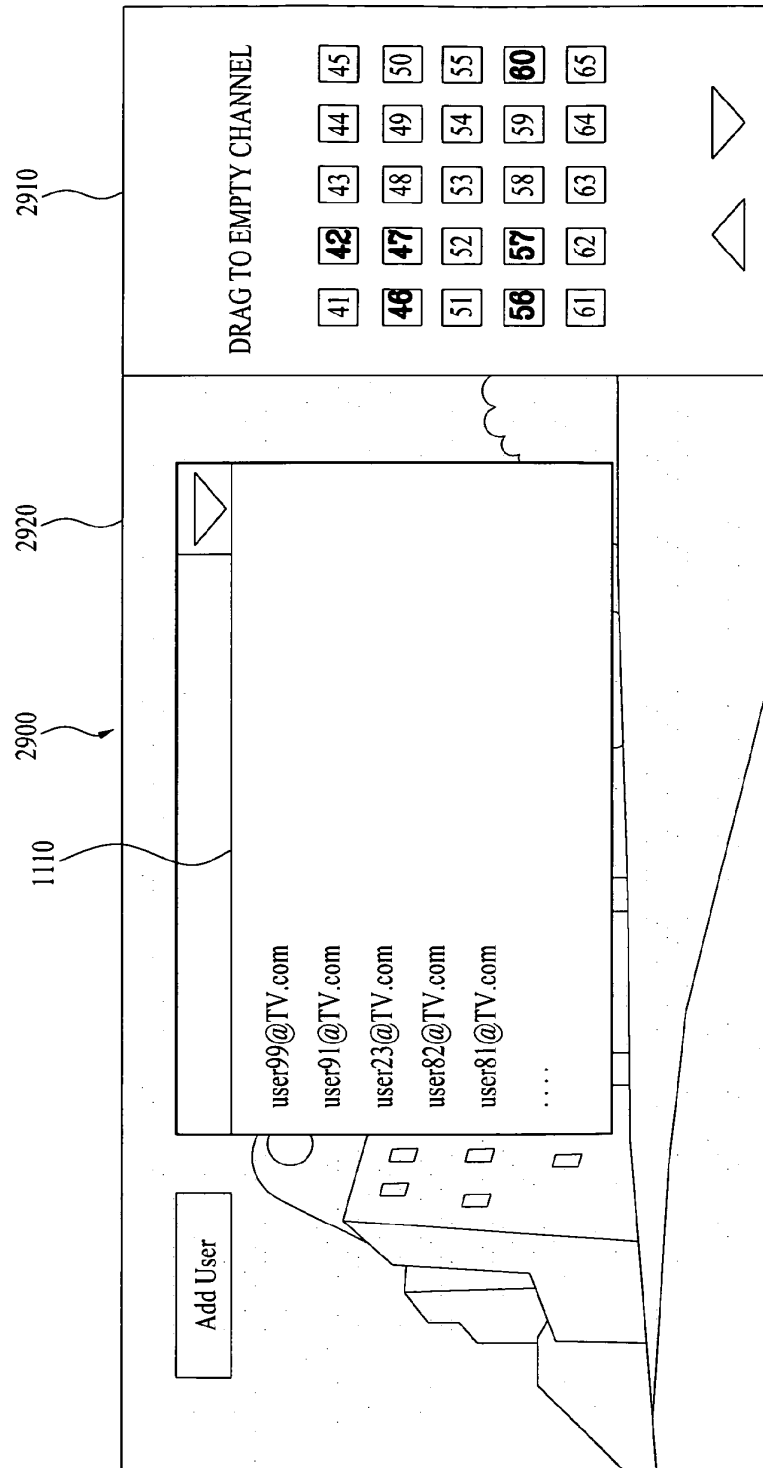


FIG. 30

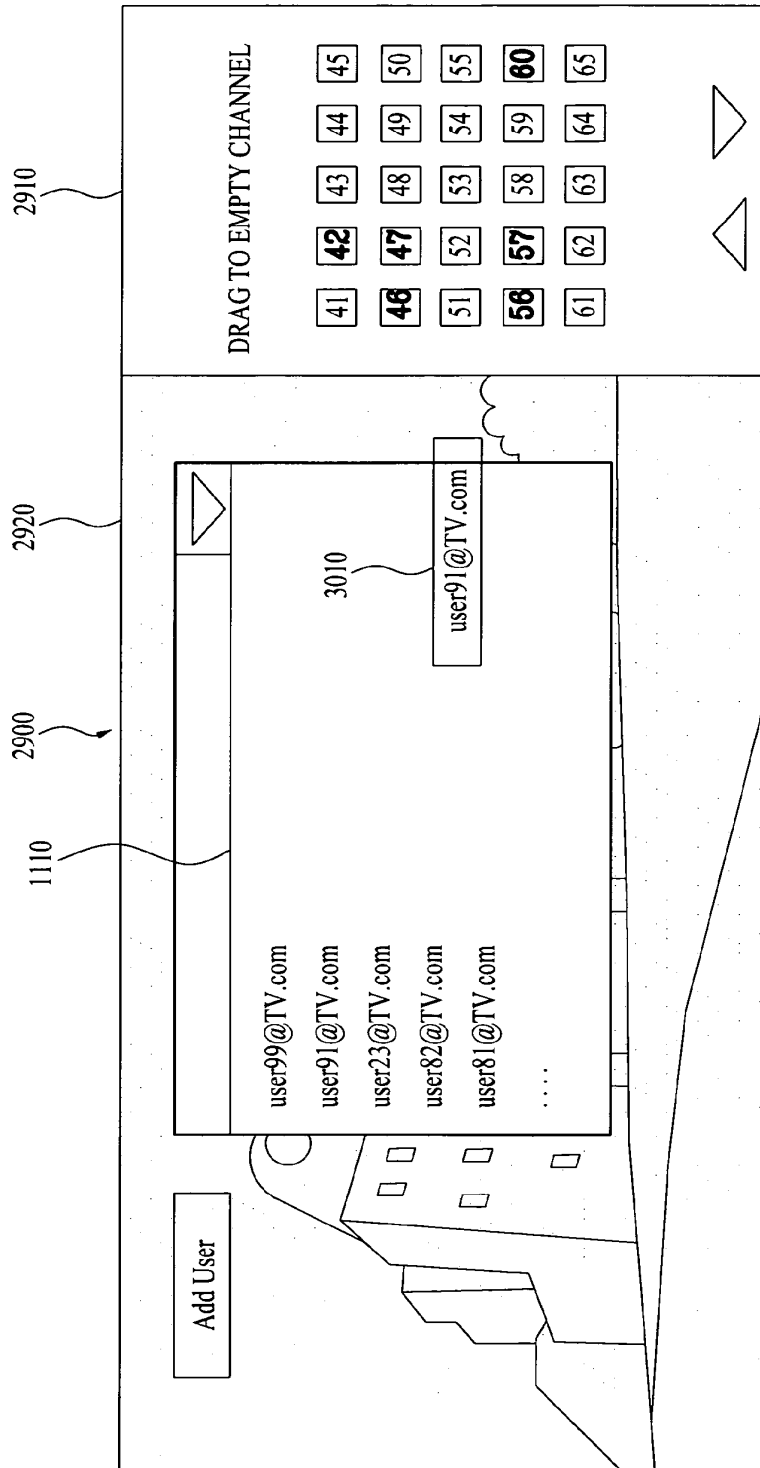


FIG. 31

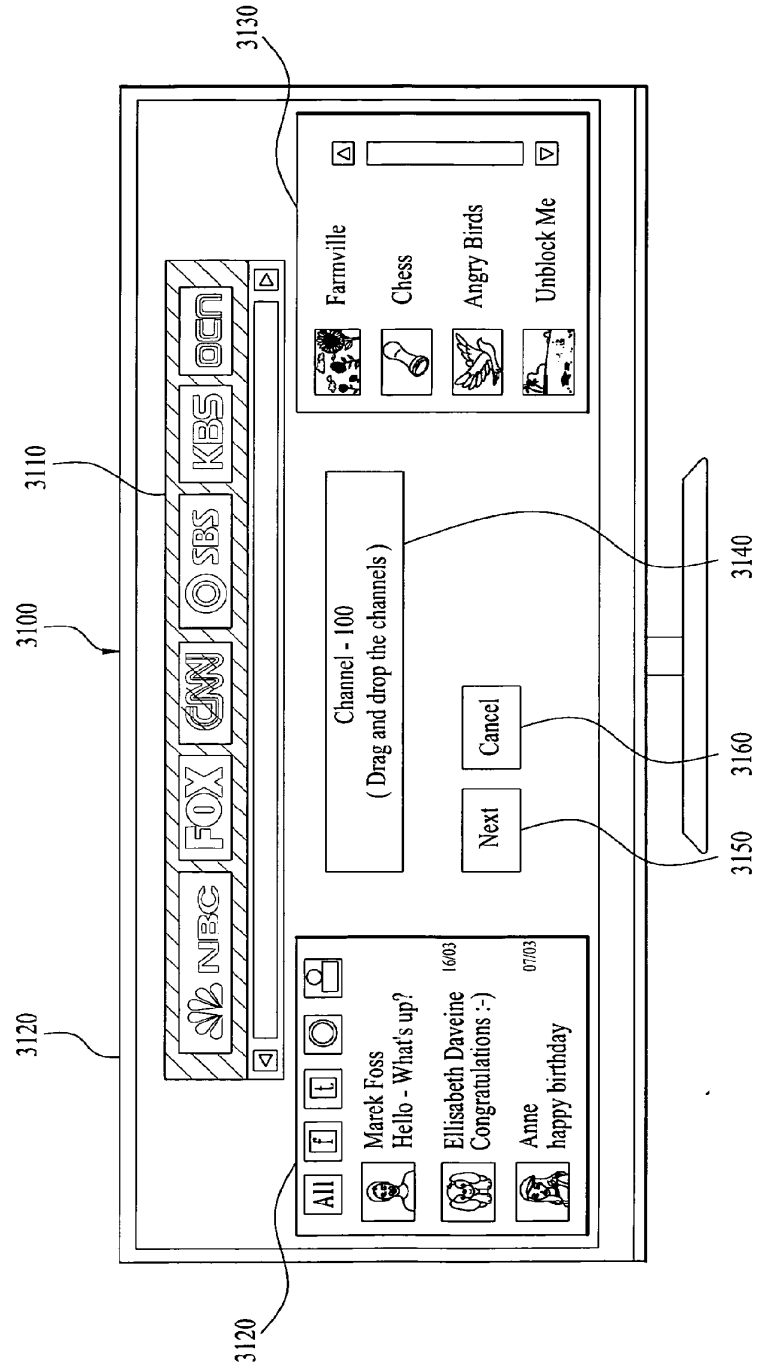


FIG. 32

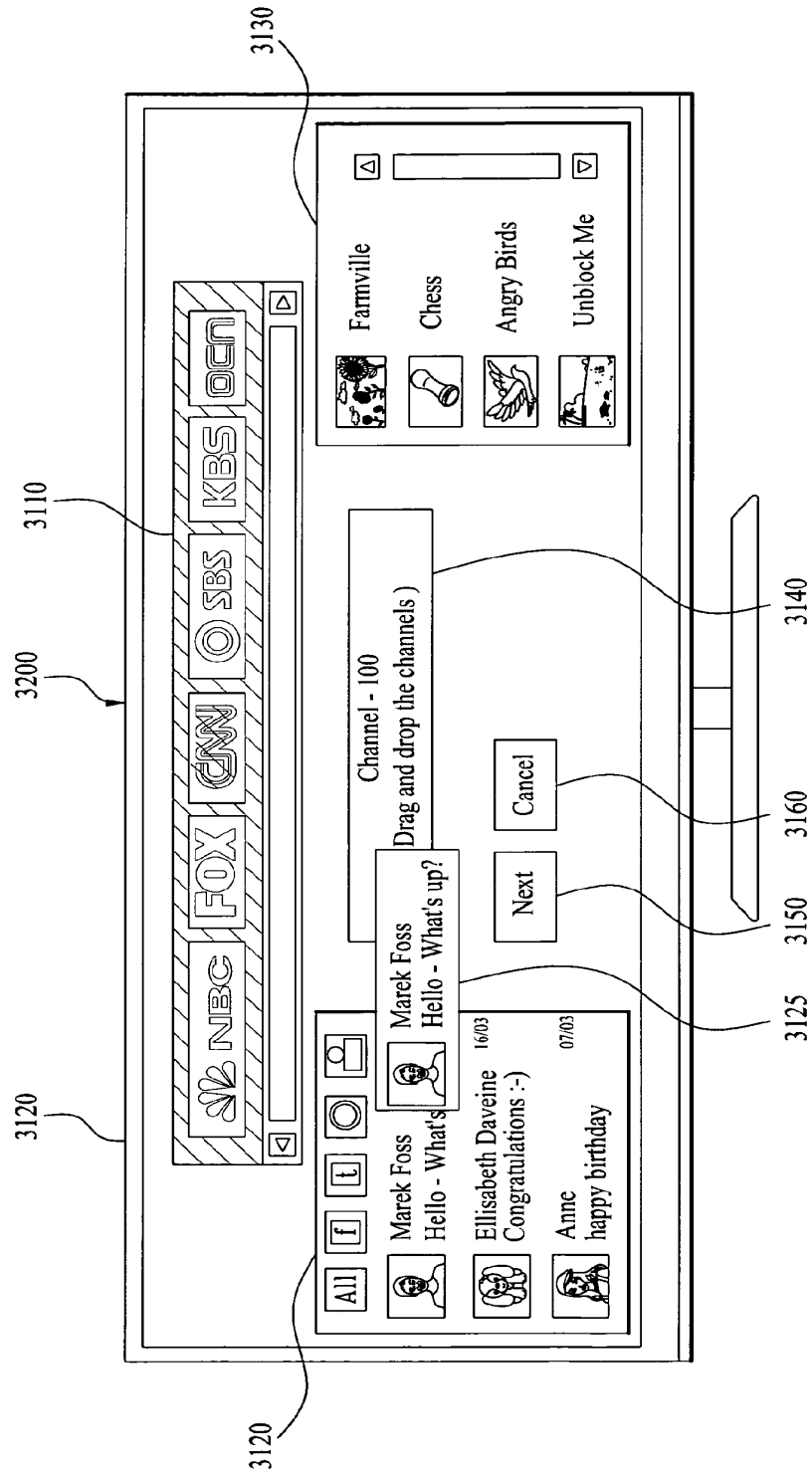


FIG. 33

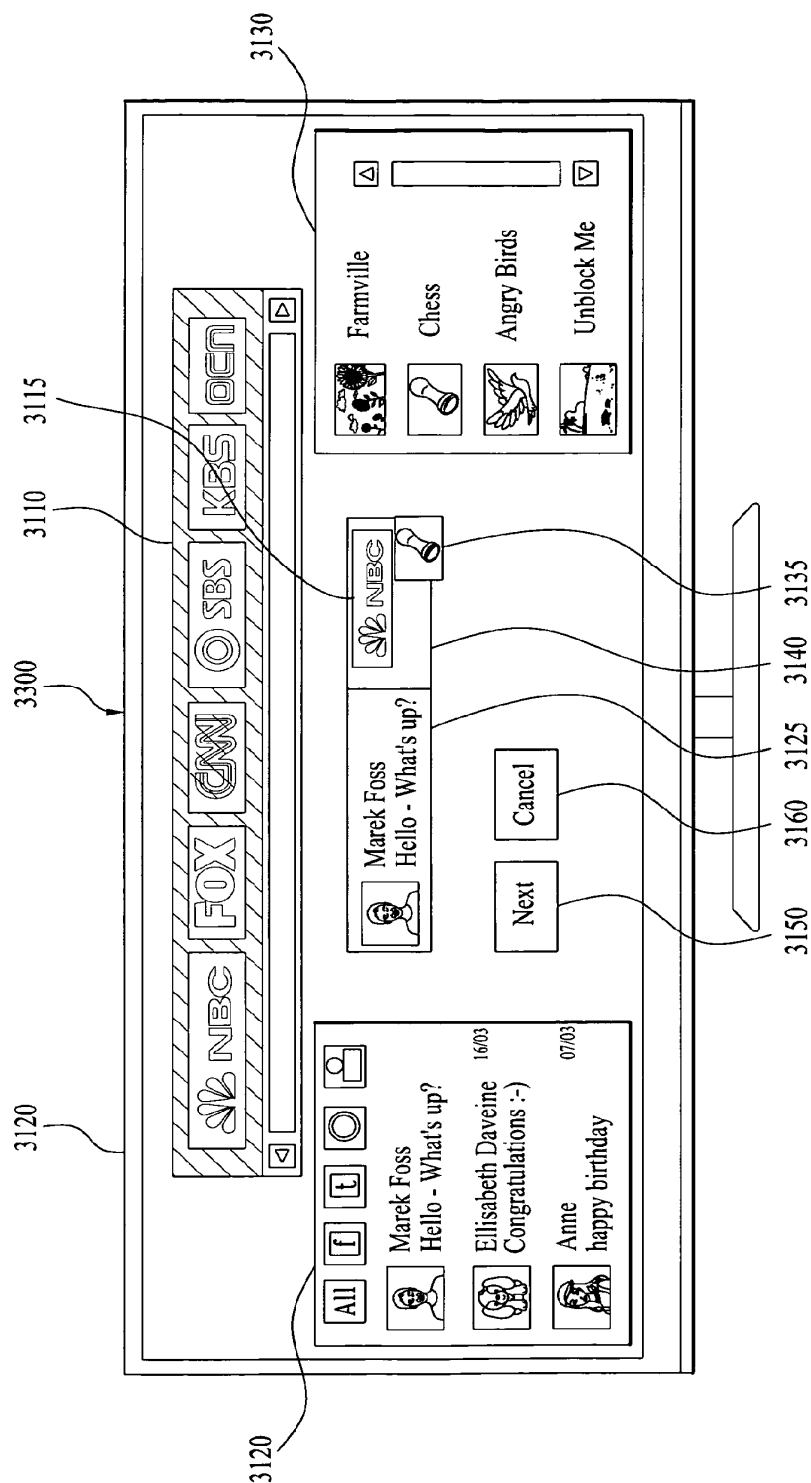


FIG. 34A

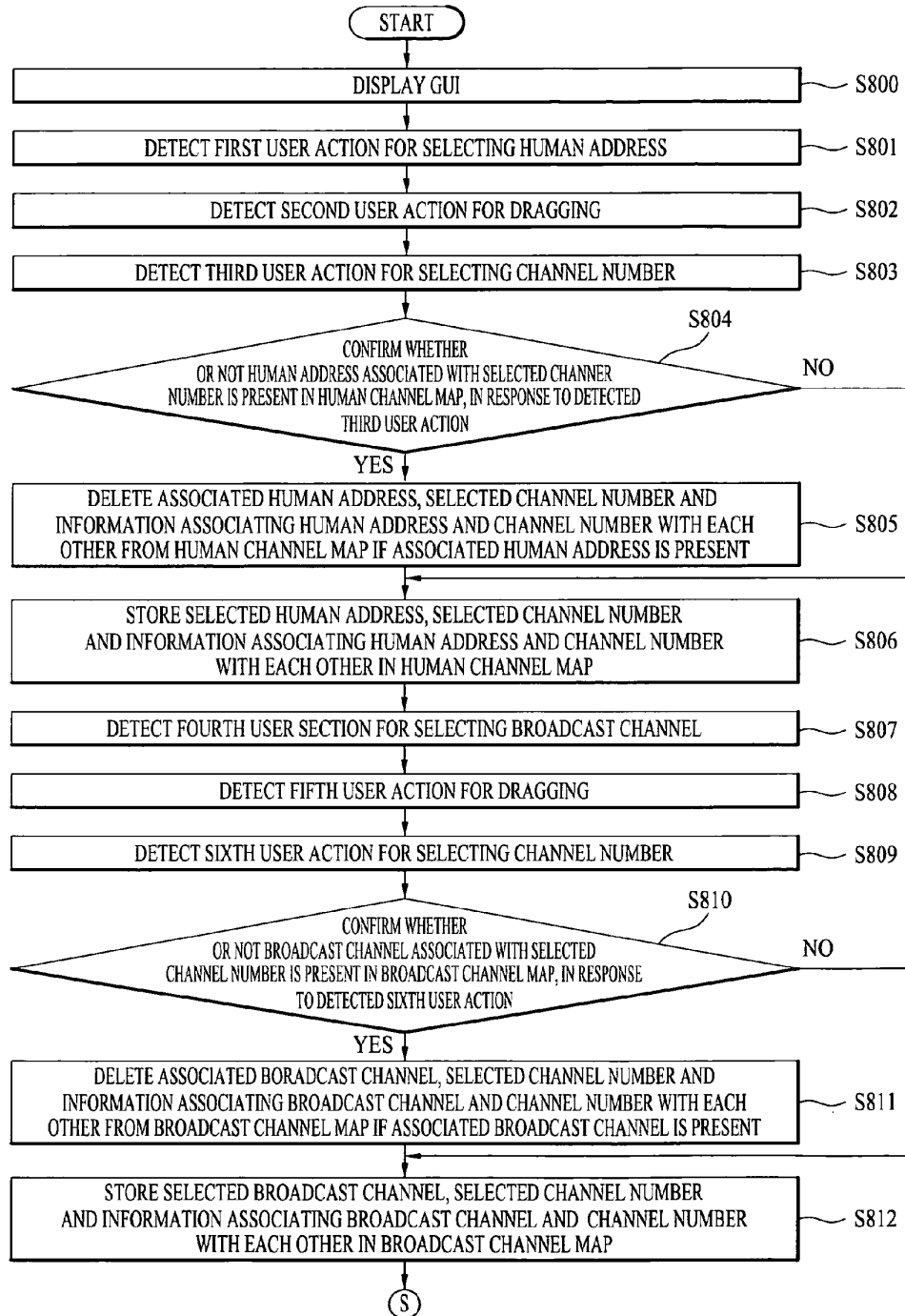


FIG. 34B

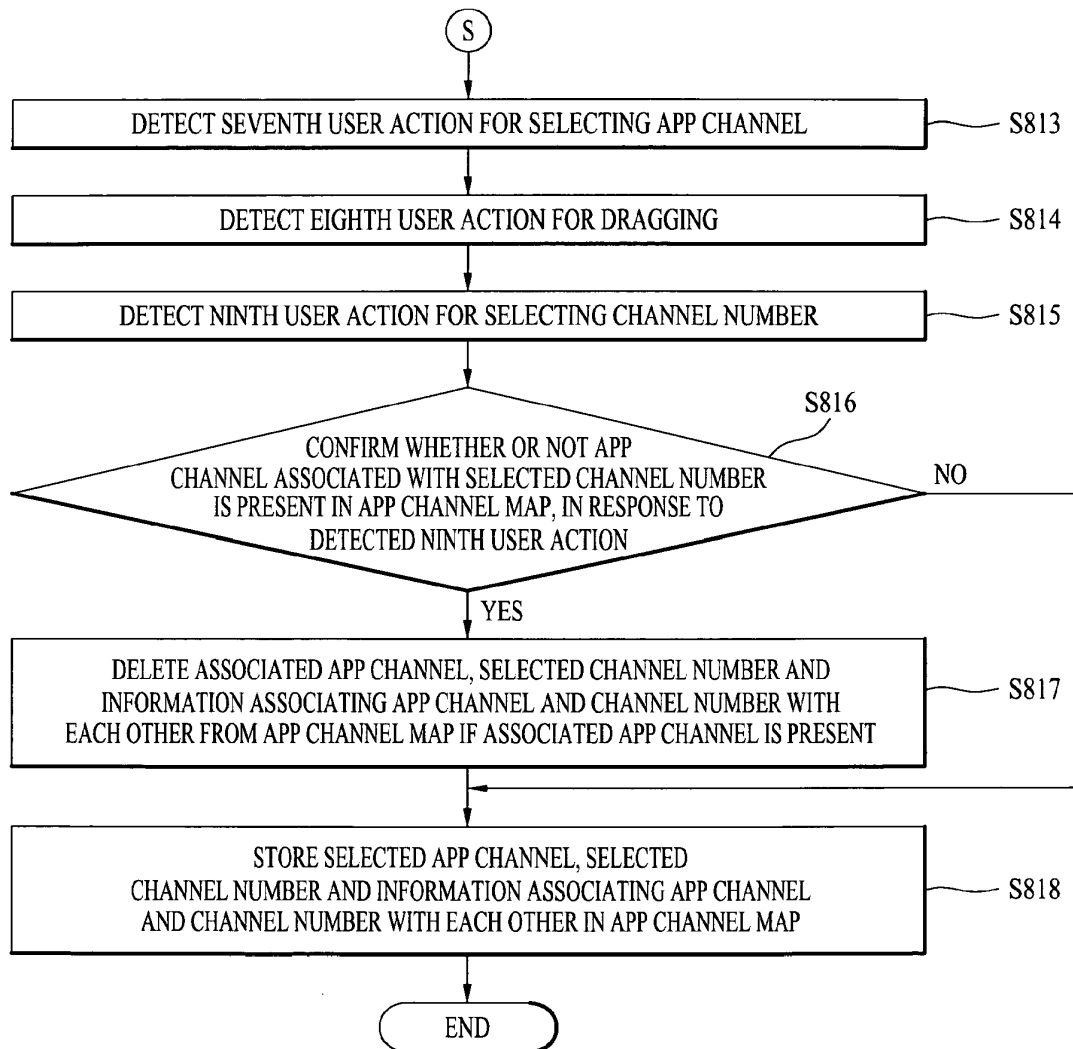


FIG. 35

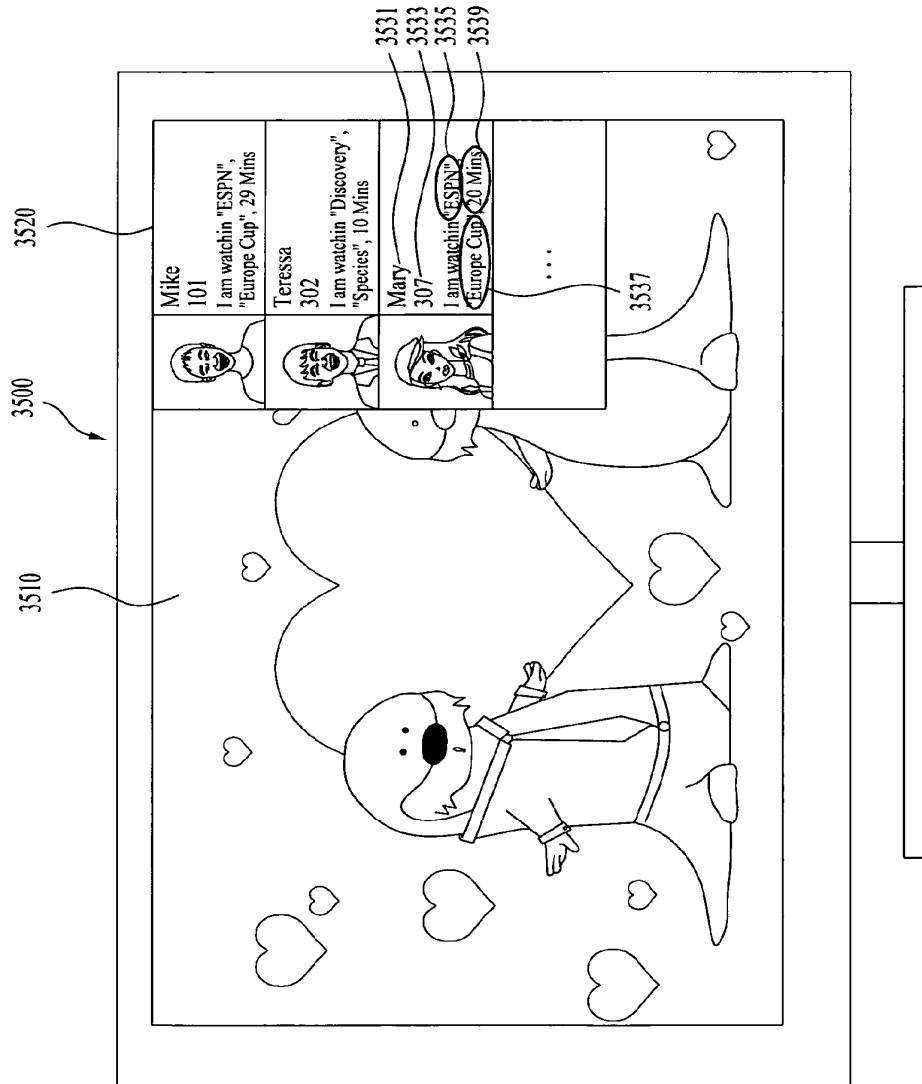


FIG. 36

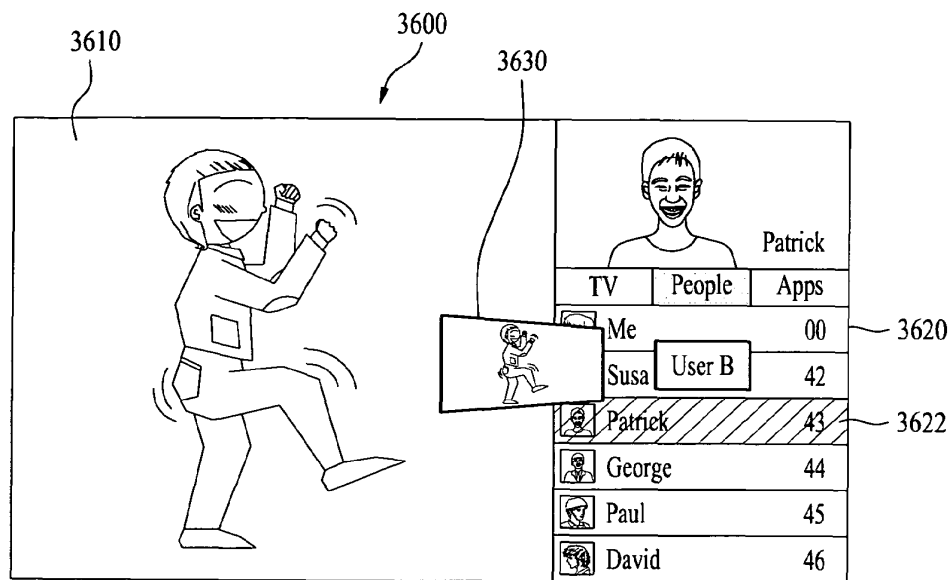


FIG. 37

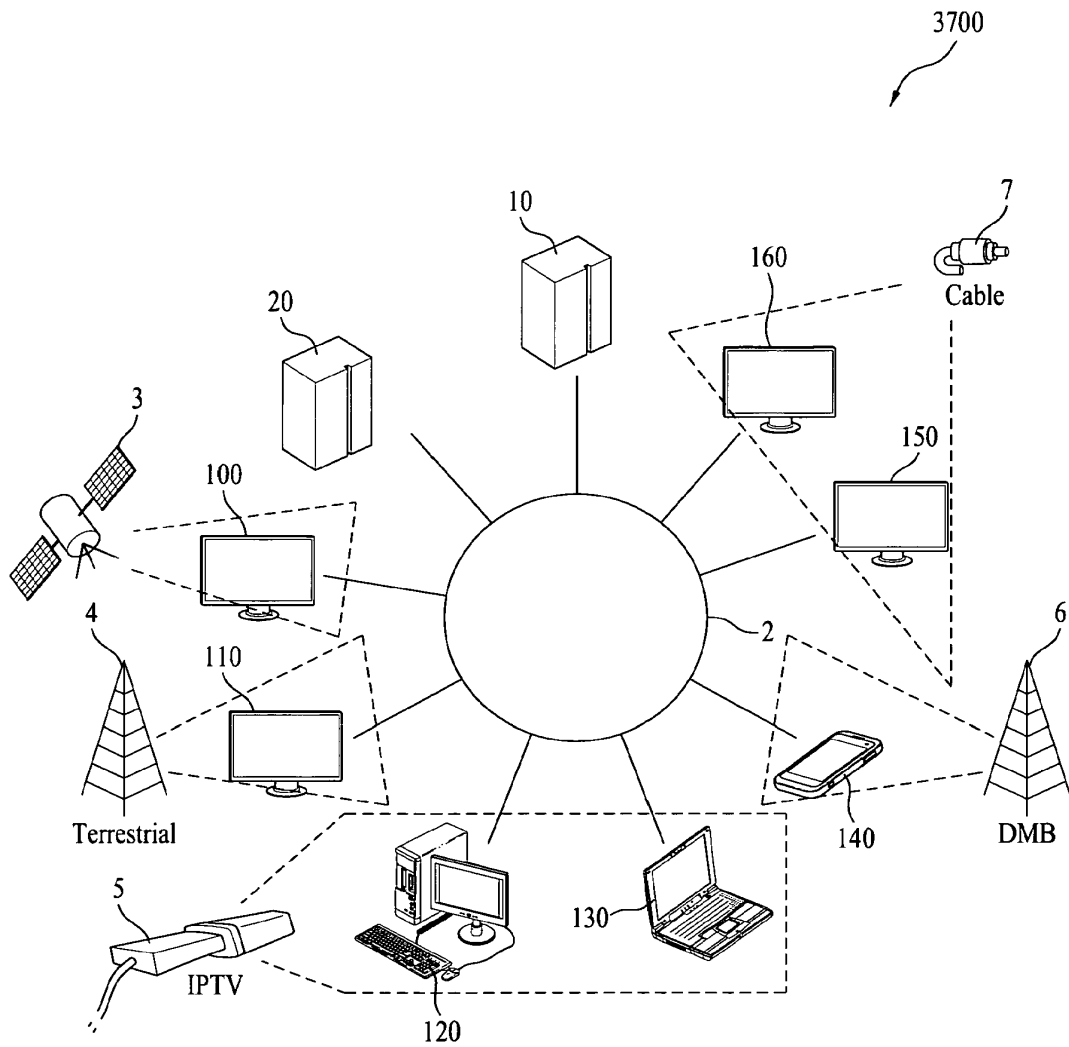


FIG. 38

3800



Field Name	bits
Details_of_user	Var
Physical_channel_details	Var
Service_Name	Var
Service_ID	64
Channel_number	64
Event_Name	Var
Event_ID	64
Transport_Stream_ID	64
Network_ID	64
ServiceProvider	Var
Originating_medium	64
Originating_Country	Var

FIG. 39

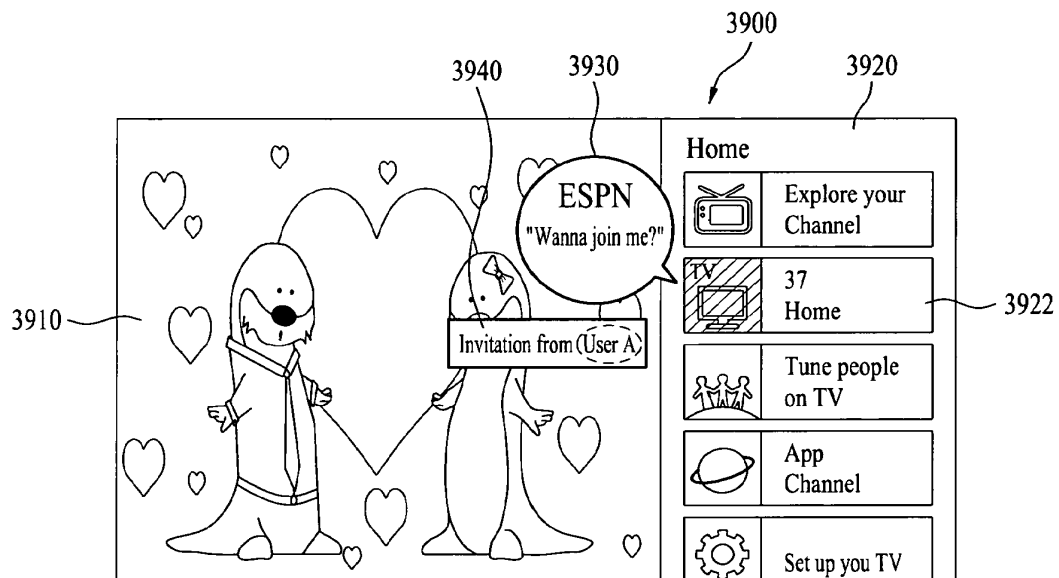


FIG. 40

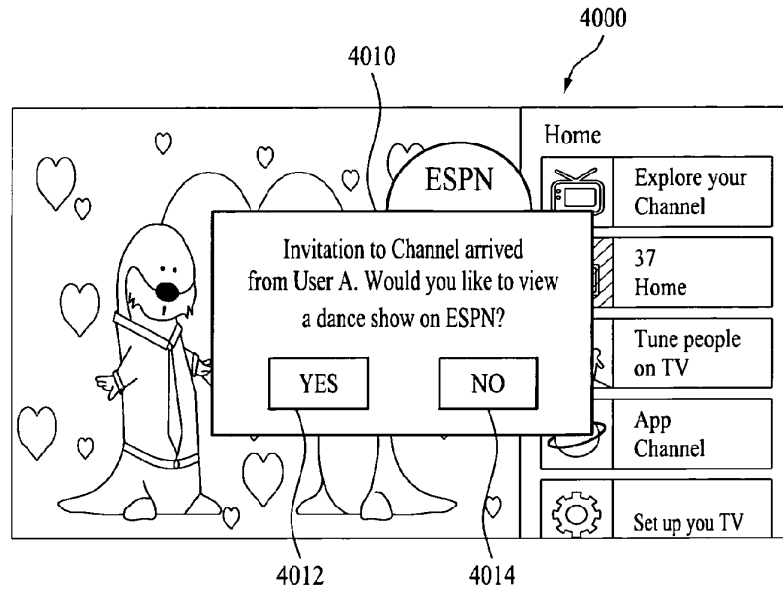


FIG. 41

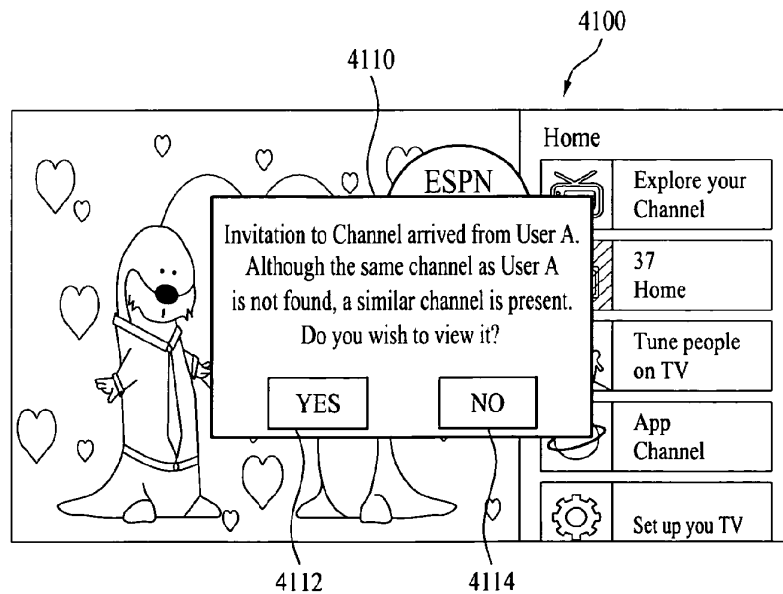


FIG. 42

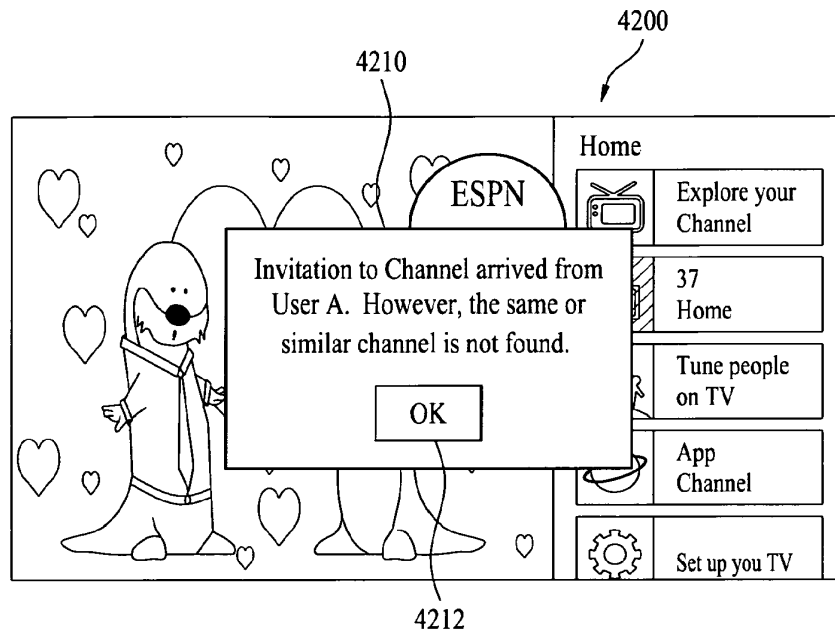


FIG. 43A

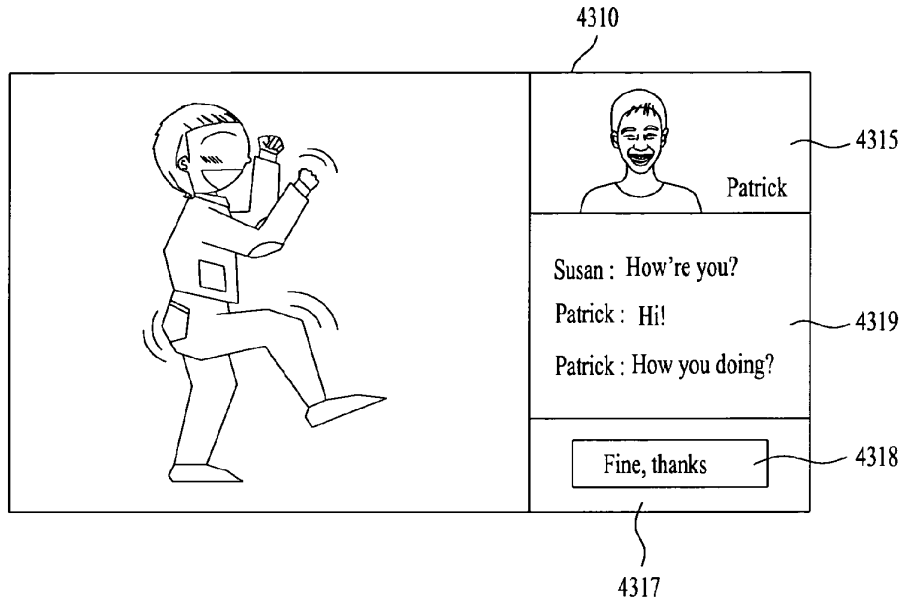


FIG. 43B

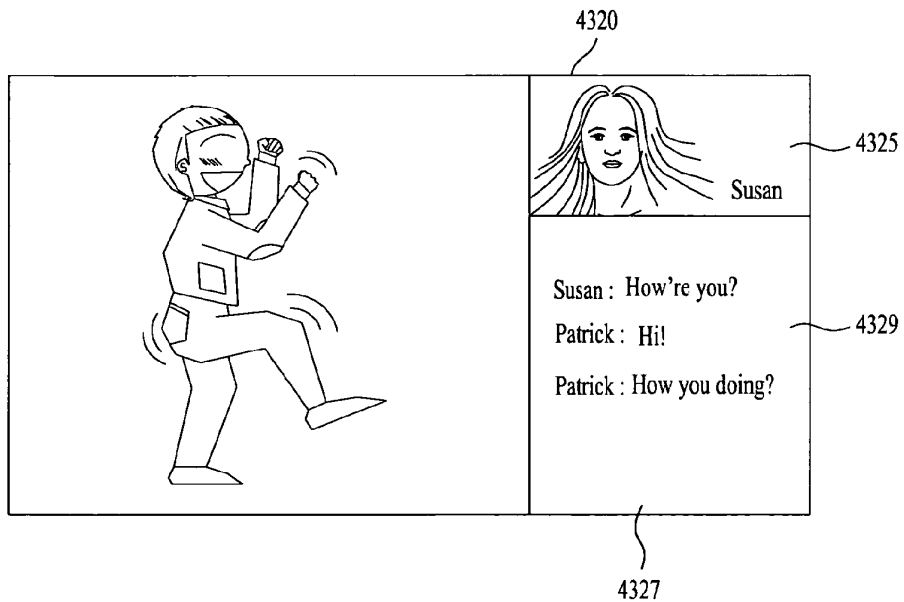


FIG. 44

4400

Service provider 1		Service provider 2	
Channel number	Frequency	Channel number	Frequency
101	10800MHZ	901	11100MHZ
202	11800MHZ	345	11010MHZ

FIG. 45

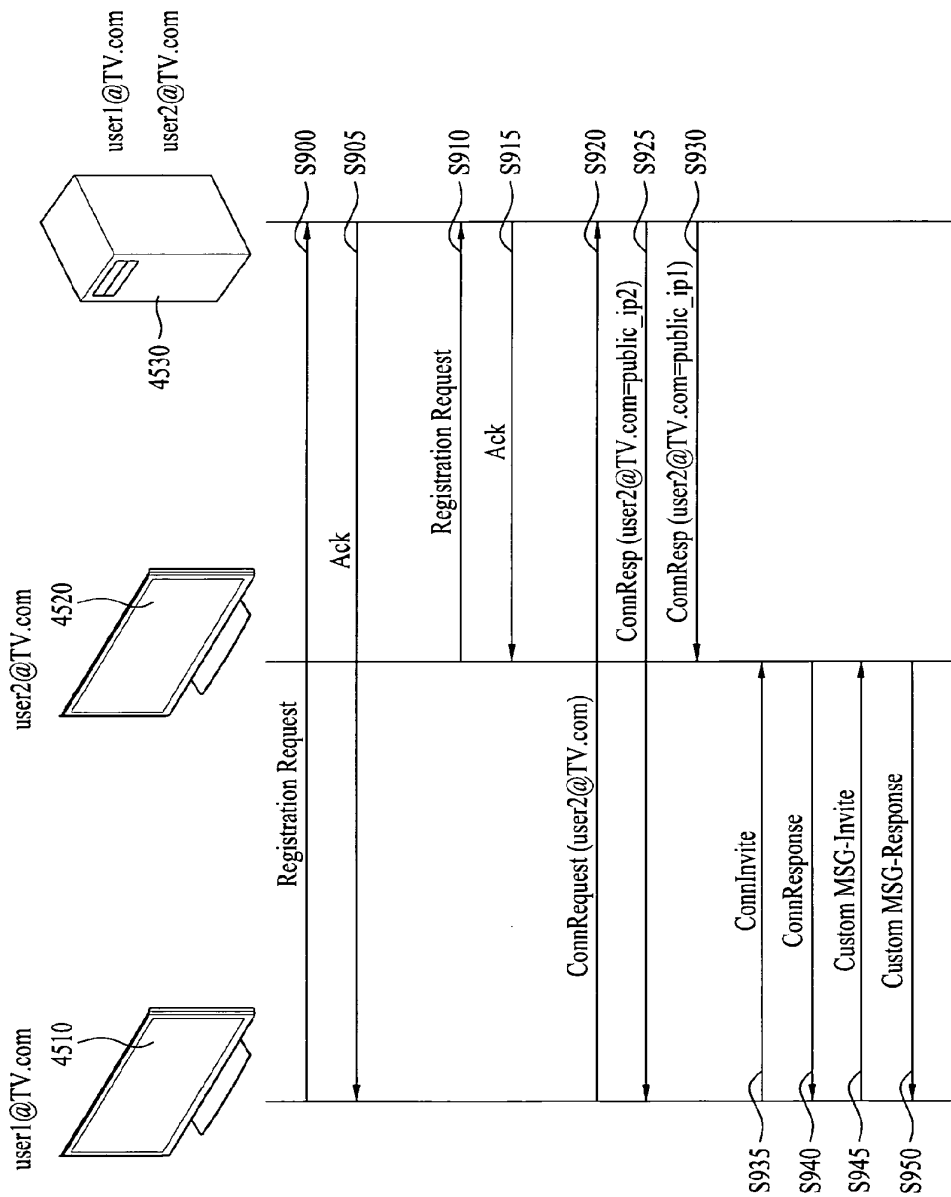


FIG. 46

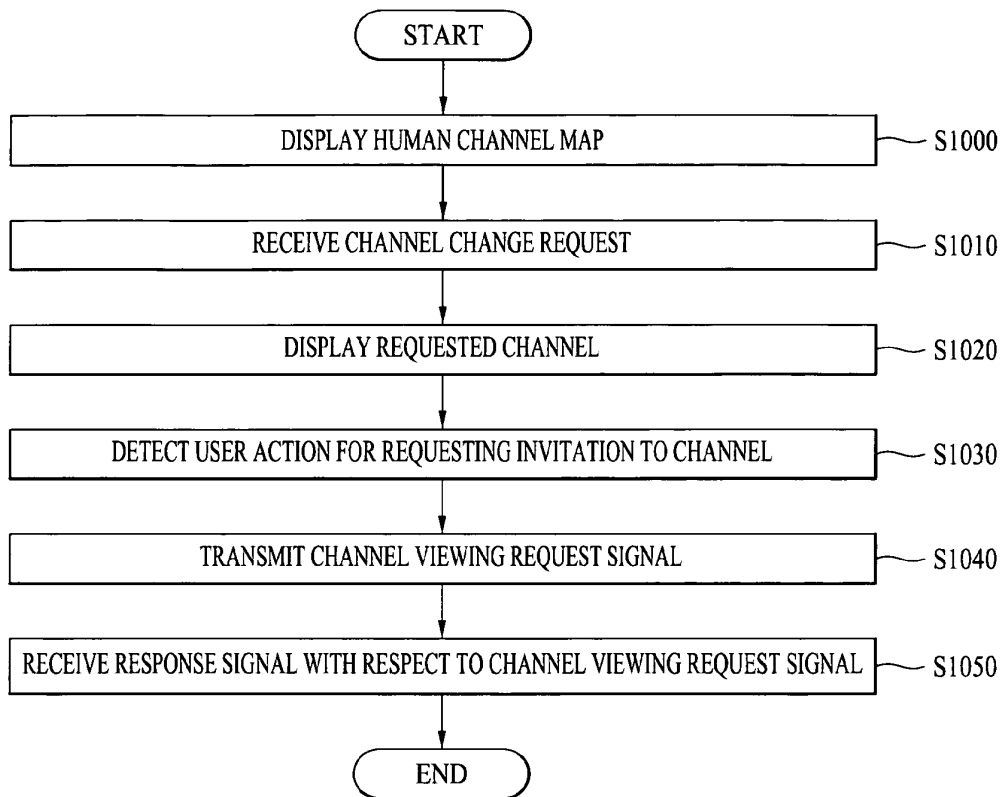


FIG. 47

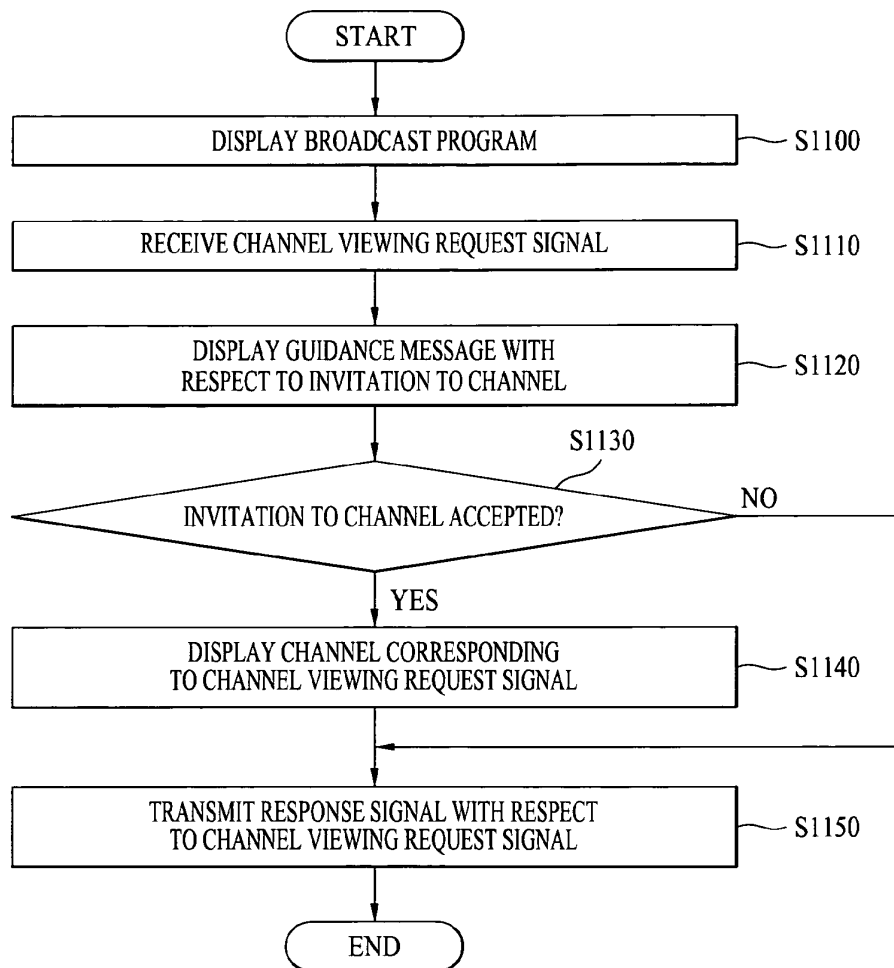


FIG. 48

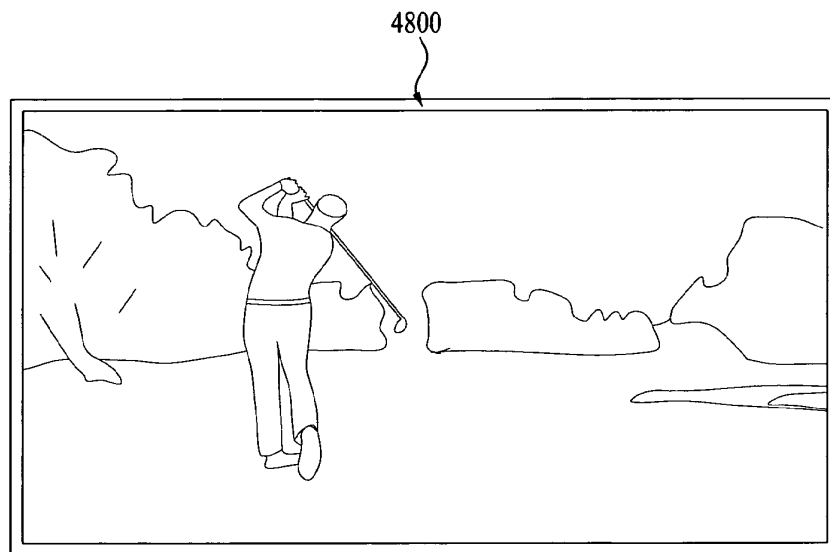


FIG. 49

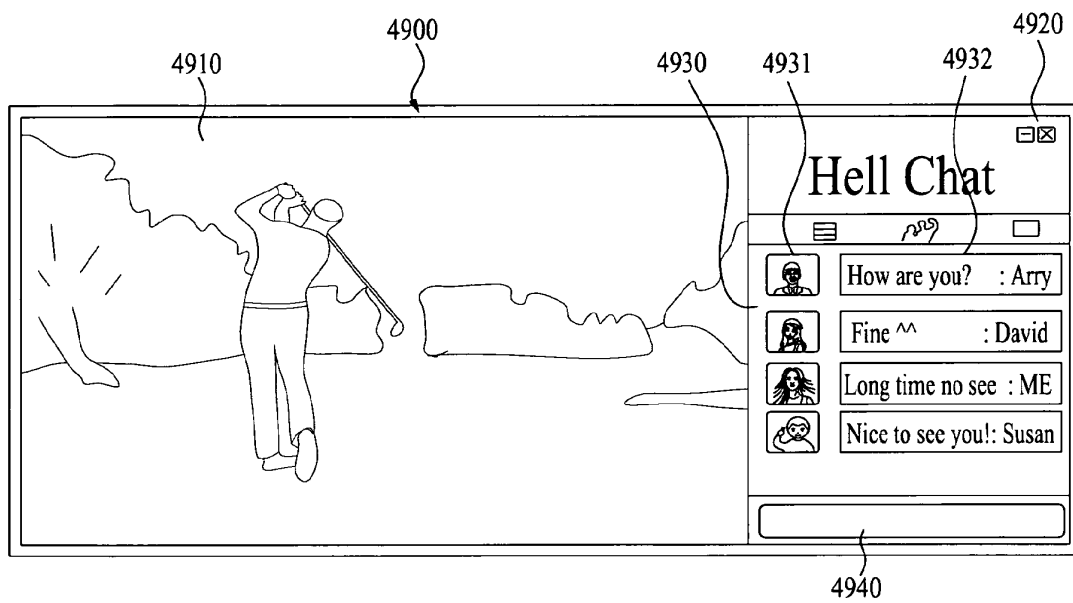


FIG. 50

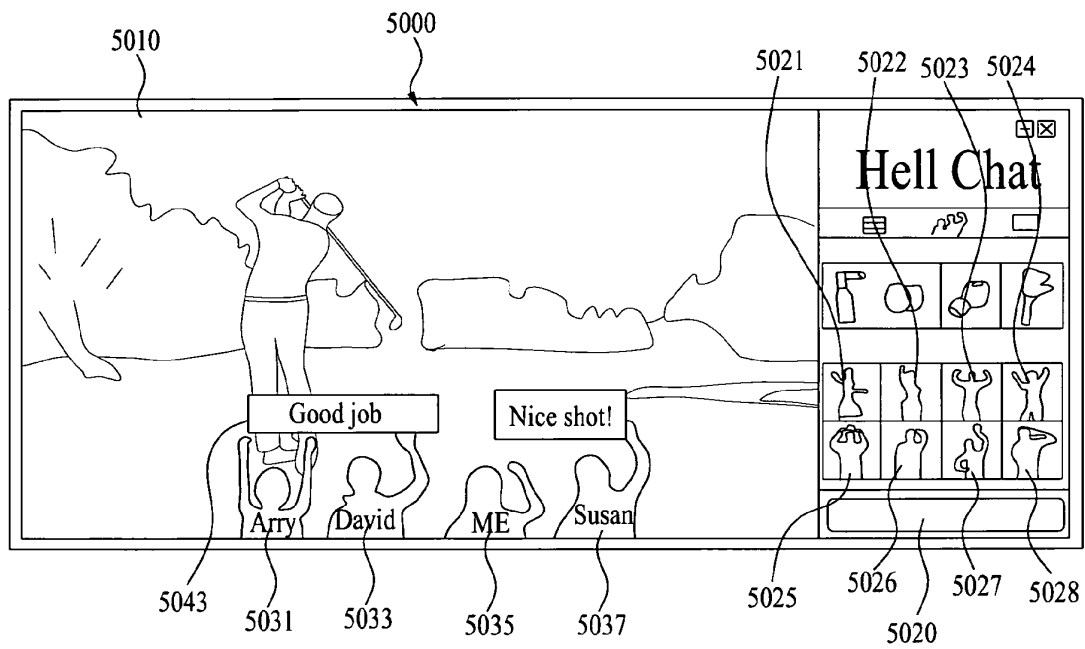


FIG. 51

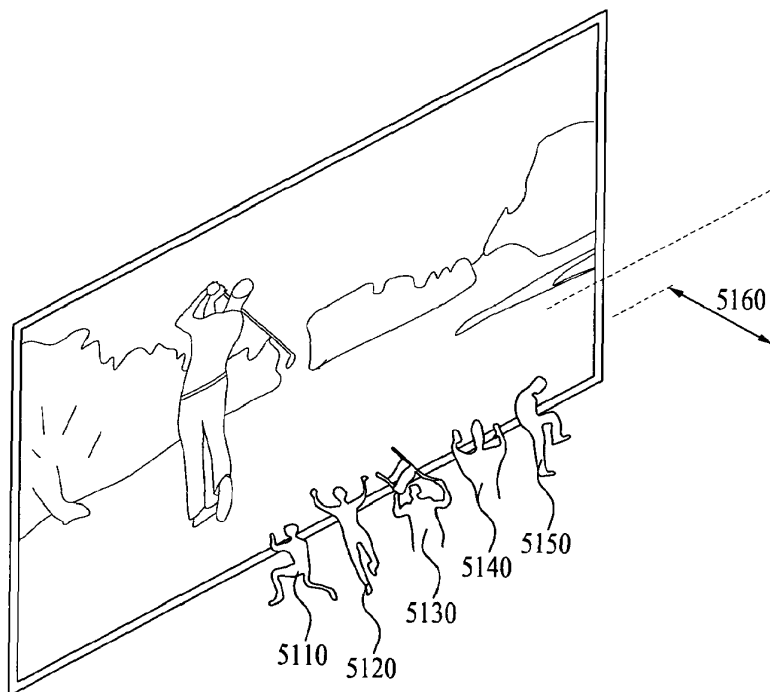


FIG. 52

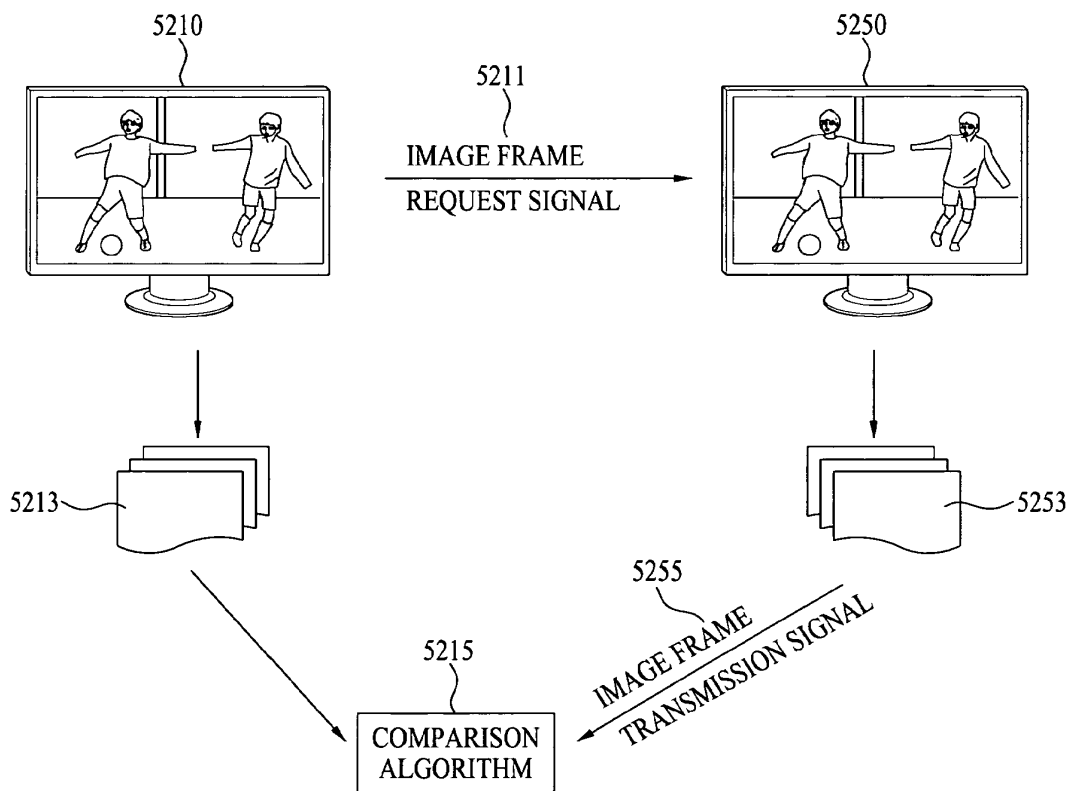


FIG. 53

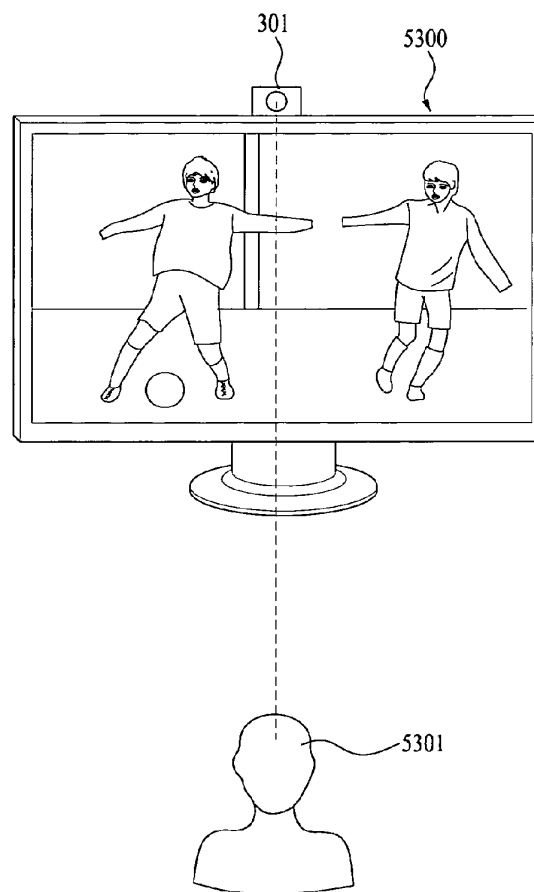


FIG. 54

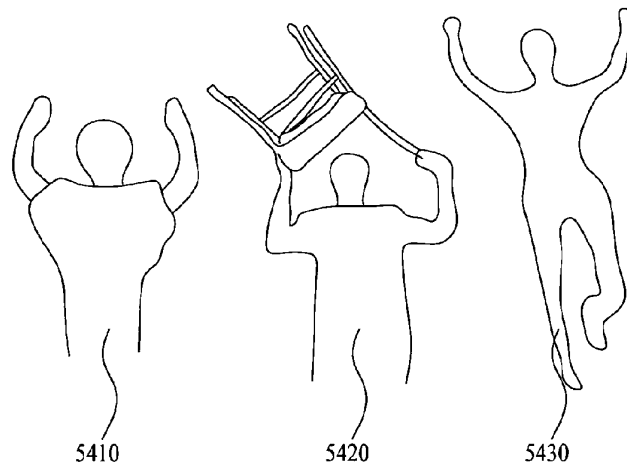


FIG. 55

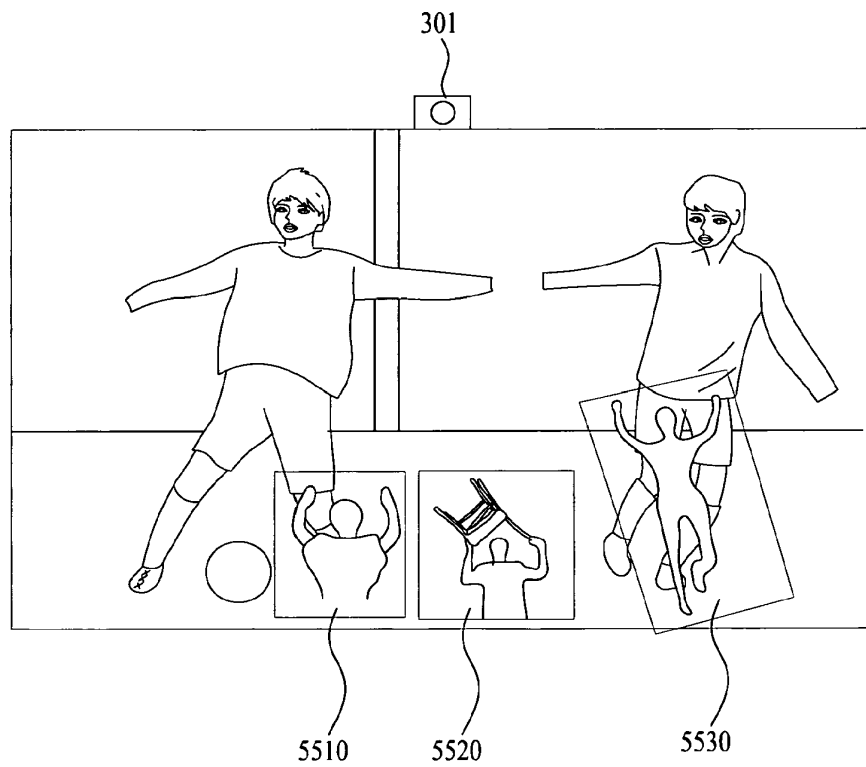


FIG. 56

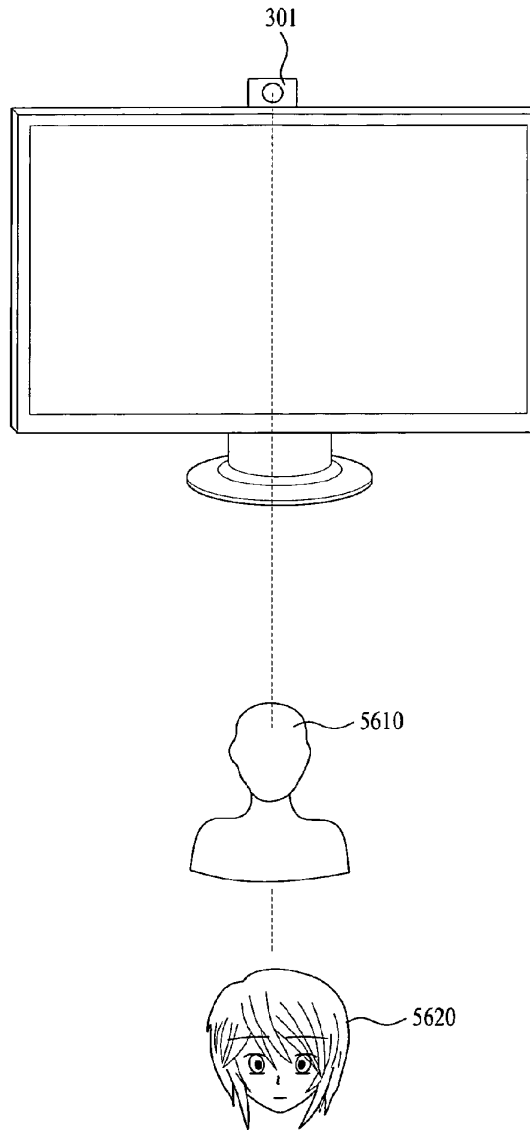


FIG. 57

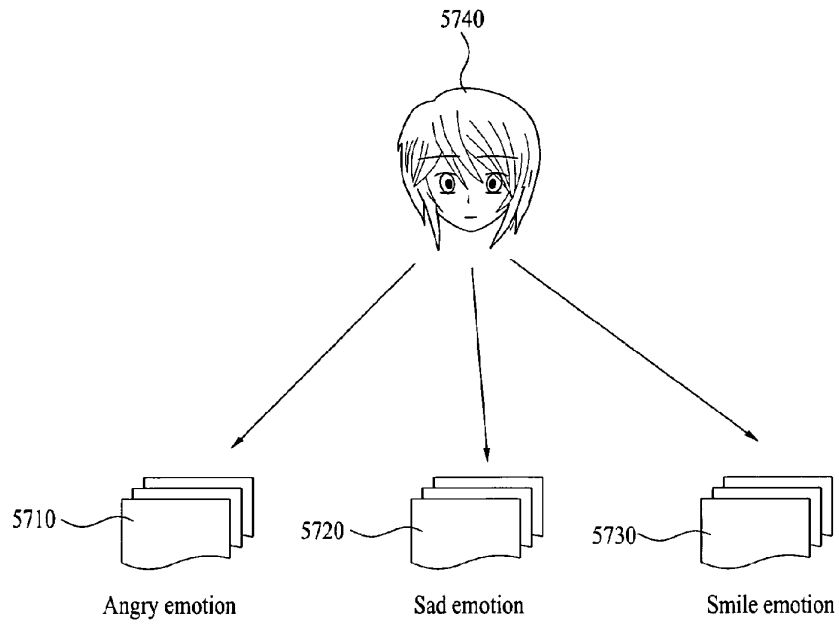


FIG. 58

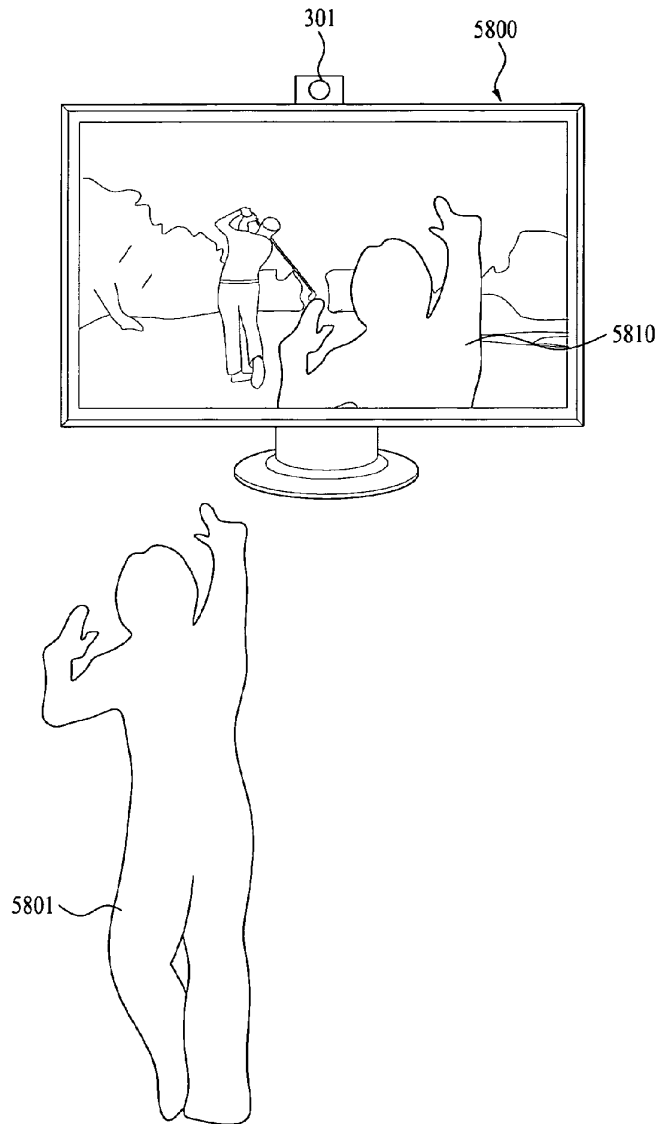


FIG. 59A

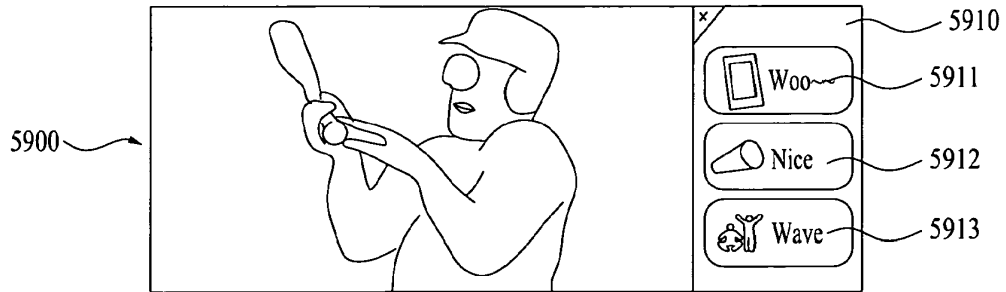


FIG. 59B

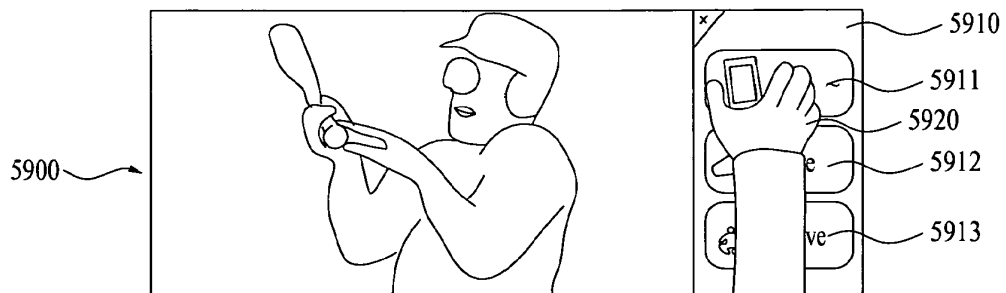


FIG. 59C

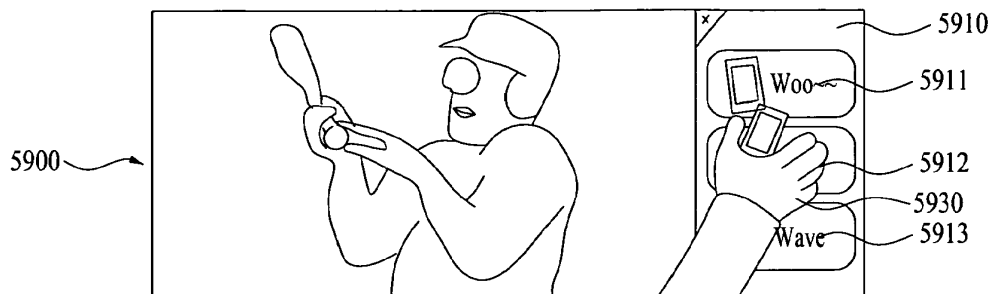


FIG. 59D

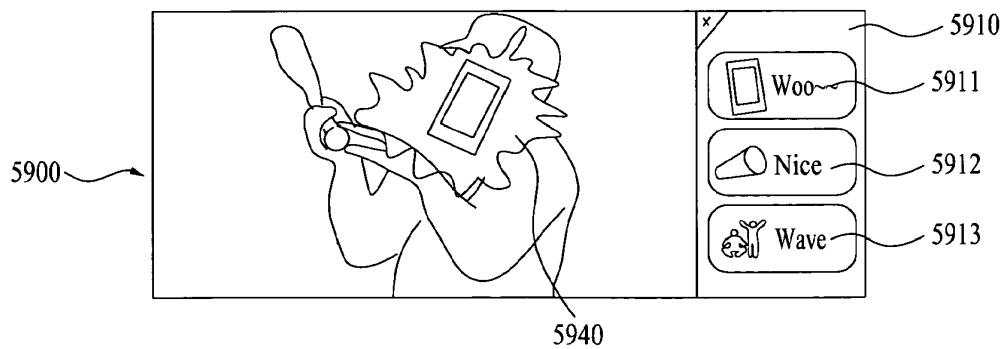


FIG. 60

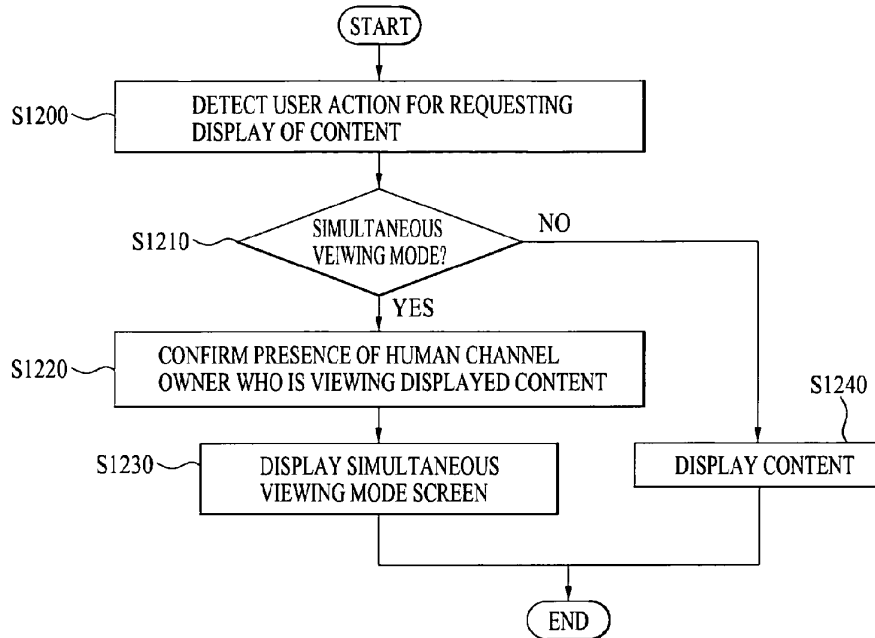


FIG. 61

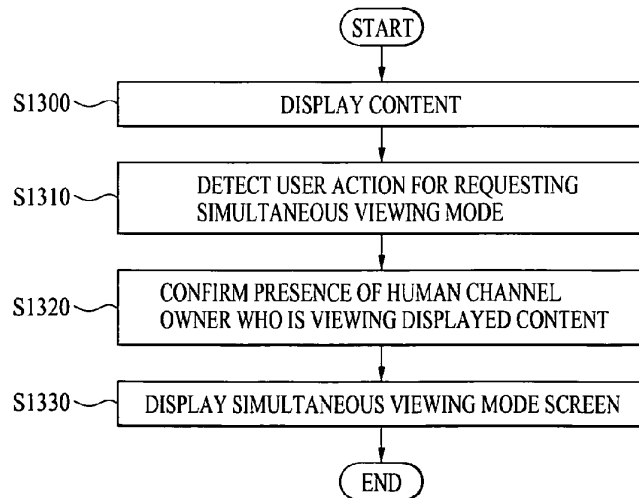


FIG. 62

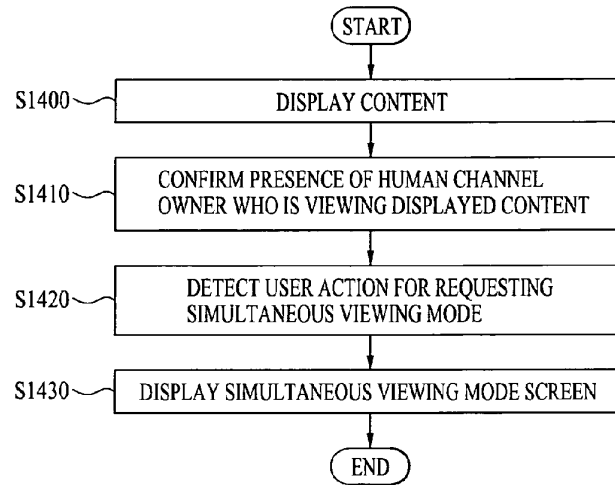


FIG. 63

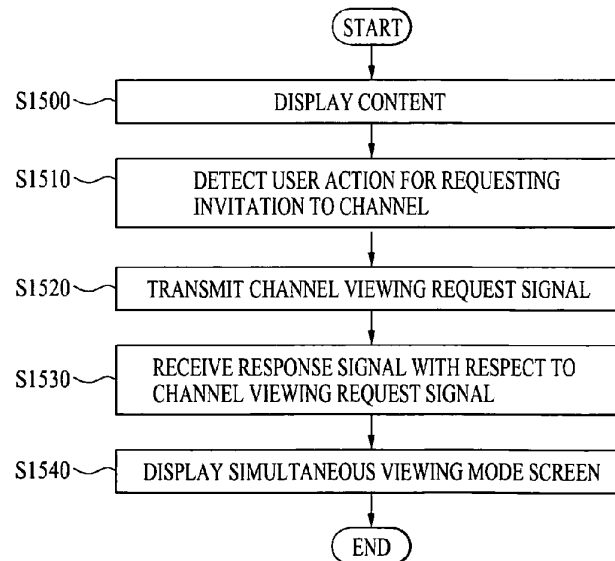


FIG. 64

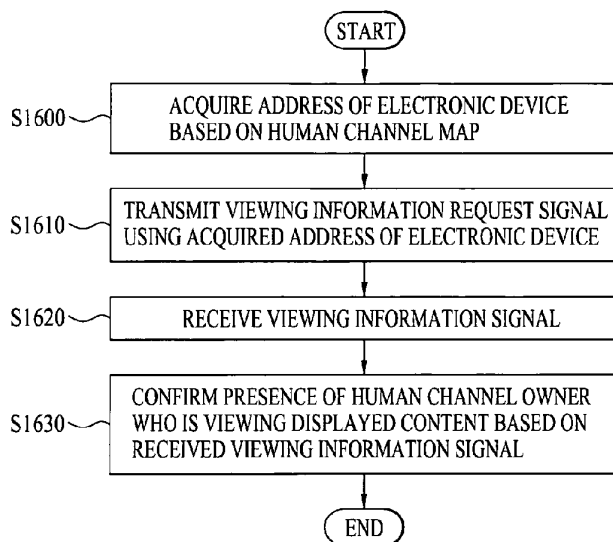


FIG. 65

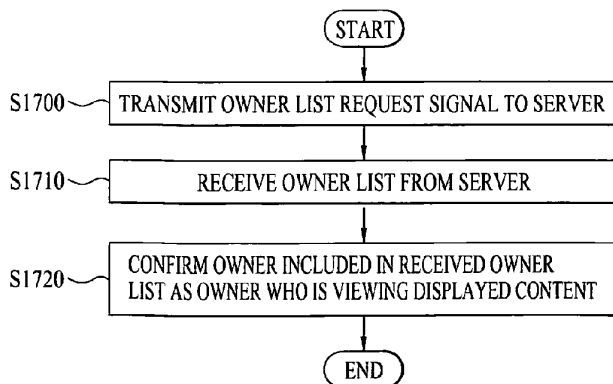


FIG. 66

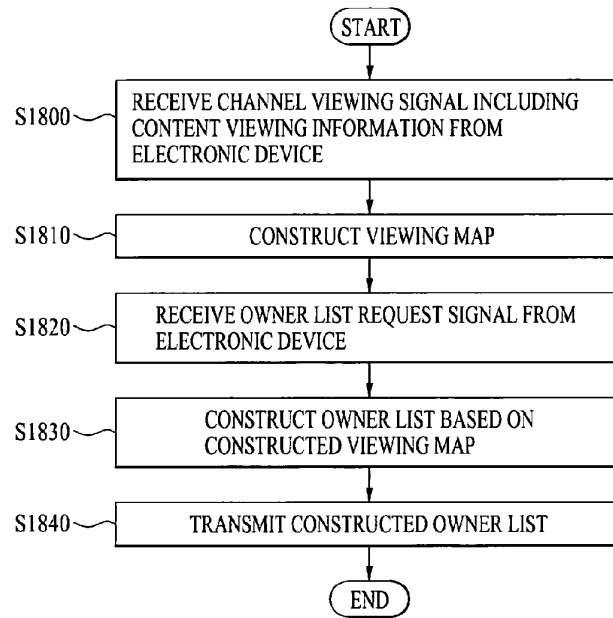


FIG. 67

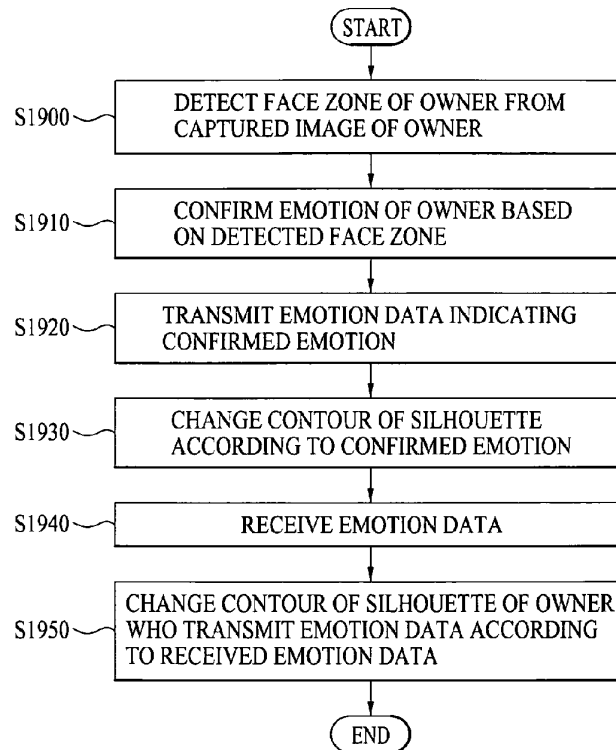


FIG. 68

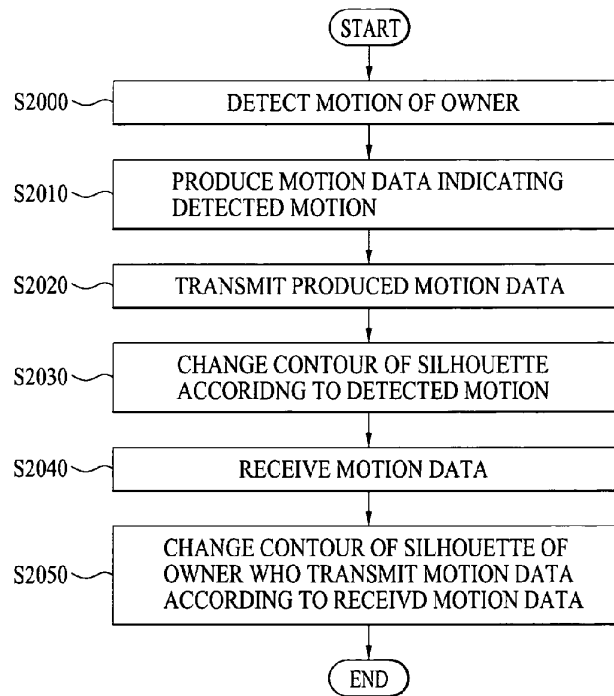


FIG. 69

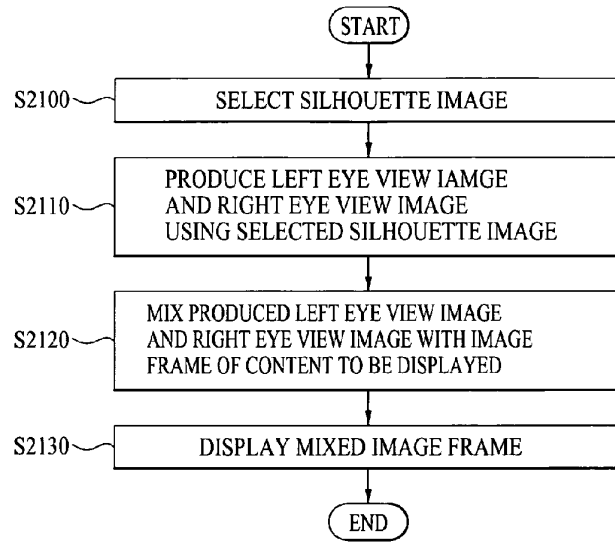


FIG. 70

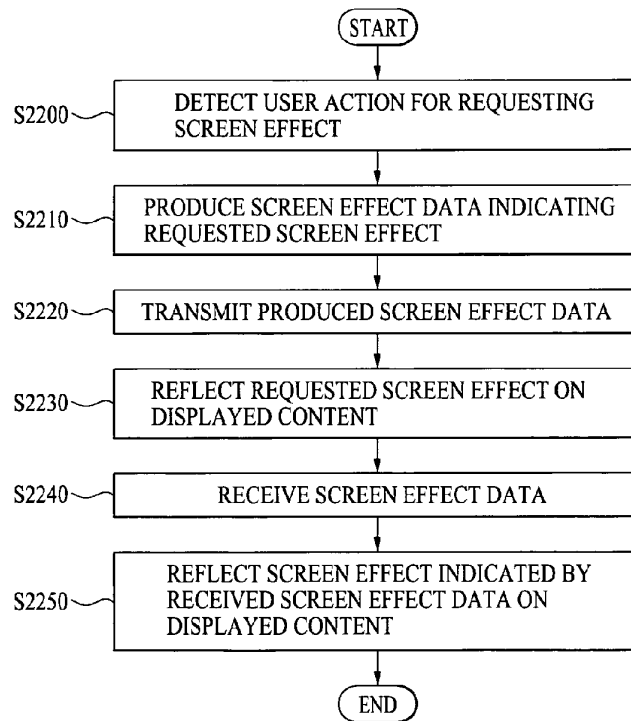


FIG. 71

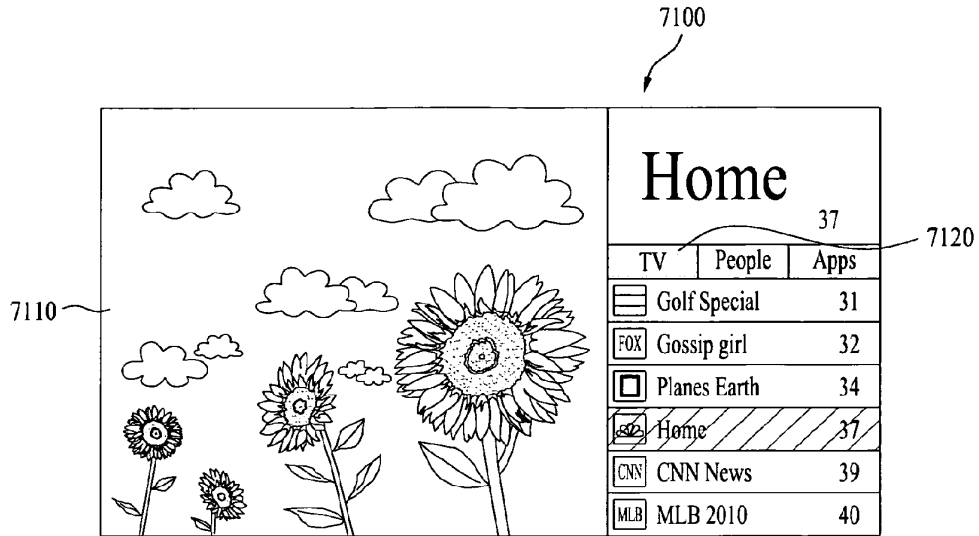


FIG. 72

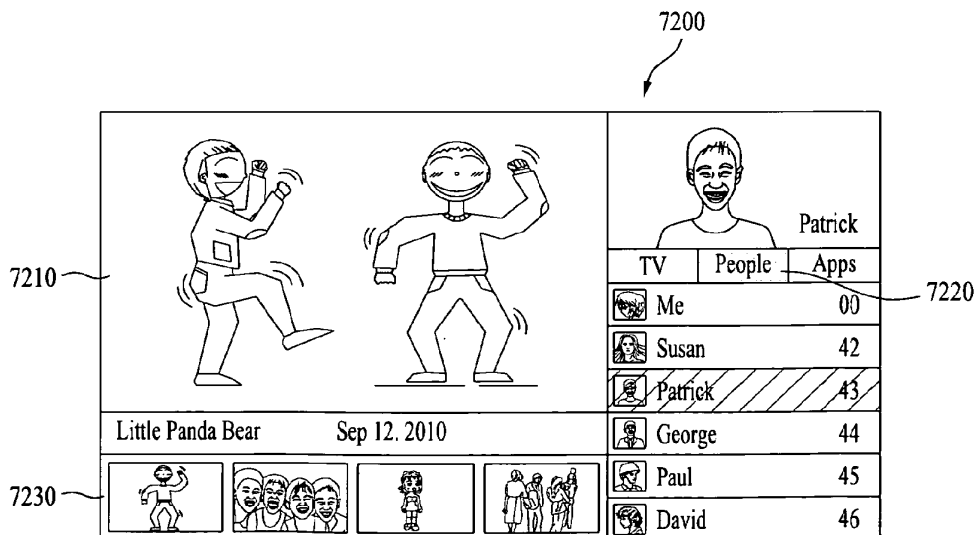


FIG. 73

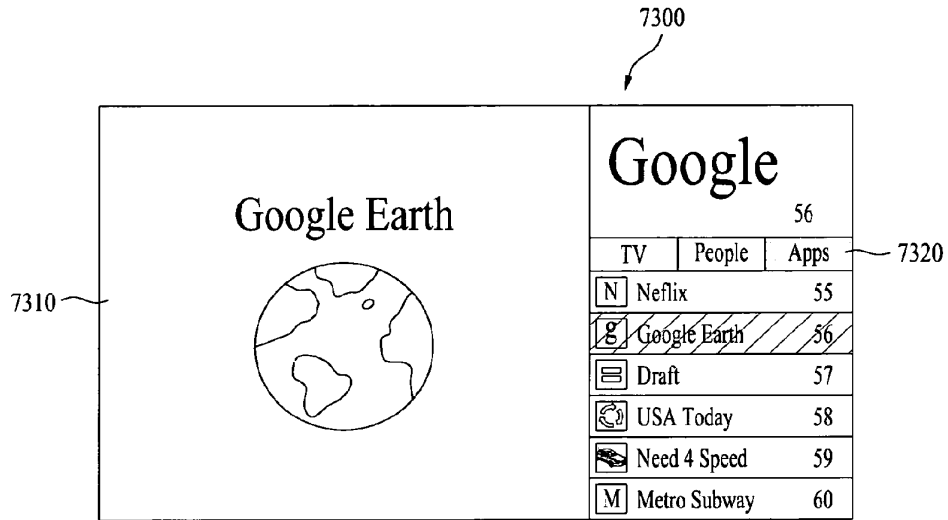


FIG. 74

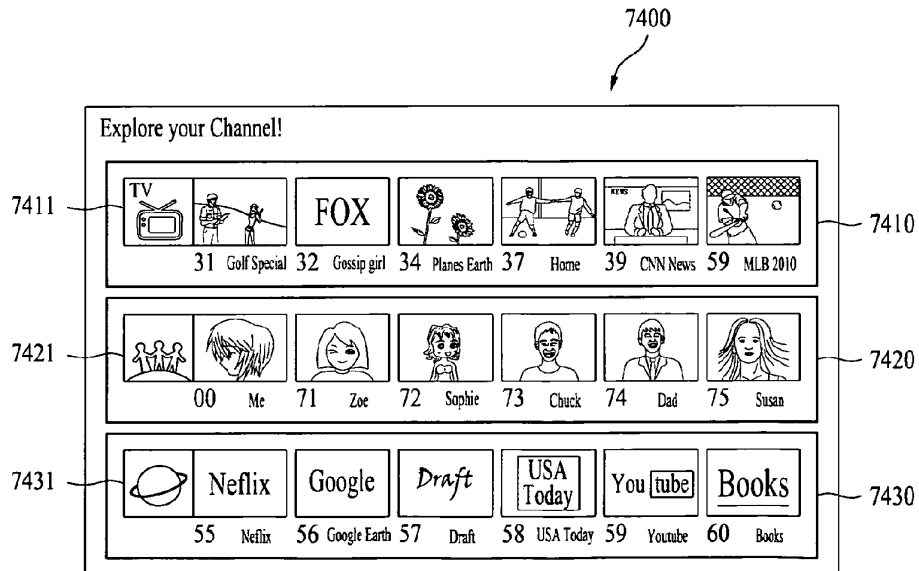


FIG. 75

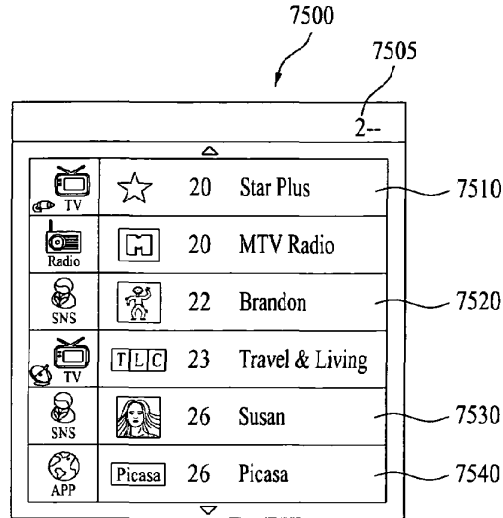


FIG. 76

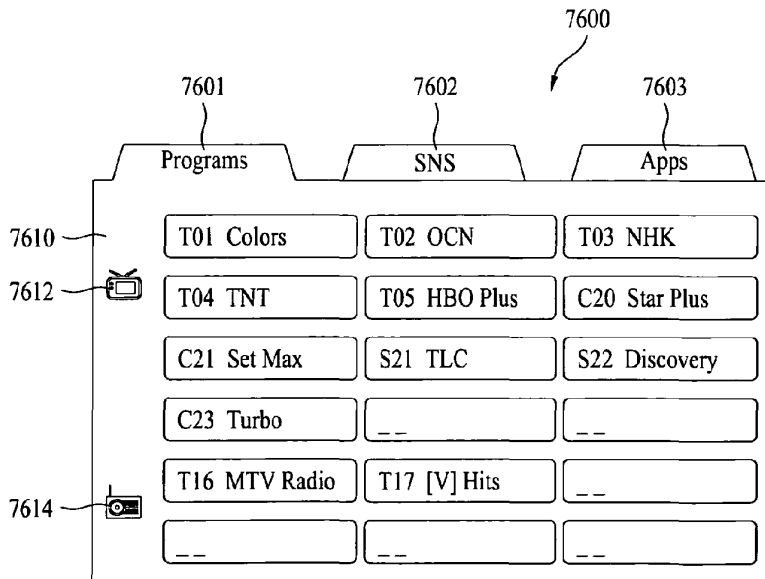


FIG. 77

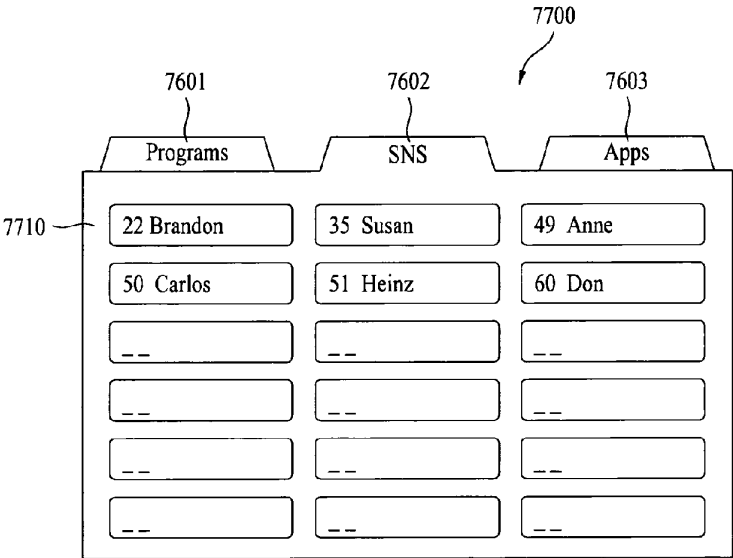


FIG. 78

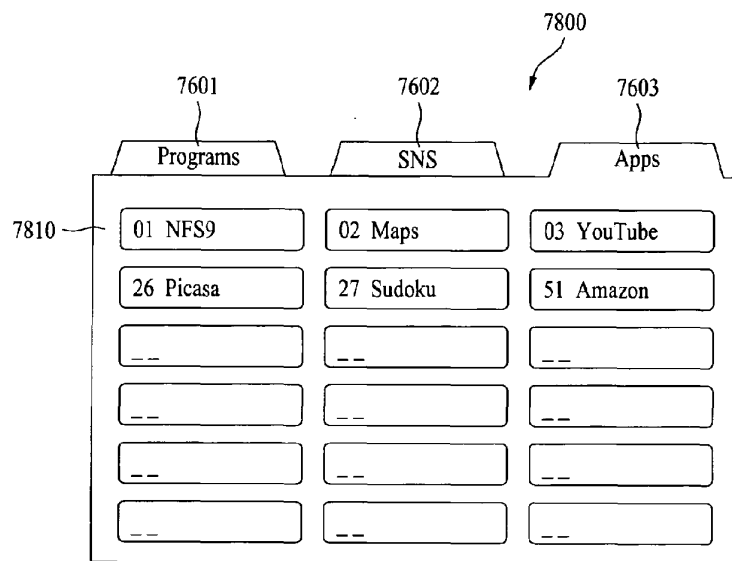


FIG. 79

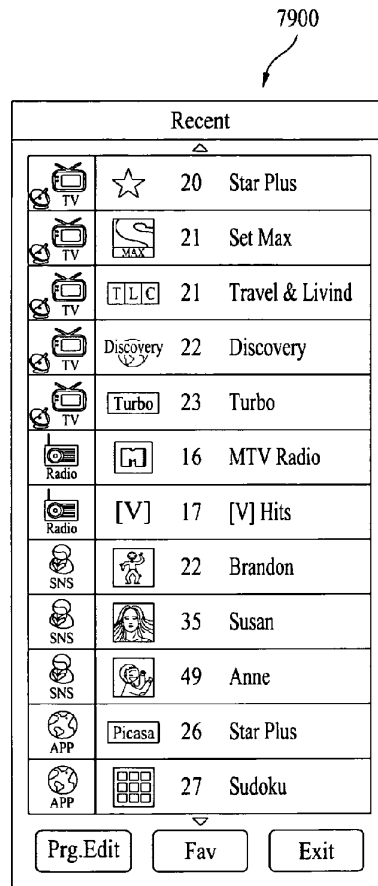


FIG. 80

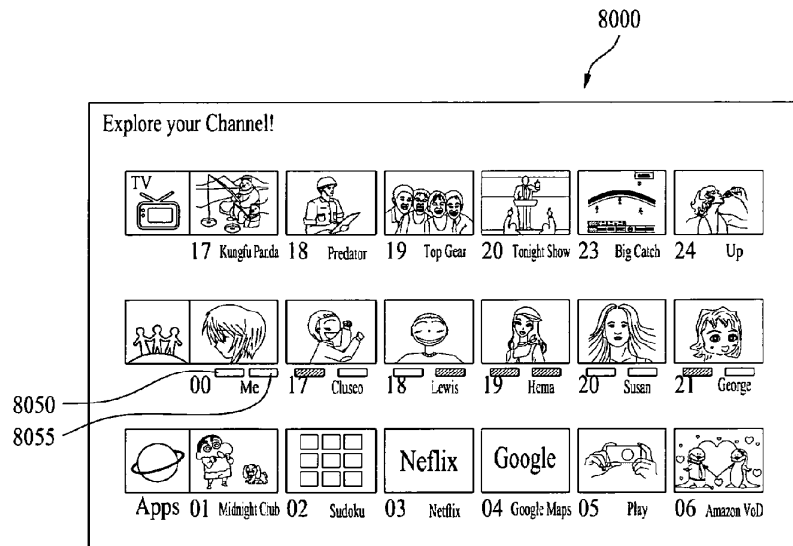


FIG. 81A

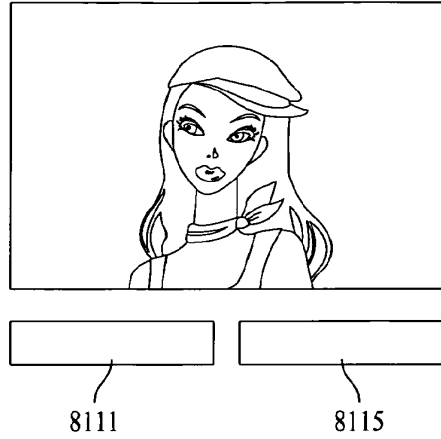


FIG. 81B

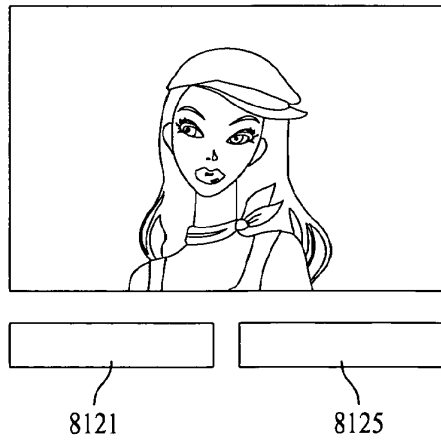


FIG. 81C

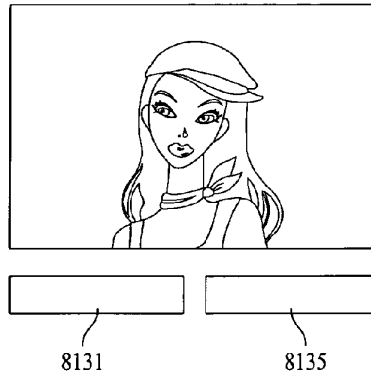


FIG. 81D

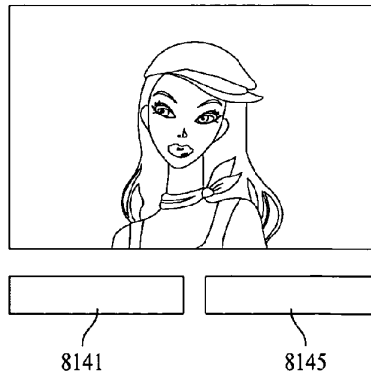


FIG. 82

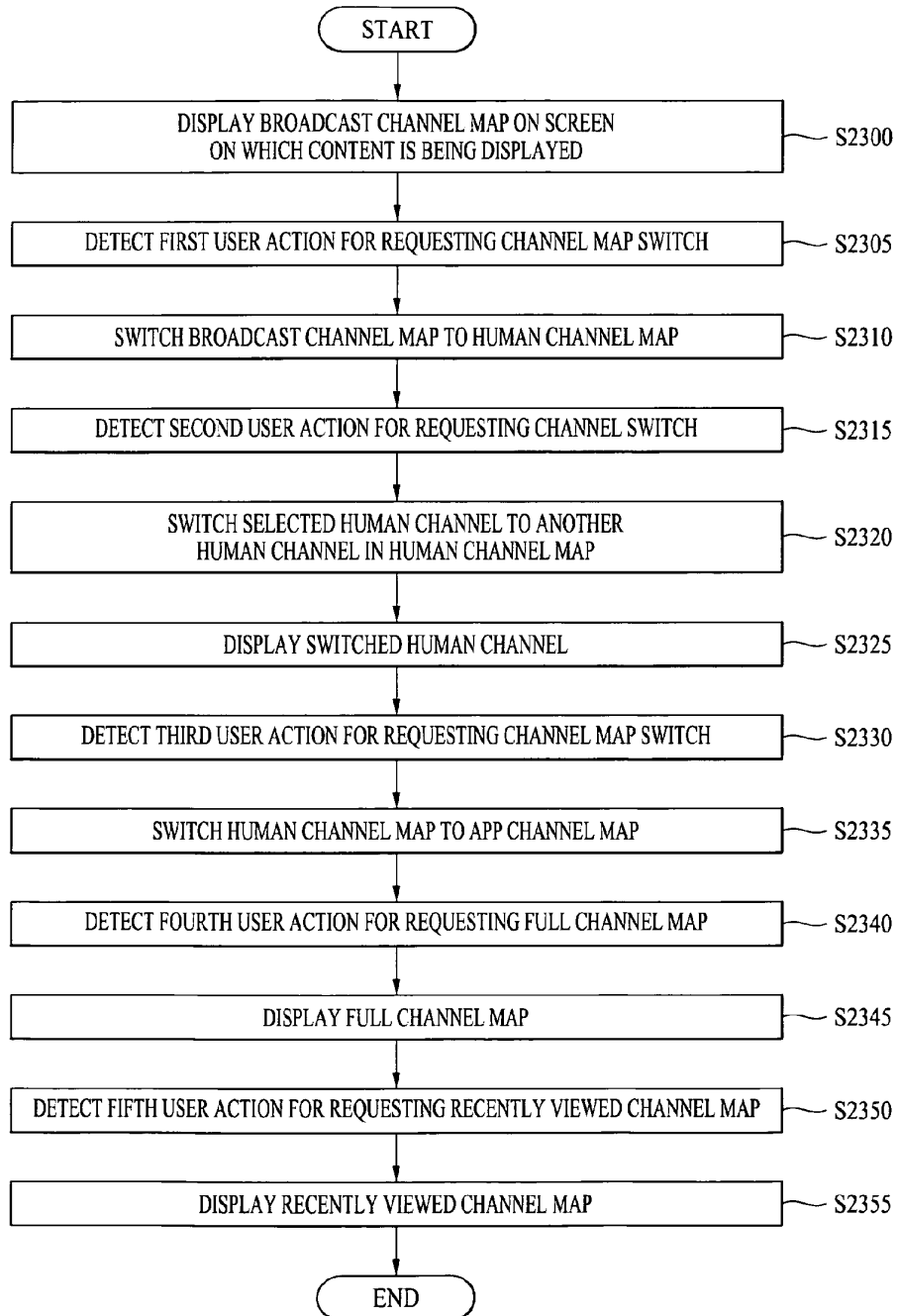


FIG. 83

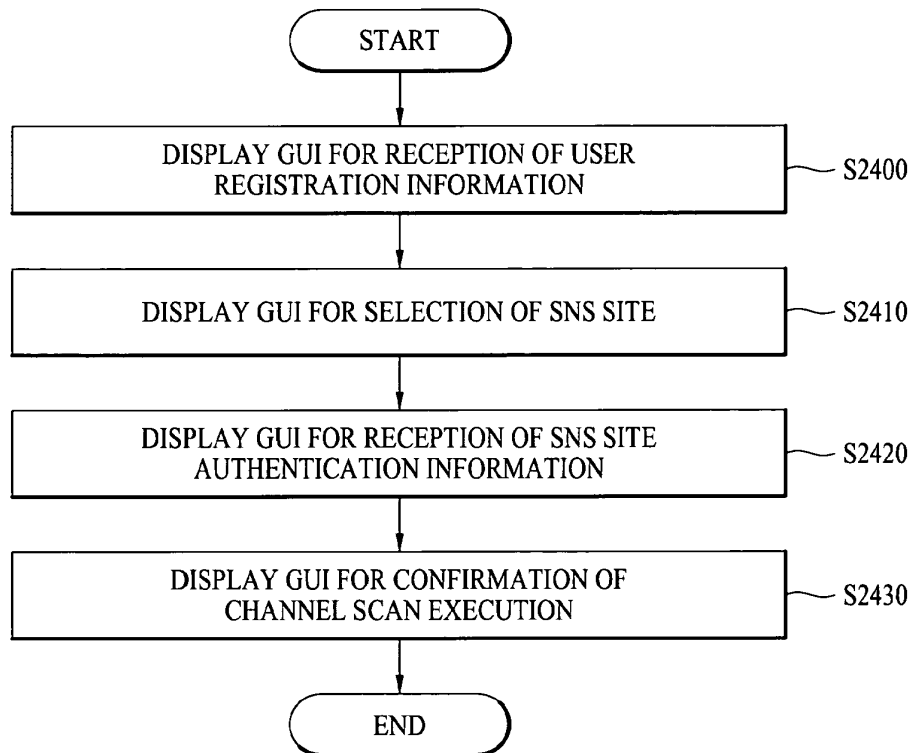


FIG. 84

8400

Enter User Account details									
User Name:	<input style="width: 90%;" type="text" value="John71"/>								
Password	<input style="width: 90%;" type="password" value="*****"/>								
Re-Enter	<input style="width: 90%;" type="password" value="*****"/>								
First Name :	<input style="width: 90%;" type="text" value="John"/>								
Last Name :	<input style="width: 90%;" type="text" value="Aventardo"/>								
Gender :	☒ M ☐ F								
Date of Birth :	<input style="width: 20px;" type="text" value="2"/>	<input style="width: 20px;" type="text" value="D"/>	<input style="width: 20px;" type="text" value="12"/>	<input style="width: 20px;" type="text" value="M"/>	<input style="width: 20px;" type="text" value="1971"/>	<input style="width: 20px;" type="text" value="Y"/>	<input style="width: 50px;" type="button" value="Next"/> <input style="width: 50px;" type="button" value="Exit"/>		

FIG. 85

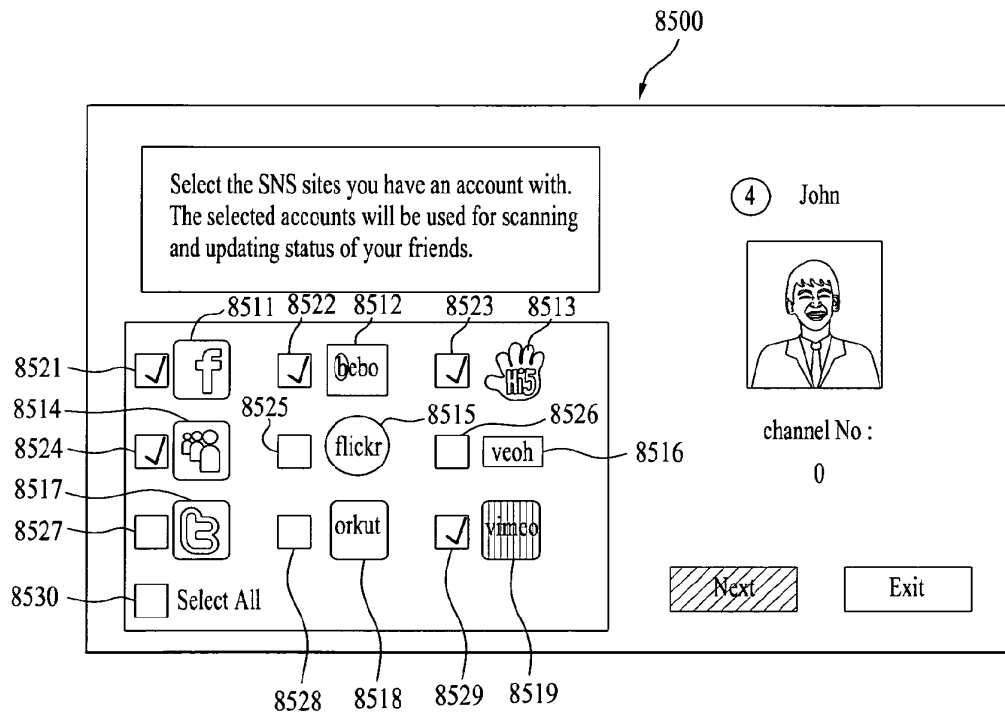


FIG. 86

8600

Enter Login details

Email ID : John71@gmail.com

Password: *****

8610

Next Exit

FIG. 87

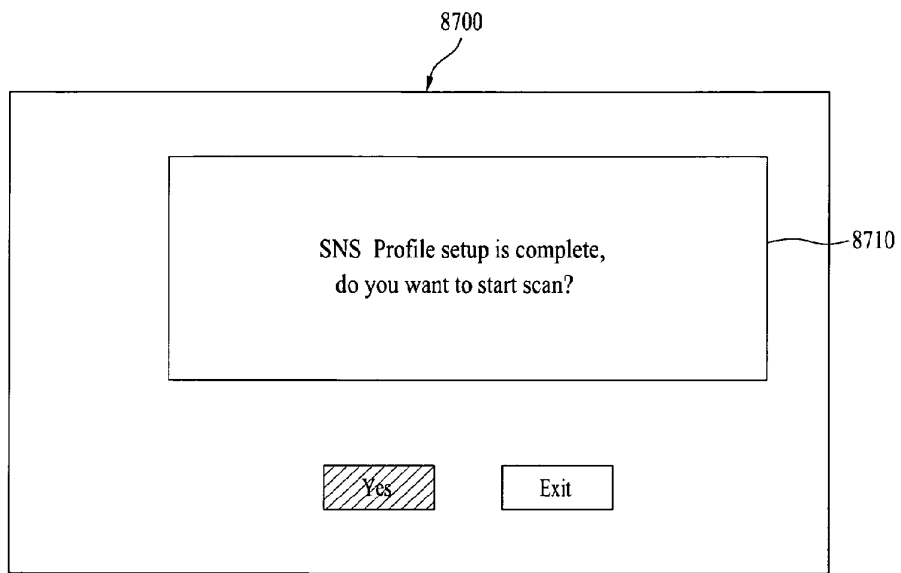


FIG. 88

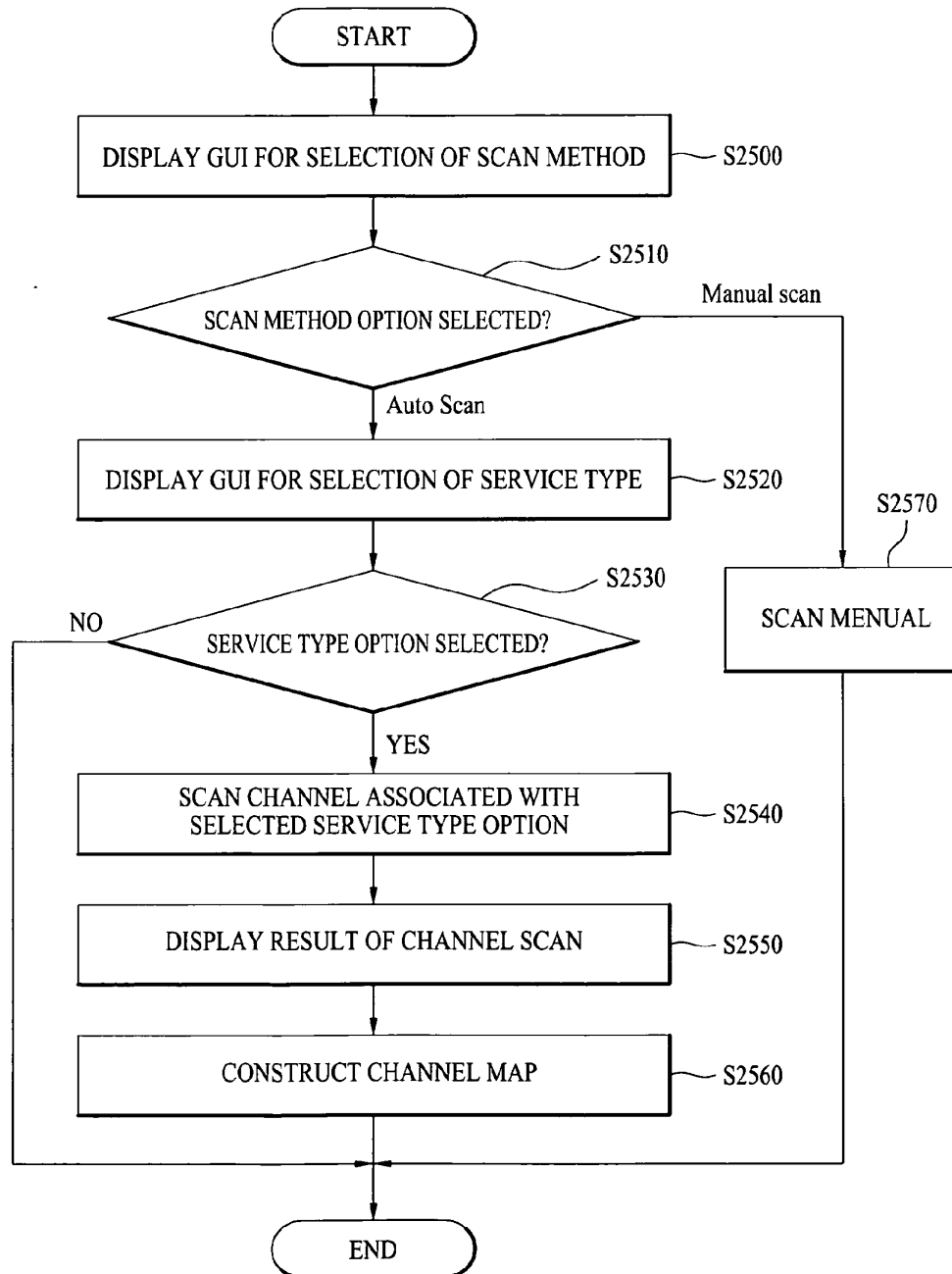


FIG. 89

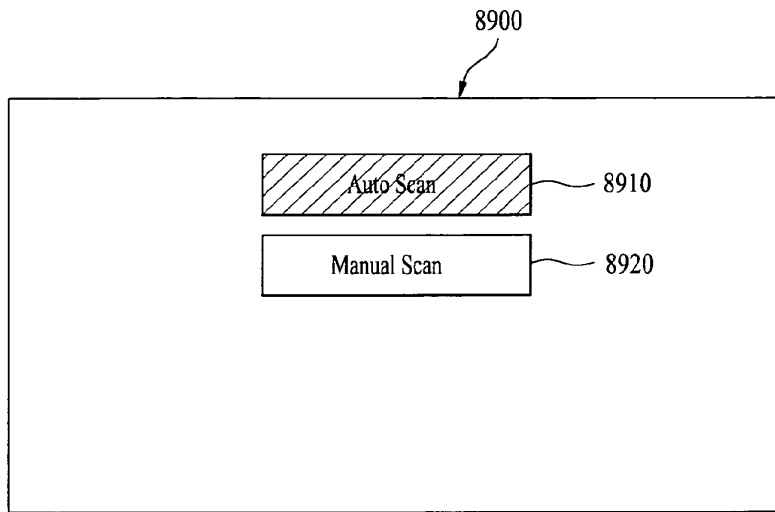


FIG. 90

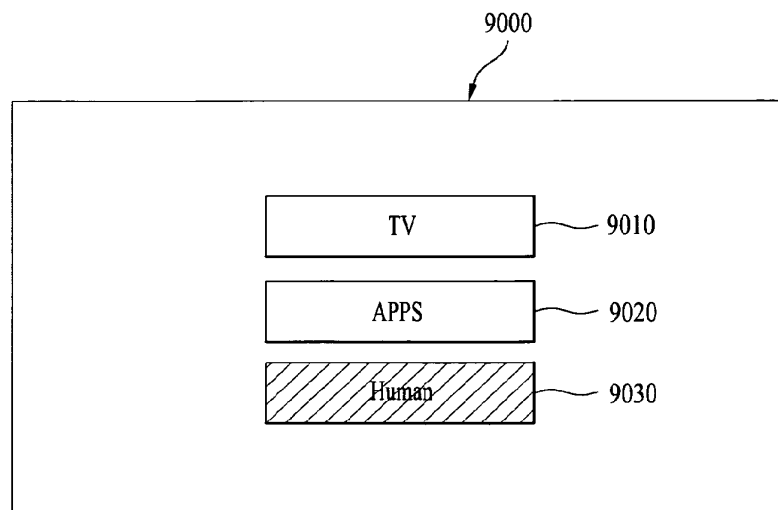


FIG. 91

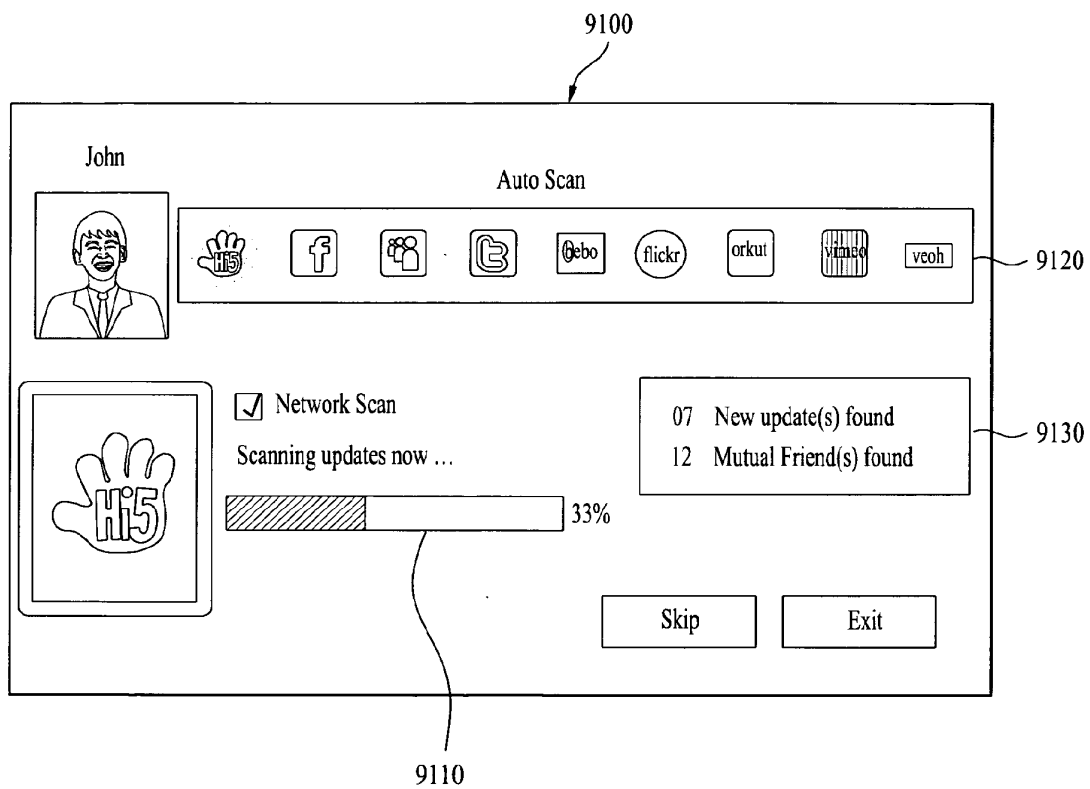


FIG. 92

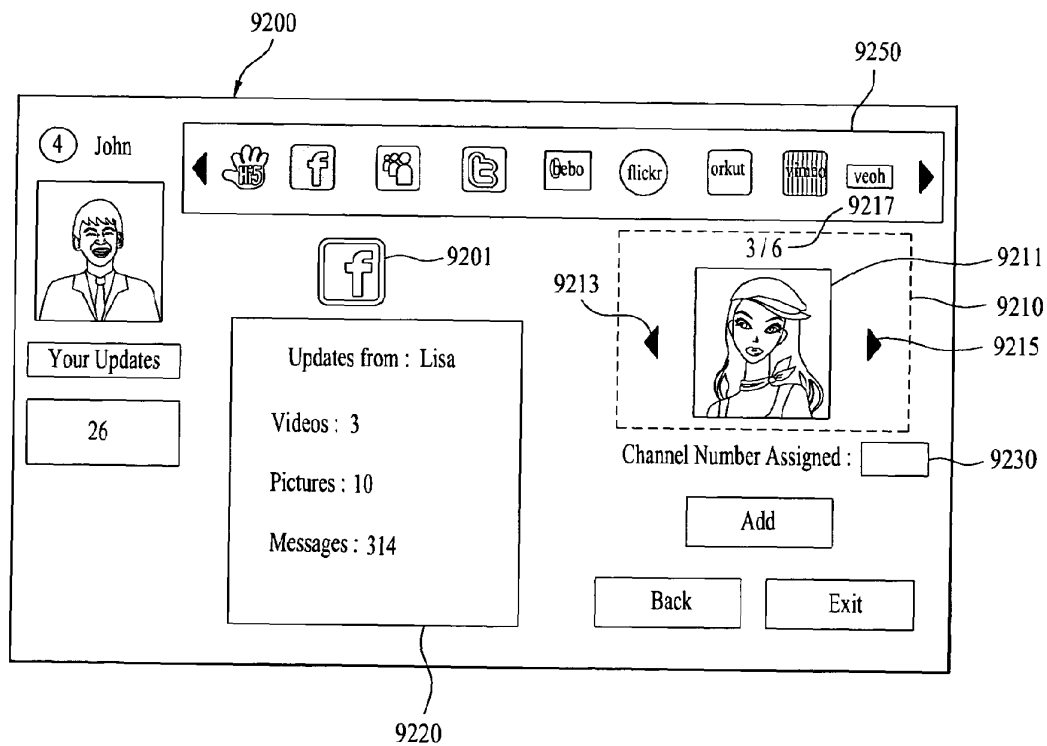


FIG. 93

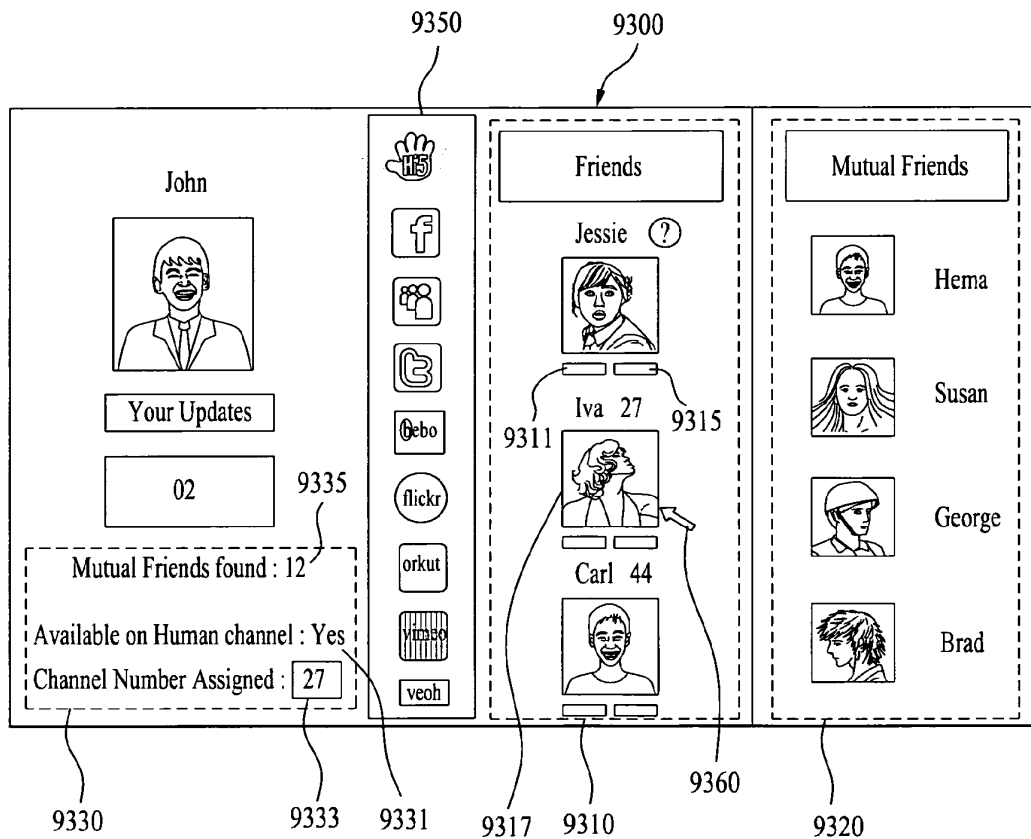


FIG. 94

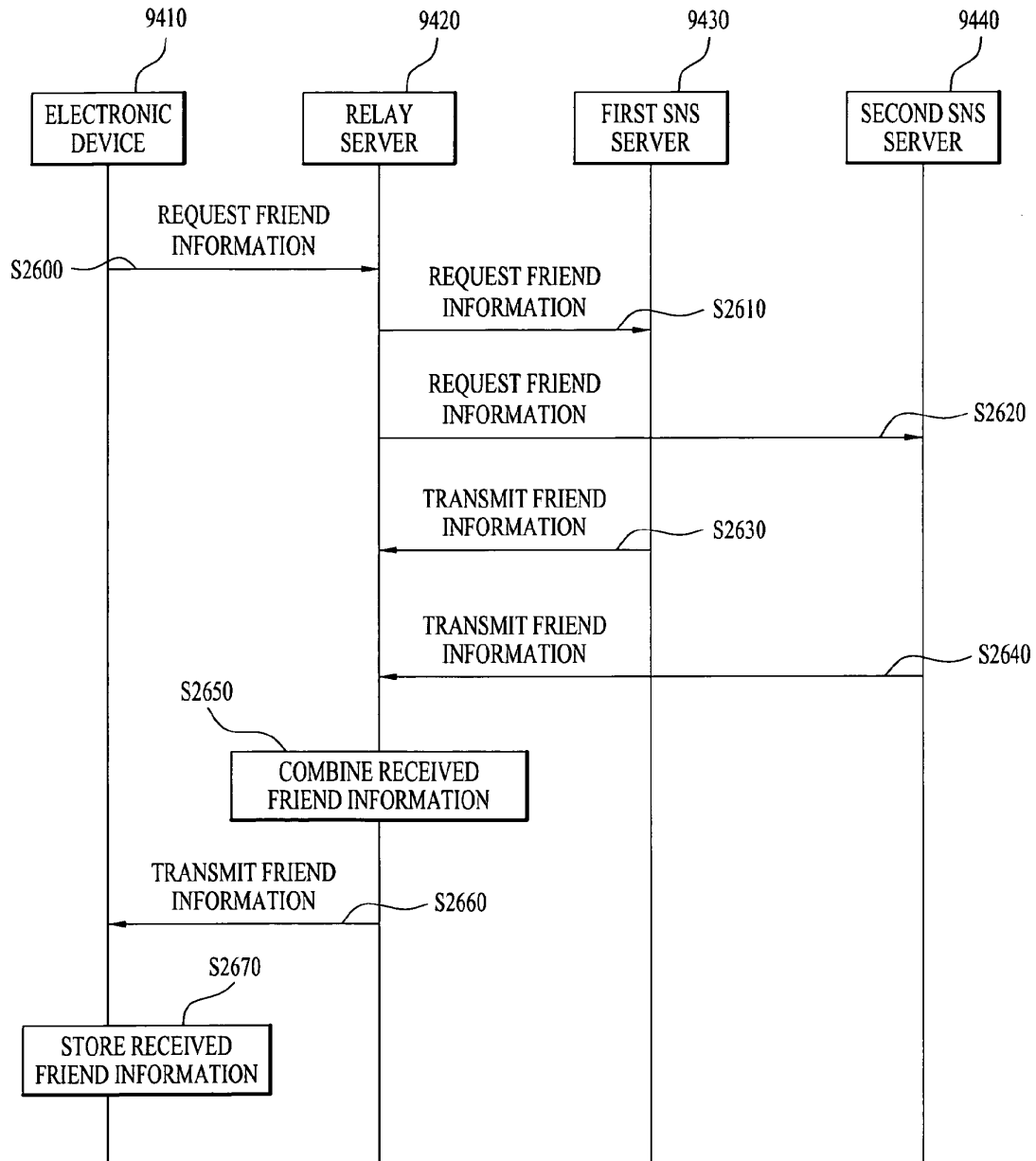


FIG. 95

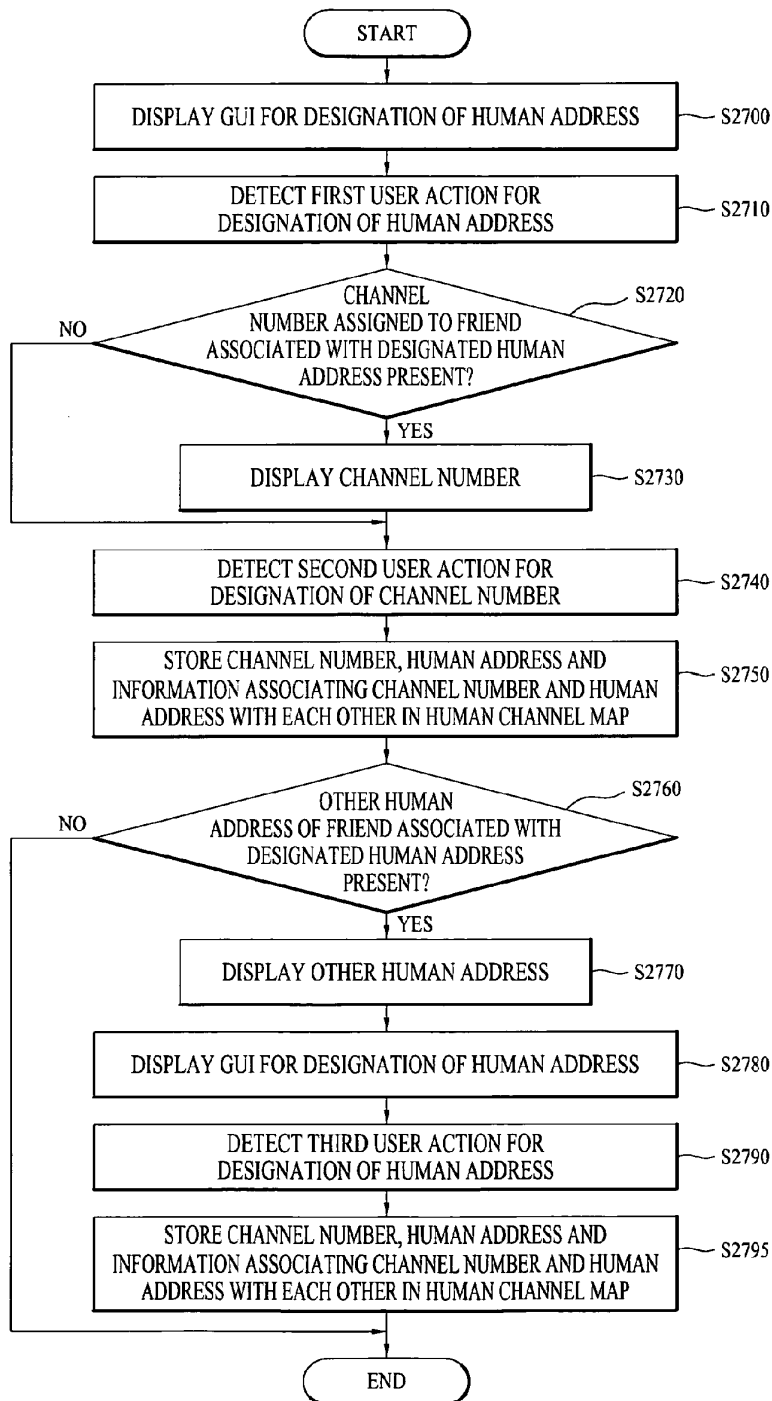


FIG. 96

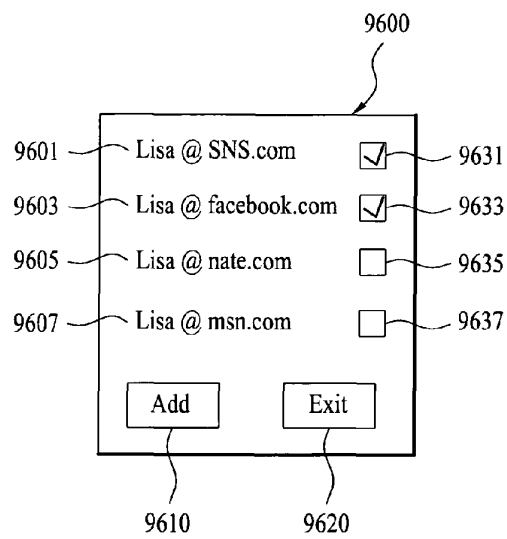


FIG. 97

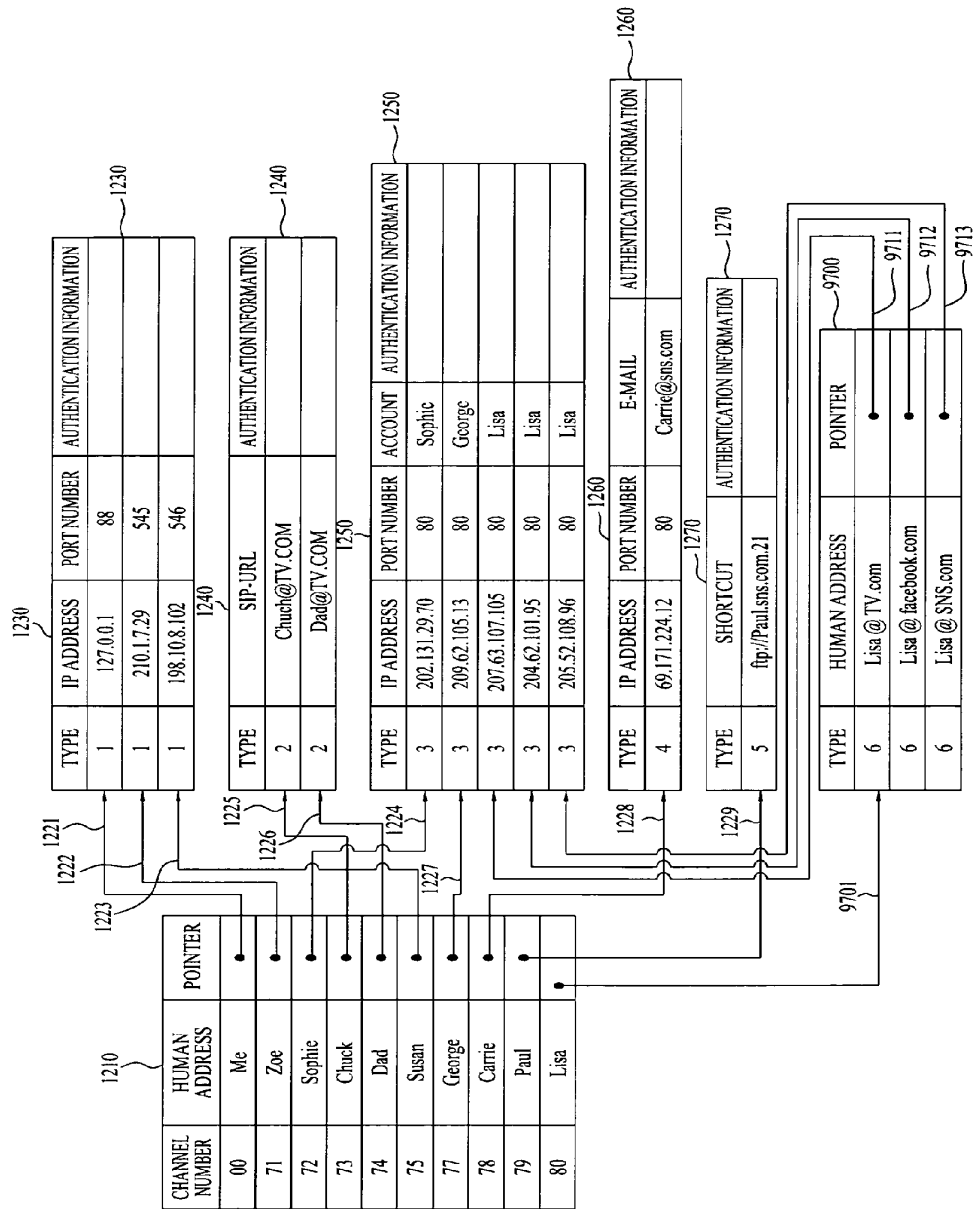


FIG. 98

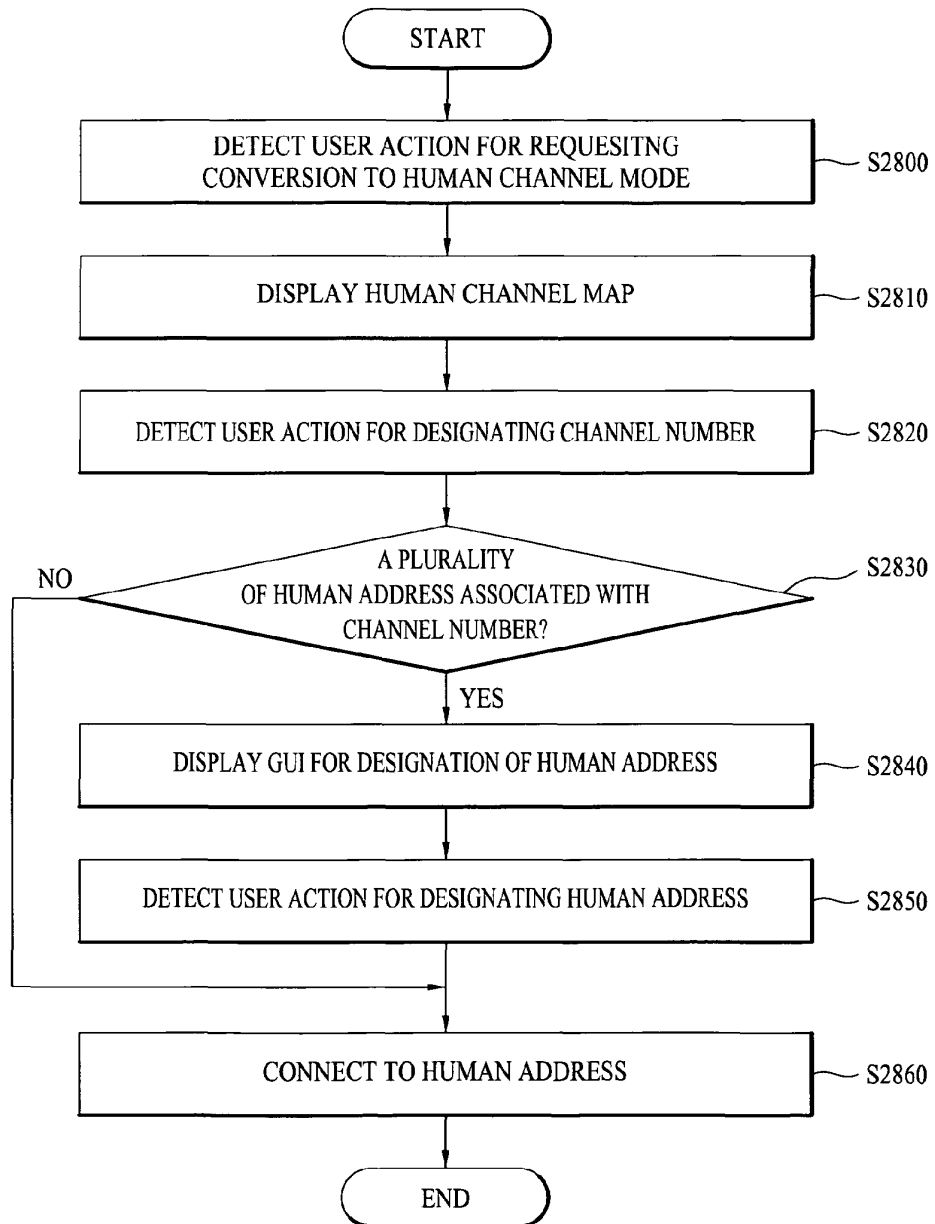


FIG. 99

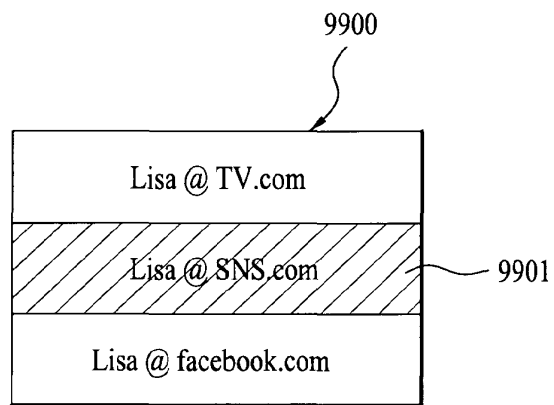


FIG. 100

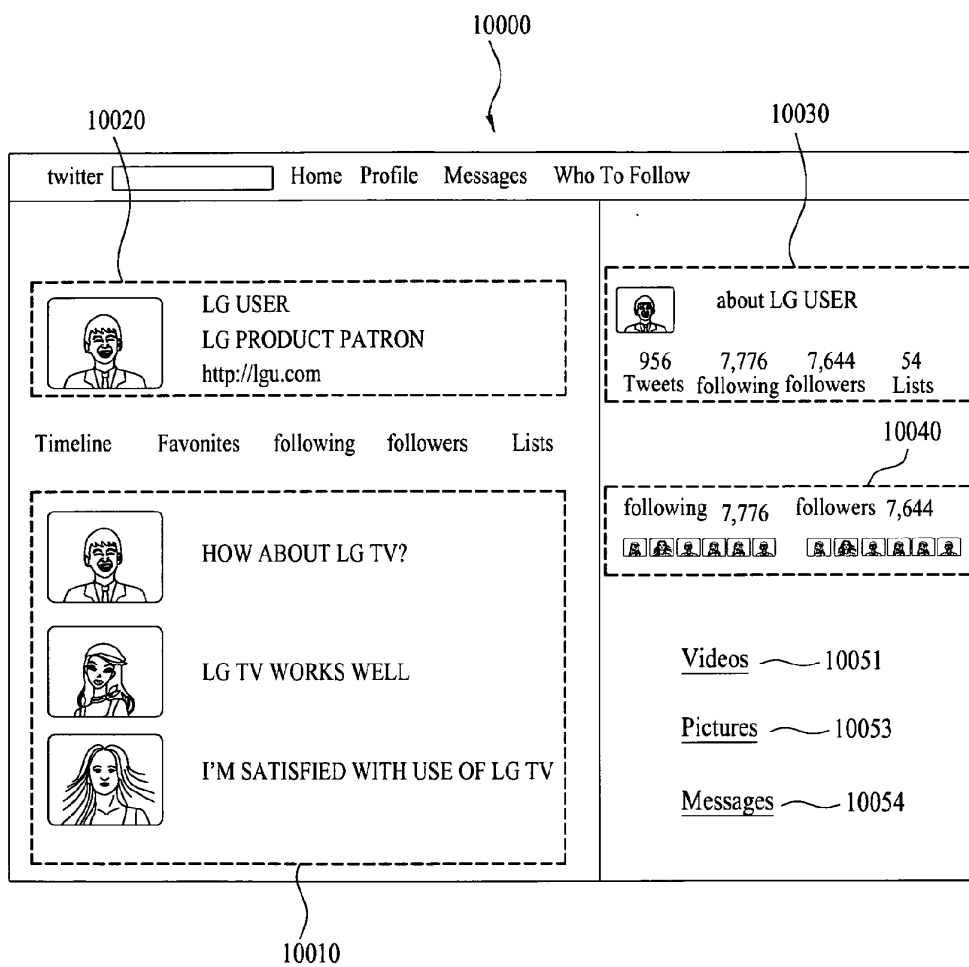


FIG. 101

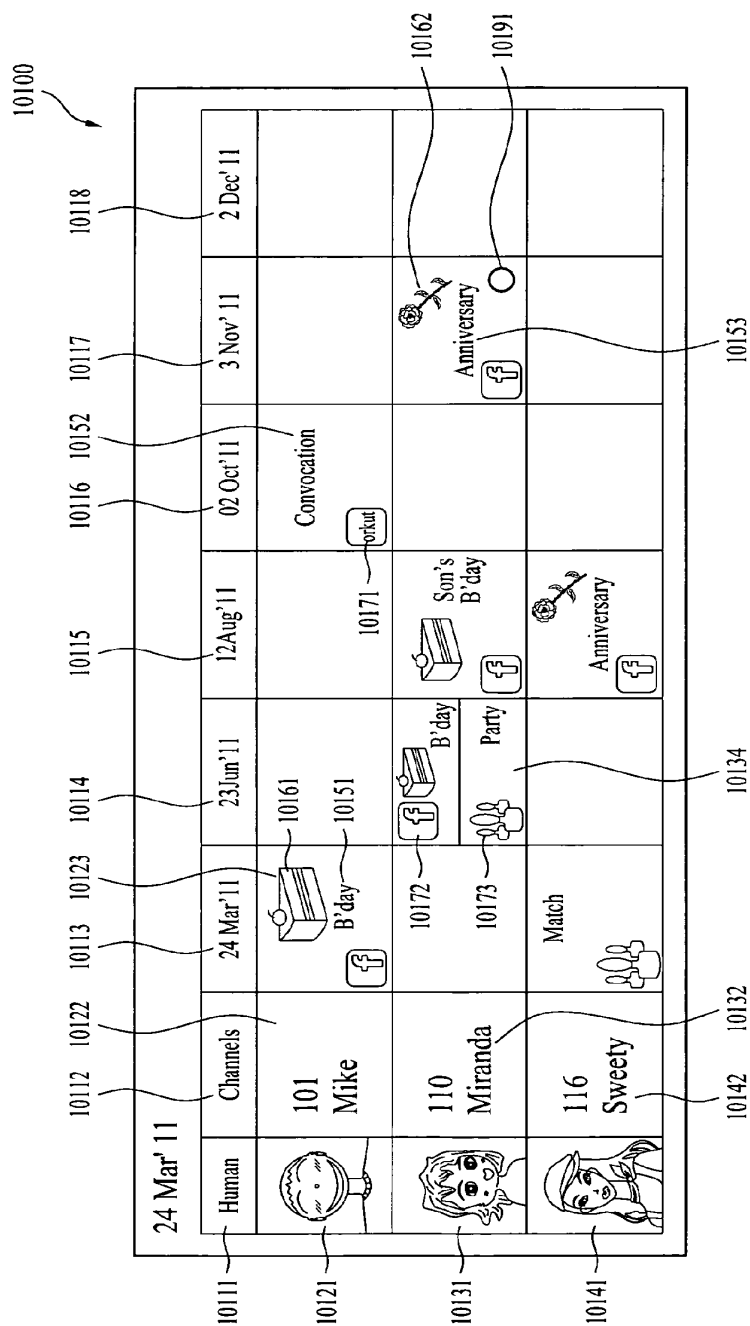


FIG. 102

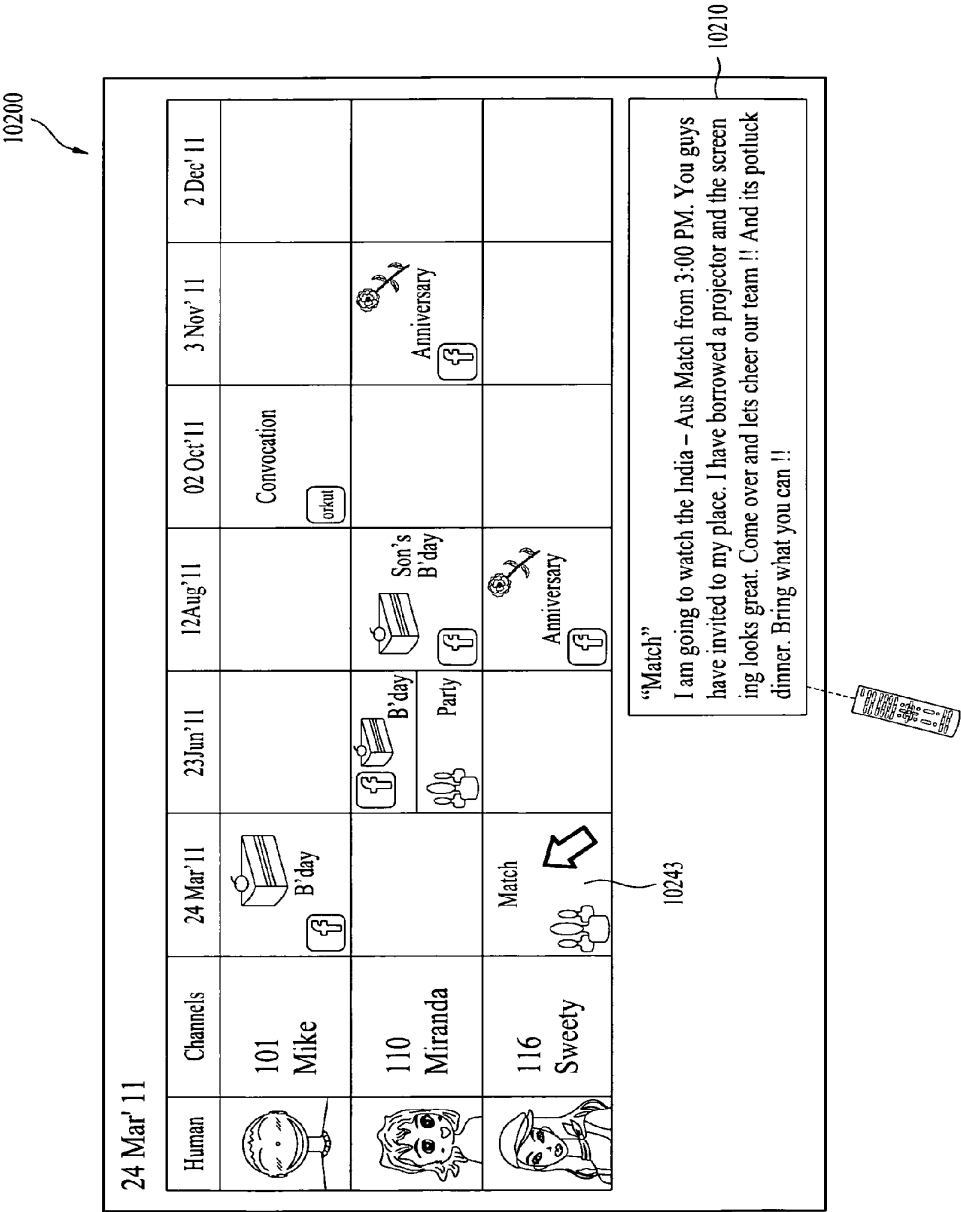


FIG. 103

10300

24 Mar' 11			
Human	Channels	24 Mar'11	30 Mar'11
	0 Mike		
	110 Miranda		
	116 Sweety		

10341

FIG. 104

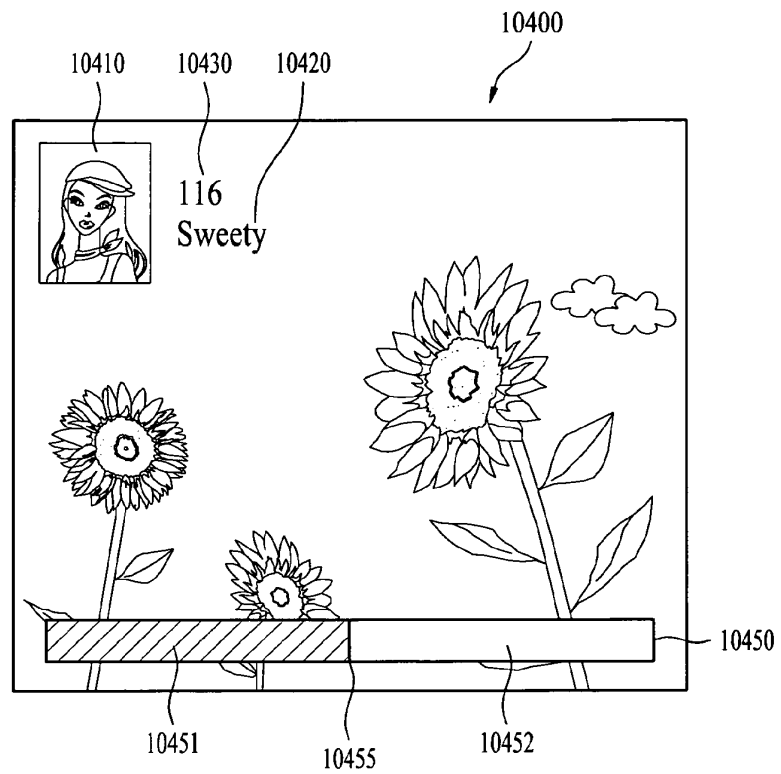


FIG. 105

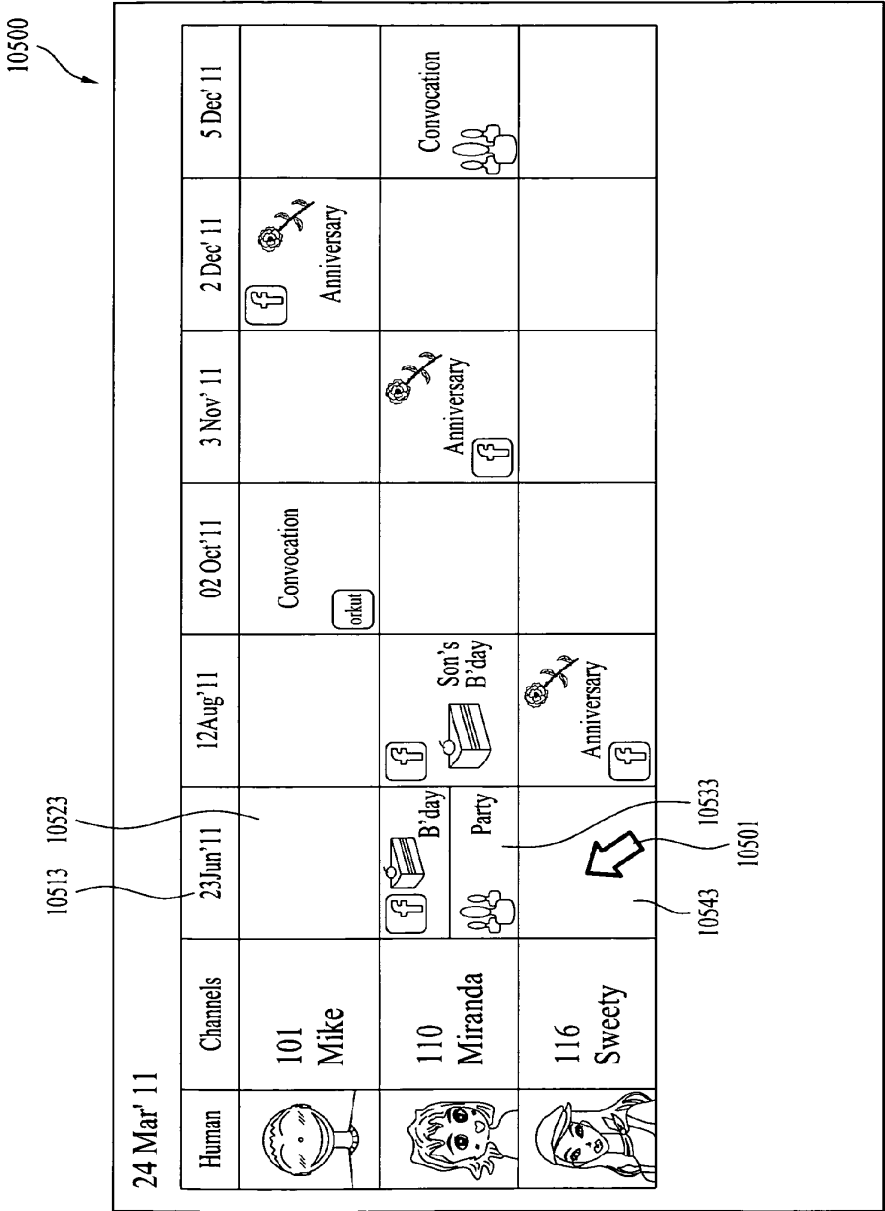


FIG. 106

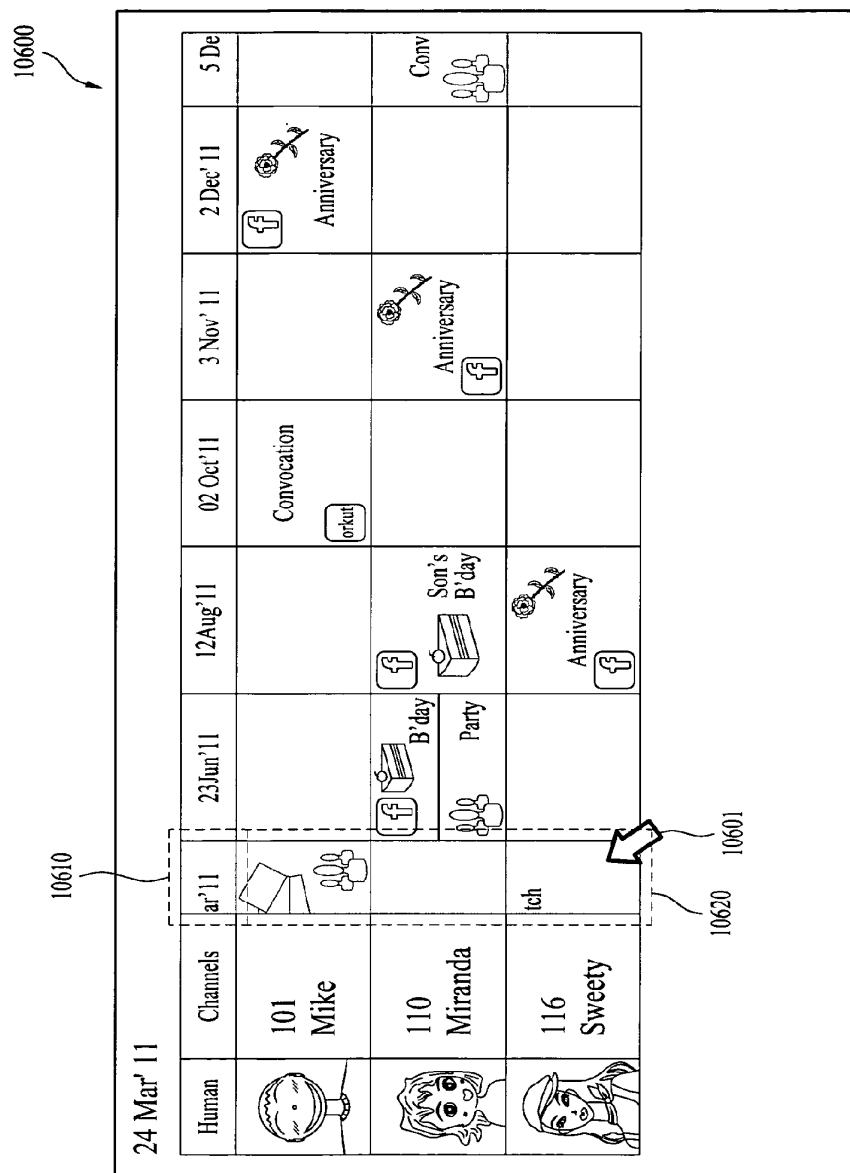


FIG. 107

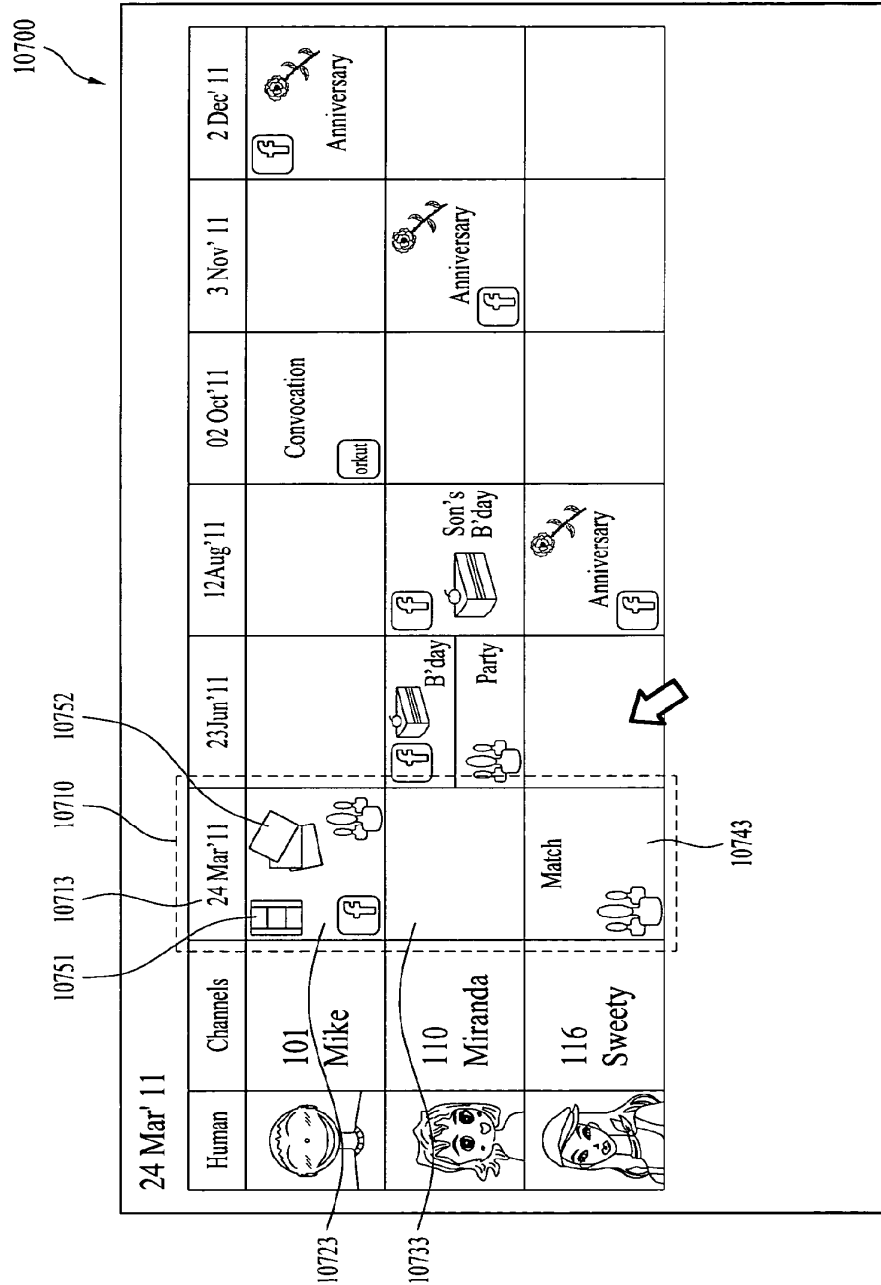


FIG. 108

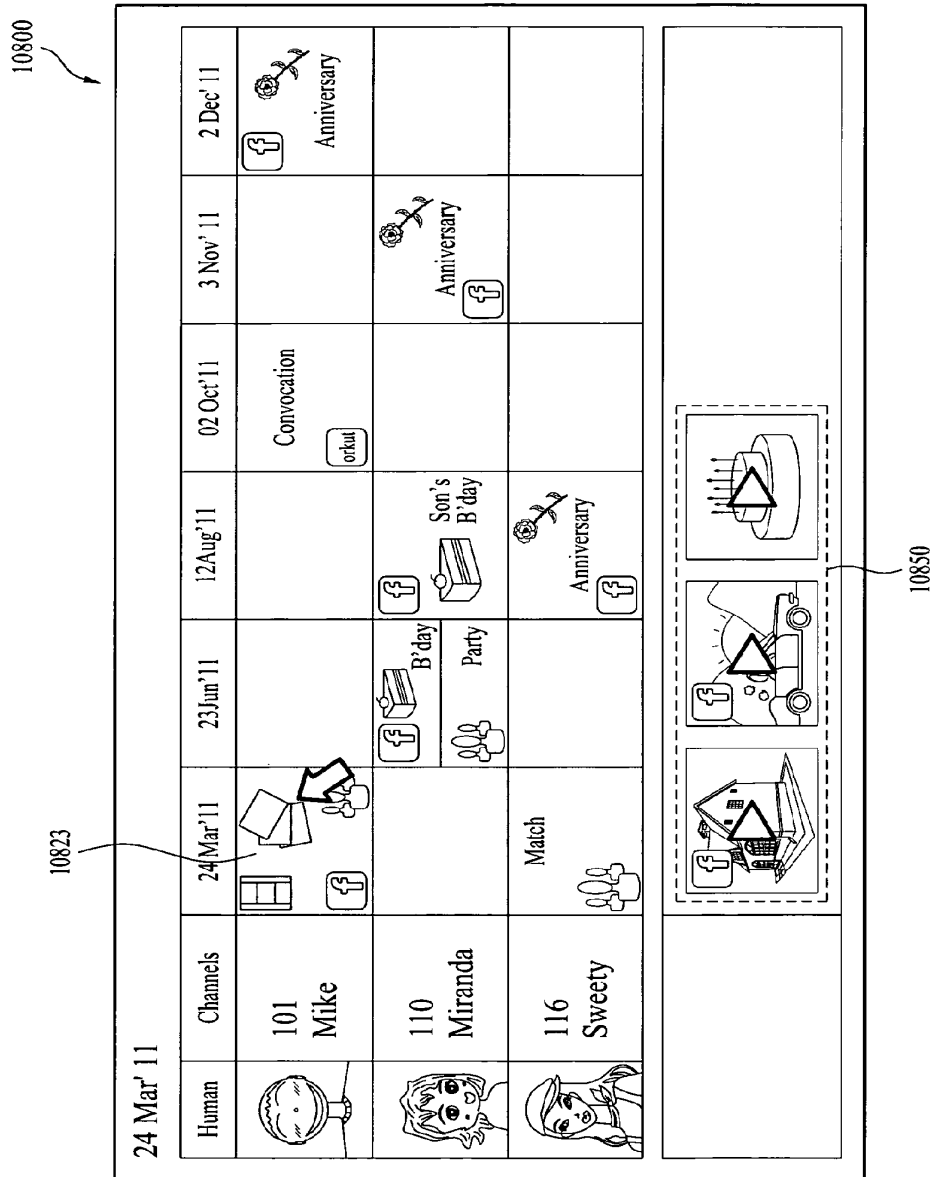


FIG. 109

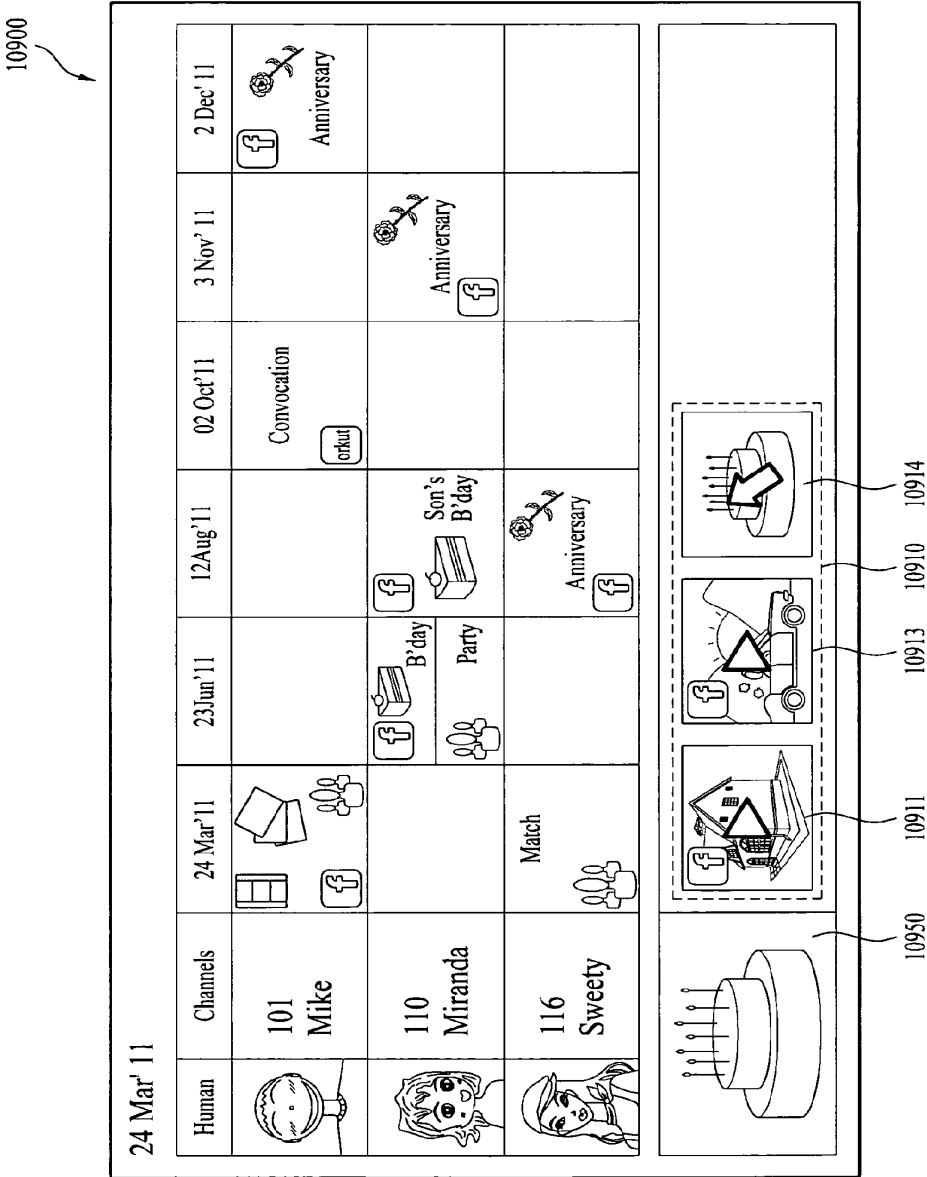


FIG. 110

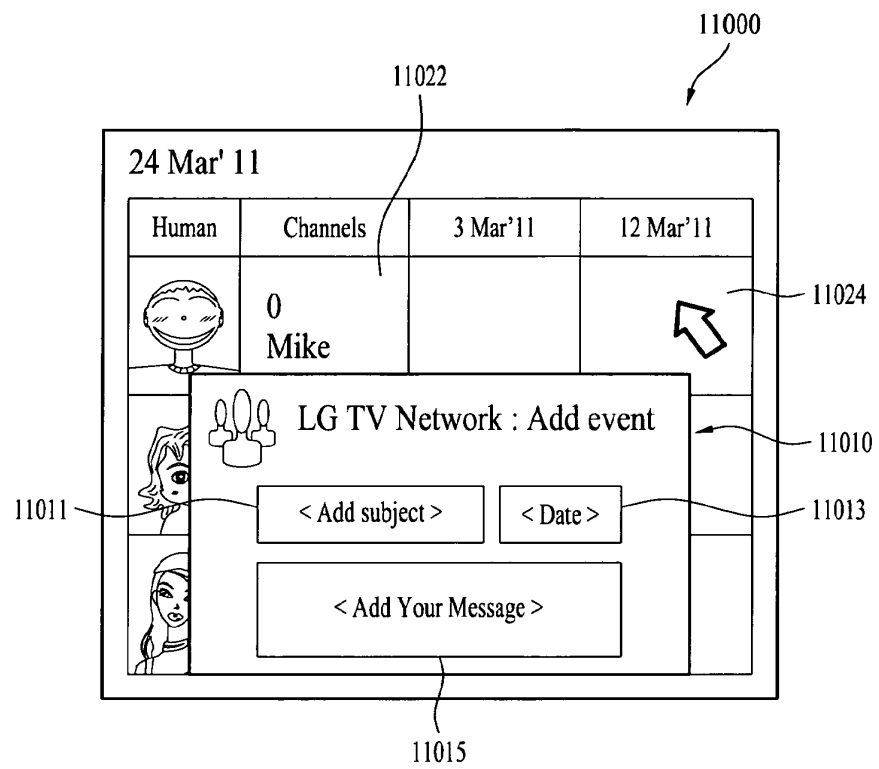


FIG. 111

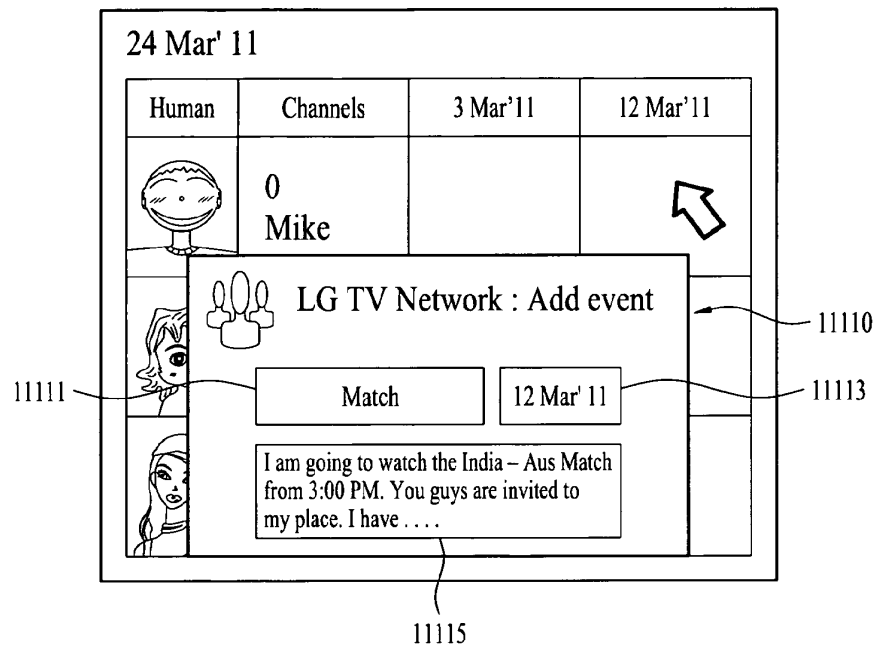


FIG. 112A

24 Mar' 11

11200

Human	Channels	3 Mar'11	12 Mar'11
	0 Mike		Match  
	110 Molly		
	116 Sally		

11224

...

FIG. 112B

24 Mar' 11

11201

Human	Channels	3 Mar'11	12 Mar'11	15 Mar'11
	0 Molly			
	112 Mike		Match 	

11234

FIG. 113

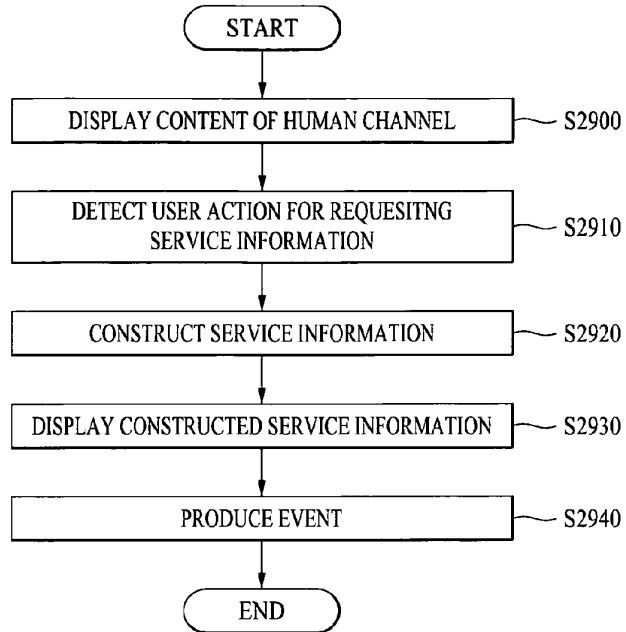


FIG. 114

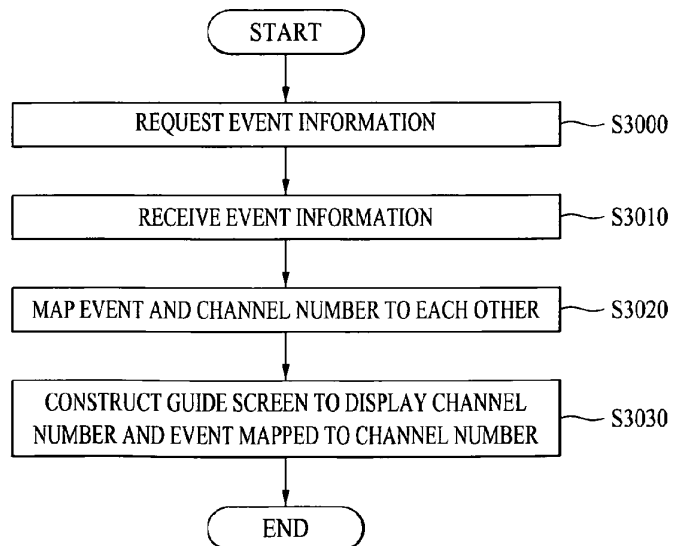


FIG. 115

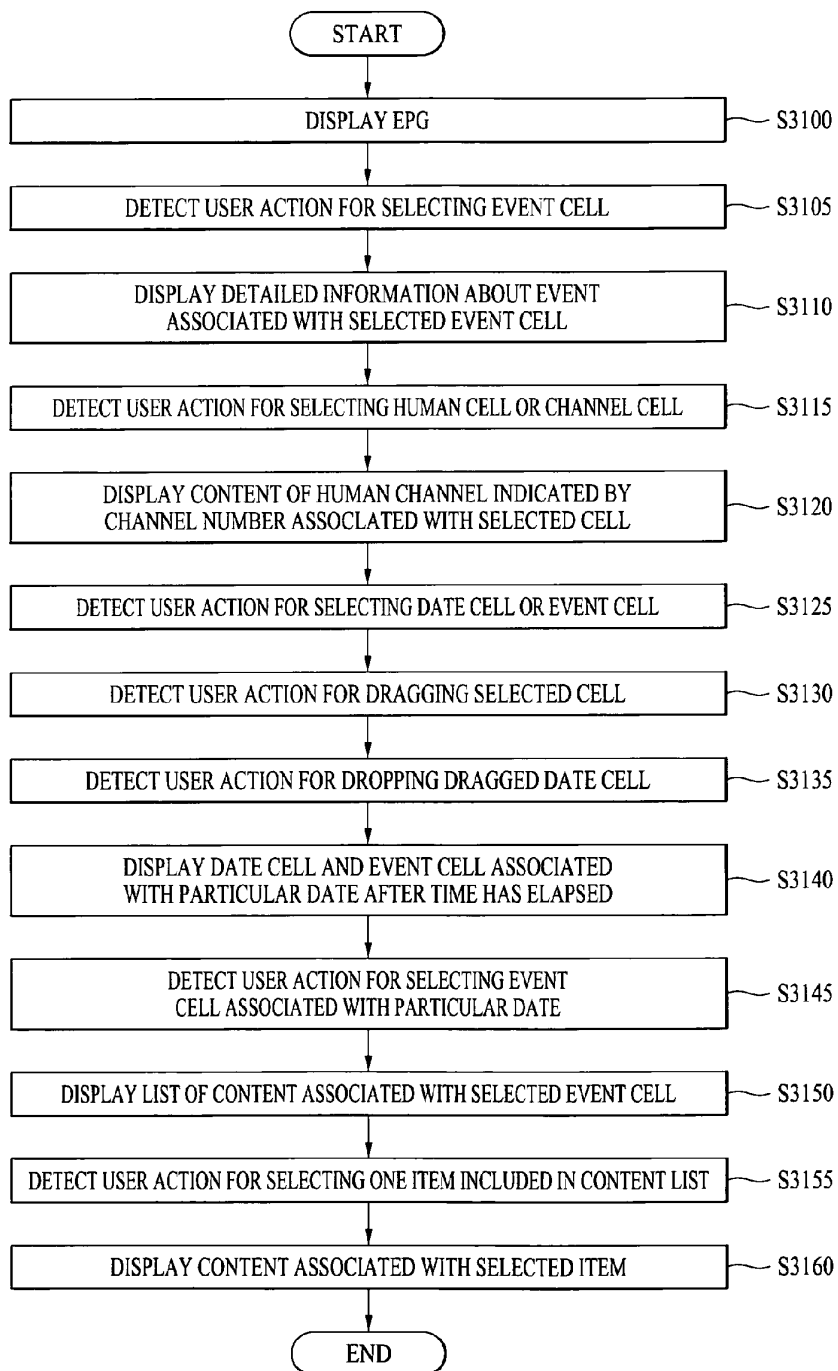
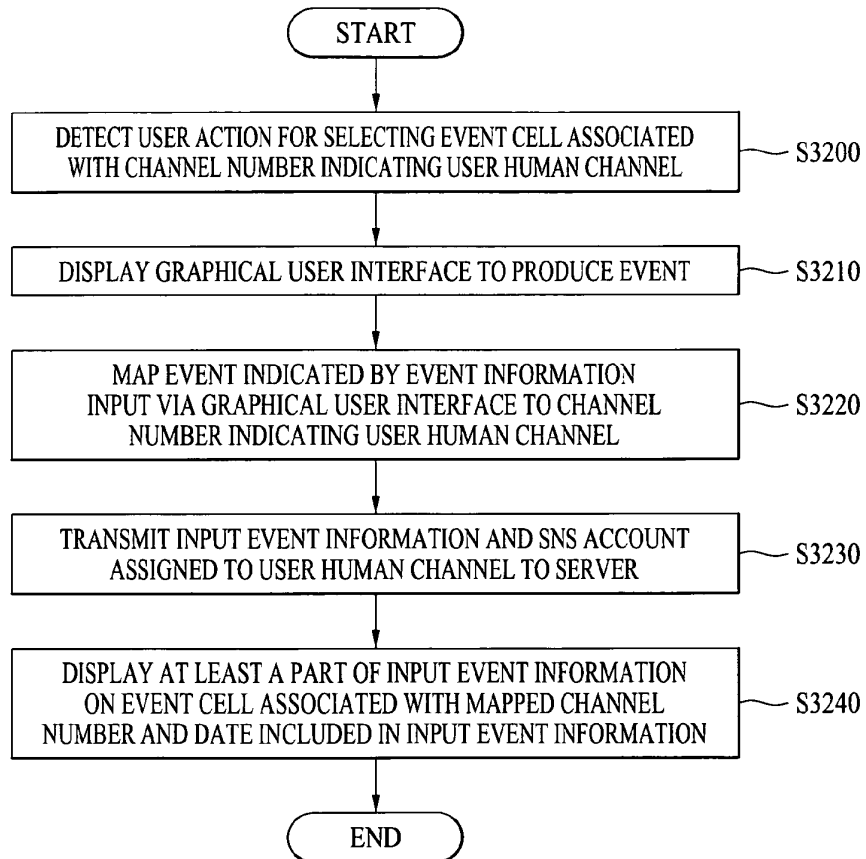


FIG. 116

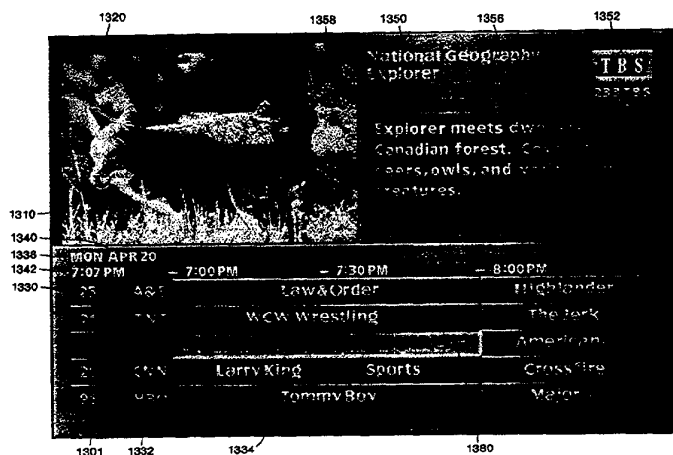




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(54) Title: A METHOD AND APPARATUS FOR DISPLAYING AN ELECTRONIC PROGRAM GUIDE



(57) Abstract

A method and apparatus for channel surfing while using an electronic program guide (1301) are provided. A multiple channel broadcasting system is tuned to a first channel to provide a display of a broadcast of a first program on a screen. An electronic program guide (1301) is displayed that identifies a plurality of channels and programming on the channels. A first display information packet (1302) containing a description of the first program is displayed with the electronic program guide. A system pointer is manipulated in response to input by the user to an area of the electronic program guide associated with a second program. The display of the first display information packet (1302) is subsequently replaced with a display of a second display information packet containing a description of the second program. A method for providing a status indication of a tuner and a pointer in a multiple channel broadcasting system are also provided.

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A METHOD AND APPARATUS FOR DISPLAYING AN
ELECTRONIC PROGRAM GUIDE

FIELD OF THE INVENTION

The present invention relates to the presentation of channel, program, and broadcast information for a multiple channel television broadcast system.

BACKGROUND OF THE INVENTION

Television broadcasting technology has improved tremendously since its inception. Today, television signals are broadcasted on the airwaves, through cables, and via satellite. The number of stations accessible today has increased to hundreds of stations. To select a program to view, many viewers simply "channel surf" until they find a channel that has a desirable program. Channel surfing refers to the process of using the channel "+" or "-" key to sequentially view each channel. Although some viewers find channel surfing among hundreds of stations enjoyable, most viewers prefer a more direct method for selecting a program to view.

Some prior art television channel selection guides provide a television channel selection guide which displays a listing of the channels typically in numeric order and the titles of the programs broadcasted or to be broadcasted on the channels. A simplified block diagram of such a guide is illustrated in Figure 1. The viewer or user of the system may then select the channel by entering in the channel number or selecting a program. The system responds by removing the guide displayed and tuning to the station selected and displaying the broadcast signals of the station.

This system has a number of drawbacks. First, the guide provides only the title of the program. To get additional information, such as a written description of the program, the user must select an information button which responds by bringing up a second layer of the menu having the program description. Thus, as the number of

stations increase, the efficiency of reviewing programs and program descriptions decreases.

Furthermore, many viewers prefer to preview an actual broadcast on a station before selecting that station for viewing. In the prior art systems, the user has to select each station to view, and subsequently go back to the channel guide in order to view program titles on other channels. While other prior art systems may provide a program listing having a transparent background superimposed over a program broadcast, it is still difficult to view the program broadcast through the program listing.

Moreover, in any television system a user can channel surf by skipping from channel to channel in sequence using the channel "up" or "down" buttons. However, when channel surfing in the prior art systems, the user is unable to take advantage of the channel listing and program description information. While some prior art television channel selection guides allow for channel surfing while the guide is displayed, these systems change the channel as the user moves a selection device or pointer to each new channel. Again this prevents taking full advantage of the broadcast system guide because, while the system guide provides program descriptions, a user might like to view a particular channel while surfing among the program descriptions of other channels.

Another shortcoming of prior art television channel selection guides is that, while providing the current time on the guide display, they do not provide a clear representation of the current time in relation to the channel program listings. Consequently, it is difficult for a user to ascertain the amount of time elapsed since a particular program began.

In the current generation of broadcasting technology, a viewer is provided with many options regarding programs that are available for broadcast. These options include, but are not limited to, on-demand selection of pay-per-view broadcasts, selection of a broadcast for automatic recording, and programming a broadcast system to tune to a preselected station at a designated time. As the number of options

increases, so to does the need for a user-friendly system interface. The prior art channel selection guides do not provide a ready status indication as part of the channel selection guide. In addition, as the channel selection guides become more interactive and provide the viewer with more selections, the lack of status displays for system pointers and tuners can lead to a great deal of viewer frustration.

SUMMARY OF THE INVENTION

A method and apparatus for displaying programming information by translating the display of a broadcast of a program are provided. According to one aspect of the invention, a multiple channel broadcasting system is tuned to a channel to provide a display of a broadcast of a program on a screen. Programming information is displayed that identifies channels in the broadcasting system. When displaying the programming information, the display of the program broadcast is translated to a smaller broadcast window on the screen. The translation comprises two steps. One step superimposes at least one of a series of successively smaller broadcast window outlines over the display of the broadcast on the screen. Another step displays the broadcast in the smaller broadcast window. Therefore, the programming information is displayed along with the program broadcast on the screen such that no portion of the broadcast is covered by the programming information. Thus, a viewer has an unobstructed view of the selected program while simultaneously accessing the channel program selections of the programming information. The programming information includes an electronic program guide, a display information packet, an electronic category guide, and an electronic subcategory guide.

A method and apparatus for channel surfing while using an electronic program guide are provided. According to one aspect of the invention, a multiple channel broadcasting system is tuned to a first channel to provide a display of a broadcast of a first program on a screen. An electronic program guide is displayed that identifies a plurality of channels and programming on the channels. A first

display information packet containing a description of the first program is displayed with the electronic program guide. The broadcast system displays a system pointer. The system pointer is manipulated in response to input by the user to an area of the electronic program guide associated with a second program. The display of the first display information packet is subsequently replaced with a display of a second display information packet containing a description of the second program. The broadcast system remains tuned to the first program while the user views program information for a second program on a second channel.

A method and apparatus for providing a status indication of a tuner and a pointer in a multiple channel broadcasting system are also provided. According to one aspect of the invention, the multiple channel broadcasting system is tuned to a channel to provide a display of a broadcast of a program on a screen. An electronic program guide is generated that identifies a plurality of channels and programming on the channels. A system pointer is supplied that points to a location in the electronic program guide that identifies a channel program in the broadcasting system. An indication is provided to the user as to the status of the broadcasting system tuner and the system pointer. The status is indicated by displaying a program block of a corresponding program on the electronic program guide as appearing to be depressed into the screen when the broadcasting system is tuned to the channel program. The status is indicated by displaying a program block of a corresponding program on the electronic program guide as appearing to be protruding from the screen when the broadcasting system is not tuned to the channel program. The status is indicated by displaying a program block of a corresponding program as highlighted when the system pointer is pointing to the channel program. The status is indicated by displaying a program block of a corresponding program as unhighlighted when the system pointer is not pointing to the channel program.

These and other features, aspects, and advantages of the present invention will be apparent from the accompanying drawings and from the detailed description and appended claims which follow.

BRIEF DESCRIPTION OF THE DRAWINGS

The objects, features, and advantages of the present invention will be apparent to one skilled in the art from the following detailed description in which:

Figure 1 is a simplified illustration of a prior art direct digital satellite system guide display.

Figure 2 is a simple illustration of one embodiment of the present invention.

Figure 3 is a block diagram representation of the elements utilized in the receiver of the television signals.

Figure 4 is a representation of a remote control utilized to tune television stations in accordance with the teachings of the present invention.

Figure 5 is a simplified block diagram of the circuitry utilized in a remote control device.

Figure 6 illustrates the type of data utilized to present the electronic program guide in accordance with the teachings of the present invention.

Figure 7 illustrates the pointers to the data utilized to generate the electronic program guide in accordance with the teachings of the present invention.

Figure 8 illustrates the Master Guide presented to enable the viewer to view programming that is broadcast and is to be broadcast.

Figures 9A, 9B and 9C illustrate one embodiment of the present invention in which a broadcast audio and video is displayed behind the Master Guide.

Figure 10 is an exemplary flowchart illustrative of translating a display to a small window in one embodiment of the present invention.

Figure 11 illustrates a broadcast display in one embodiment of the present invention.

Figure 12 illustrates superimposing successively smaller broadcast window outlines over a broadcast display in the translation of the broadcast window in one embodiment of the present invention.

Figure 13 illustrates the display of an electronic program guide along with a program broadcast on a screen in one embodiment of the present invention.

Figure 14 is an exemplary flowchart that illustrates integrating the translation of a display to a small window with other functions of a broadcast system in one embodiment of the present invention.

Figure 15 illustrates the display of an electronic program guide in one embodiment of the present invention.

Figure 16 is an exemplary flowchart illustrative of the process for optimizing the font size for an available display space in one embodiment of the present invention.

Figure 17 is an exemplary flowchart illustrative of the process for integrating the process of optimization of the font size with other functions of a broadcast system in one embodiment of the present invention.

Figure 18 is an exemplary flowchart illustrative of channel surfing in one embodiment of the present invention.

Figure 19 is an exemplary flowchart illustrative of the process for providing tuner and pointer status display in one embodiment of the present invention.

Figure 20 illustrates the display of an electronic program guide in one embodiment of the present invention.

Figure 21 illustrates the display of an electronic subcategory guide with an electronic program guide in one embodiment of the present invention.

Figure 22 is an exemplary flowchart that illustrates the process for providing an icon to indicate program status in one embodiment of the present invention.

Figure 23 illustrates the display of an electronic program guide having program status icons in one embodiment of the present invention.

Figure 24 is an exemplary flowchart that illustrates a process for providing a time bar with a current time marker in one embodiment of the present invention.

Figure 25 illustrates the display of an electronic program guide having a graphical representation of the current time in relation to the times of channel programming in one embodiment of the present invention.

Figure 26 is an exemplary flowchart that illustrates the process for providing an on-screen menu having differing transparency levels in one embodiment of the present invention.

Figure 27 illustrates the display of an on screen menu having differing transparency levels in one embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

In the method and apparatus of the present invention the broadcast system described is a direct broadcast satellite system. However, it is readily apparent to one skilled in the art that other broadcast systems which have the capability of receiving and displaying a multiplicity of stations may utilize the method and apparatus of the present invention. Furthermore, in the following description, for purposes of explanation, numerous details are set forth, such as menus, flowcharts and system configurations, in order to provide a thorough understanding of the present invention. However, it will be apparent to one skilled in the art that these specific details are not required in order to practice the present invention. In other instances, well known electrical structures and circuits are shown in block diagram form in order not to unnecessarily obscure the present invention.

Figure 2 is a simplified diagram illustrating a Direct Satellite System (DSS). The system has an antenna 3, an integrated receiver/decoder 2 (IRD), a remote controller 5, and a monitor 4. Packets of data are transmitted by a transponder on the satellite. Each transponder transmits data in a time share manner at a predetermined frequency. A tuner 21 of a decoder is tuned in to the frequency of the transponder corresponding to a channel, which is designated by a viewer so that the packets of digital data are received by the decoder.

The antenna 3 receives an encoded data signal sent from a satellite. The received encoded signal is decoded by the IRD. The antenna 3 has a low noise block down converter 3a (LNB). The LNB 3a converts a frequency of a signal sent from the satellite to another frequency. The converted signal is supplied to the IRD 3. The monitor 4 receives a signal from the IRD 3.

Figure 3 is a block diagram of the IRD 3. A radio frequency (RF) signal output from the LNB 3a of the antenna 3 is supplied to a tuner 21 of a front end 20. The output from the tuner 21 is supplied to a quadrature phase shift keying (QPSK) demodulation circuit 22 for demodulation. The output from the QPSK demodulation circuit 22 is supplied to an error correcting circuit 23 for error correction. The data is received in encrypted and encoded (i.e., compressed) form.

The transport IC 24 receives the data stream, consisting of packets of data, from the error correcting circuit 23 and directs portions of the data stream to the appropriate circuit for processing. The digital data stream sent from a satellite includes headers for classifying the different portions of the data in the digital data stream. The transport IC stores the headers in registers and uses the headers to direct the data. The data stream sent from the satellite, includes video data in the format specified by the Motion Pictures Expert Group standard (MPEG), MPEG audio data and electronic programming guide (EPG) data. Data that is identified by its header to be video data is transferred to MPEG video decoder 25. Data that is identified by its header to be audio data is transferred to MPEG audio decoder 26. Similarly, data having a header that identifies the data to be EPG data is transferred to a predetermined area in the data buffer 51 designated to store the EPG.

A conditional access module 33, includes a central processing unit (CPU), a read-only memory (ROM) and a random access memory (RAM). The conditional access module determines whether the user has the authorization to receive certain data, e.g., audio/video for a pay TV station, using the authorization information stored in its memory. Thus, if the conditional access module determines that the user is authorized access, a key to decrypt the incoming data is provided to the transport IC 24, which decrypts the data using the key provided. In one embodiment, a smart card is utilized. This card is inserted into the card reader interface 32 for interface to the transport IC 24. It is readily apparent to one skilled in the art that the

conditional access module is not limited to smart cards and may be configured in other kinds of circuitry.

The MPEG video decoder 25 decodes the video signal received from the transport IC. Dynamic random access memory (DRAM) 25a, connected to the MPEG video decoder 25, is used for buffering and storage of video data during processing by the MPEG video decoder. The decoded digital video signal is supplied to a National Television System Committee (NTSC) encoder 27 and converted to a luminance signal (Y) and a chroma signal (C) which are respectively output through a buffer amplifier 28Y or 28C as an S video signal. A composite video signal is also output through a buffer amplifier 28V.

The MPEG audio decoder 26 decodes the digital audio signal. DRAM 26a, connected to the MPEG audio decoder 26, is used for buffering of data and information during processing by the MPEG audio decoder 26. The decoded digital audio signal is converted into an analog audio signal by D/A converter 30. The left audio signal is output through buffer amplifier 31L and the right audio signal is output through buffer amplifier 31R.

An RF modulator 41 mixes a composite signal output from the NTSC encoder 27 with an analog audio signal output from the D/A converter 30. The RF modulator 41 converts the mixed signal into an RF signal and outputs the RF signal therefrom.

The CPU 29 is the central control mechanism and executes code stored in the ROM 37 to perform certain functions of the system. For example, the CPU processes certain data to control the generation of the program list in accordance with the teachings of the present invention. In addition, the CPU receives and processes the user input, received from the front panel buttons or switches 40 and the photodetector circuit 39 to provide the user functionality and access to the system described herein. In addition, the CPU accesses user settings/preferences for processing of information and configuration

1 1

of the system. The user settings are stored in the non-volatile memory, such as electrically erasable programmable read-only memory (EEPROM) 38. In addition, the CPU maintains a list of pointers, stored in static random access memory (SRAM) 36, to the channel information and program information stored in the SRAM 51. Thus, when a user wishes to display a form of the EPG on the screen, the CPU 29, accessing pointers stored in the SRAM 36, communicates to the transport IC 34 to retrieve the data from the data buffer (SRAM) 51 identified by the pointers. The CPU then formulates the format and other digital data which forms the guide or list on the screen and forwards the data representative of the guide/list to the transport IC 34 which forwards the data to the DRAM 25a of the MPEG video decoder 25 for subsequent output to the screen.

Figure 4 shows an example of a remote controller utilized by a user to transmit commands and make program selections in accordance with the teachings of the present invention. **Figure 5** is simplified a block diagram of the remote controller. The remote controller 400 has an infrared originating device 405, a set of operation buttons 410, a CPU 415, a ROM 420 and a RAM 425. The CPU 415 receives a signal sent from an operation button 410 through an input port 430. The signal is processed according to a program stored in the ROM 420. The RAM 425 is used as a working space so as to produce a transmitting code. The transmitting code is sent to the infrared originating device 405 through an output port and converted into an infrared signal. The infrared signal is transmitted to the IRD. The operation buttons 410 include a direction key for designating a pointer direction such as north, south, east and west, an "EPG" key, a "FAVORITE" key, a "SELECT KEY", a "MENU" key, an "EXIT" key, a ten-key numeric keypad and an "ENTER" key. The set of operation buttons 410 enable the user to select programs through the electronic programming guide in accordance with the teachings of the present invention.

Figure 6 is a block diagram illustration of the data stored in a portion of the data buffer RAM 51. As noted above, the RAM 51 stores EPG data including guide data, channel data, and program data. General information is included in the guide data, for example, the current date and time. The transponder list identifies the number of the transponder transmitting a segment. The channel list identifies the channel number of the first channel of a portion of data. The channel data includes data relating to channels, such as the channel number, channel name (i.e., the call sign of a broadcast station), logo ID (i.e., an identification of the channel logo), data ID, which is an identification of a channel number of MPEG video data or MPEG audio data, number of programs, which identifies the number of programs to be transmitted on a channel during a predetermined time frame, and first program offset which identifies the offset from the header to the first channel data in a segment.

The program data includes the program title, start time of the program, time length of the program, program category such as movies, news, sports, etc., program subcategory such as drama, horror, children's movies or baseball, basketball, football for the sports category, the movie rating and program description that provides a detailed description of the program.

Figure 7 illustrates how pointers to the EPG data are sorted for display on a guide on the user's television screen. As noted above, EPG data includes guide data, channel data and program data which are stored in the Data Buffer (RAM) of the IRD (as shown in **Figure 3**). When a viewer selects a channel, the CPU of the system determines the packet containing the channel information and extracts the transponder number from the channel information. The system front end starts tuning in the frequency of the designated transponder so as to receive the data transmitting from that transponder. If a viewer does not select any channel, the last channel is designated.

As noted above, the CPU generates a table of pointers 736 to the EPG stored in the memory. The table 736 is used for changing the order of channels or programs according to the information to be presented in the guide to the user. The table 736 includes an entry for the address pointer to the corresponding channel data and an entry to the corresponding program data.

A table for generating display information is stored in the ROM 37. Certain data from the table is read out from the ROM 37 and stored in DRAM 25a. Preferably the data is stored in compressed form. Therefore, when a character is displayed on a screen, the compressed character array is decoded so as to generate the character to be displayed. The encoder references a dictionary which includes a set of words and frequently used portions of words and numbers corresponding to each word or portion of a word. The encoder encodes each word to each number by using the dictionary. The decoder references the same dictionary as the encoder to perform the decode function. Once decoded, each character of the decoded word includes a character code corresponding to an American Standard Code for Information Interchange (ASCII) code. Nonvolatile memory (e.g., EEPROM 38) has two tables. The first table contains character bitmaps in the different fonts available for each character. The second table identifies the address in the first table at which to extract the character bitmap. The address is determined according to the character code. The bit map image of the character is transmitted to DRAM 25a and subsequently accessed to display the character on the screen.

In one embodiment of the present invention, the channel data is received from a predetermined transponder and the channel number and channel name are stored in DRAM 25a. Additional channel information such as the channel logo is stored in the ROM 36. The ROM 36 preferably includes a table of Logo IDs and the address of Logo Data stored in ROM 36. Therefore, once a Logo ID is

determined, the address of the Logo Data is determined, retrieved and stored in DRAM 25a.

The channel data provides the beginning address of the program data for a particular program. The actual location on the screen at which the program information is displayed is dependent upon the format of the guide. For example, in a time-based system, the location where the program title is displayed is determined by the start time and time length stored in the program data.

Using this information downloaded from the satellite transmission, programming and channel selection information is provided to the viewer. In the system and method of one embodiment of the present invention, this information is provided to the user in an innovative manner in order to enable the viewer to easily determine and select stations or programs to be viewed. For example, **Figure 8** illustrates a Master Guide that provides such information as the channel call sign 810, channel number 815 in the system, the channel logo of the selected station 820, a highlight 825 indicating the location of the system pointer operable by the arrow direction buttons, a program description 830 for the program the system pointer is located at, as well as program time information 835.

This guide is superimposed on the broadcast of channel 840 at which the system pointer is located. Thus, the user not only is provided the television system data showing the television channels, times of programming broadcasts and descriptions of programs, but is also provided the audio and video of one channel, all on the same menu level of the guide. By movement of the pointer 845 (in the present example, by manipulation of the information highlighted), the channel tuned to will change automatically, enabling the user to stay in the menu while still previewing in part the actual channel highlighted on the guide. This process is illustrated by **Figures 9A, 9B, and 9C**. The discussion will now turn to general process flows for an embodiment of the present invention.

It is readily apparent to one skilled in the art that additional functions can be added to the process and functions modified or removed and still be within the spirit and scope of the invention. The system provides an innovative and user friendly access to a wealth of information regarding programming available through the broadcasting system. In the present invention a number of functions are selectable through the remote control device. It is apparent that these functions may be selectable through other devices such as a joystick or other means such as an on screen menu.

Figure 10 is an exemplary flowchart illustrative of translating a display to a small window in one embodiment of the present invention. The resizing process provides innovative feedback to the user while providing the broadcast system time to perform the computations necessary to resize the window. In the present embodiment, the broadcast display is translated to a small window when the user selects to display the electronic program guide. Thus both the broadcast and the electronic program guide are displayed without overlap. It is readily apparent that the window resizing process can be used to resize windows for a variety of purposes.

Referring to **Figure 10**, operation begins at Block 1000, at which a broadcasting system is tuned to a channel to provide a display of a broadcast of a program. The broadcast window corresponds to the entire display. **Figure 11** illustrates a broadcast display 1102 in one embodiment of the present invention. It is readily apparent that the window size need not initially correspond to the entire display but can be some portion of the display. Operation continues at Block 1002, at which a series of successively smaller broadcast window outlines are superimposed over the program display when it is desirable to translate to a smaller window. **Figure 12** illustrates superimposing these successfully smaller broadcast window outlines 1202-1210 over a broadcast display 1201 in the translation of a broadcast window in one embodiment of the present invention. With reference to **Figure 12**,

outline 1202 is displayed first, followed by outlines 1204, 1206, 1208, and 1210, respectively. Preferably, outline 1202 is shorter in length and narrower in width than the screen perimeter 1220, although it is contemplated that the outlines can progress in one dimension. Each of outlines 1204, 1206, 1208, and 1210 is shorter in length and narrower in width than the preceding outline, respectively.

Referring again to **Figure 10**, operation continues at Block 1004, at which the program display is translated to a smaller broadcast window. Preferably the size of the broadcast window is not changed until the size of the smallest superimposed broadcast window outline equals a predetermined smallest broadcast window size. In an alternate embodiment, the size of the broadcast window changes as the size of the outline changes.

Operation continues at Block 1006, at which programming information in the form of an electronic program guide is displayed on the screen with the broadcast on the screen such that no portion of the broadcast is covered by the electronic program guide. In an alternate embodiment, programming information is displayed performed prior to the translation of the program broadcast.

Figure 13 illustrates one embodiment of a display of an electronic program guide 1301 with the program broadcast 1310 on a screen 1320. The electronic program guide 1301 includes the broadcast channel number 1330, the broadcast network identification 1332, the program title 1334, the start and end times for a program 1336, the current day 1338, the current date 1340, and the current time 1342. It is readily apparent that other embodiments of displays of electronic program guides presenting different information may be utilized.

Referring to **Figure 13**, a user is able to readily view not only the broadcast audio and video, but also the electronic program guide of programming and the program description. A display information packet 1302 containing a description of the program broadcast may be

displayed with the electronic program guide 1310. The display information packet 1302 also contains the program title 1350, the broadcast network identification 1352, the broadcast channel number 1354, the start and end times of the program 1356, and the program rating 1358. Alternatively, the user may selectively replace the display of the display information packet 1302 with the display of an electronic category guide. The electronic category guide contains a listing of programming categories.

After viewing the programming selections on the electronic program guide, a viewer may deselect the electronic program guide display. The electronic program guide display is also deselected upon selection of a channel by the user. Upon deselection of the electronic program guide, the broadcast system translates the broadcast of a program displayed in the small window by superimposing a series of successively larger broadcast window outlines over the display. In the present embodiment, the first larger broadcast window is longer in length and wider in width than the small window in which the program is displayed. Each successive outline is longer in length and wider in width than the preceding outline. Following the translation, the video broadcast is redisplayed in an area defined by each successively larger broadcast window outline.

Figure 14 is an exemplary flowchart that illustrates one embodiment of the process for integrating the translation of a display to a small window with other functions of a broadcast system. Operation begins at Block 1402, at which a television screen or display is currently showing a broadcast of a selected station. Operation continues at Block 1404, at which a user may select the electronic program guide for display. The system monitors the states of the buttons on a user's remote control device to determine when the user has depressed a certain button. Implementation of monitoring, e.g., polling, interrupt driven events, are well known in the art and will not be discussed further herein. If the user does not select the

electronic program guide for display operation continues at Block 1402, at which the system continues to display the broadcast and monitors selection by the user of the electronic program guide function. If the user does select the electronic program guide for display at Block 1404, then operation continues at Block 1406, at which a series of successfully smaller broadcast window outlines are displayed.

Operation continues at Block 1408, at which the display of a broadcast is translated to a smaller broadcast window on the display. Operation continues at Block 1410, at which an electronic program guide is displayed in an area adjacent to the smaller broadcast window. An exemplary electronic program guide was previously discussed with reference to **Figure 13**. Operation continues at Block 1412, at which a display information packet is displayed along with the electronic program guide in an area adjacent to the broadcast window on the electronic program guide. The display information packet contains a description of the program that is currently selected. Operation continues at Block 1414, at which a user may select an electronic category guide for display using the buttons on the remote control. If the user selects the display of an electronic category guide, operation continues at Block 1416, at which the display of an electronic category guide replaces the display of the display information packet. The electronic category guide includes a number of programming categories. The broadcast system then identifies programs on channels that correspond to each category contained in the electronic category guide. The programs that correspond to the particular categories of the electronic category guide are then highlighted on the electronic program guide.

If the user does not select the electronic category guide for display, or following the display of the electronic category guide when the user selects the electronic category guide for display, operation continues at Block 1418, at which the user may deselect the display of

the electronic program guide using the buttons on the remote control. If the user does not deselect the electronic program guide at Block 1418, operation continues at Block 1410, at which the broadcast system continues to display the electronic program guide. If the user does deselect the electronic program guide at Block 1418, operation continues at Block 1420, at which a series of successively larger broadcast window outlines are displayed. Operation continues at Block 1422, at which the electronic program guide is removed from the display. If the electronic category guide was not selected by the user, then the display information packet is also removed from the display at Block 1422. If the electronic category guide was selected by the user, then the electronic category guide is also removed from the display at Block 1422. Operation continues at Block 1424, at which the display of the broadcast is translated to a larger window on the display screen.

As noted earlier and referring again to **Figure 13**, the user may select a display information packet for display along with the electronic program guide. In one embodiment, the display information packet contains a description of the program selected for display. Preferably, the system automatically resizes the text of the display information packet such that all the text appears in the window. **Figure 15** illustrates a display of an electronic program guide in one embodiment of the present invention that is displayed with a display information packet 1502 that contains a greater number of characters than the display information packet 1302 of **Figure 13**. As the area allocated for the display information packet in one embodiment of the broadcasting system is of a constant fixed size, the broadcasting system is configured to adjust the font size of the characters based on the number of characters present for display. Optimization of the font size causes a maximum number of characters to be displayed for a given display area.

Figure 16 is an exemplary flowchart illustrative of the process for optimizing the font size for an available display space in one embodiment of the present invention. Operation begins at Block 1602, at which the broadcast system determines a number of characters to be displayed. Operation continues at Block 1604, at which the broadcast system determines the number of display pixels available for character display. Operation continues at Block 1606, at which the broadcast system adjusts the character font size in order to display all characters in the available number of display pixels. Operation continues at Block 1608, at which the broadcasting system displays the characters in the display information packet.

Figure 17 is an exemplary flowchart illustrative of the process for integrating the process of optimization of the font size in the display information packet with other functions of a broadcast system in one embodiment of the present invention. Operation begins at Block 1702, at which a television screen or display is currently showing a broadcast of a selected station. Operation continues at Block 1704, at which a user may select a display of an electronic program guide. If the user does not select the electronic program guide for display, operation continues at Block 1702, at which the system continues to display the broadcast. If the user does select the display of an electronic program guide operation continues at Block 1706, at which the electronic program guide is displayed. Operation continues at Block 1708, at which a user selects a display information packet for display along with the electronic program guide.

Upon selection of the display information packet for display, operation continues at Block 1710, at which the broadcast system determines the number of pixels available for the display information packet. Operation continues at Block 1712, at which the broadcast system determines the number of characters in the display information packet that are to be displayed. In one embodiment, the maximum number of characters is 256. Operation continues at Block

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1714, at which the broadcasting system determines if the number of characters is less than 180. One embodiment of the present invention uses three font sizes for the displaying characters in the display information packet. If the broadcast system determines at Block 1714 that the number of characters is less than 180, then the broadcast system selects the largest of the three font sizes. Following selection of the largest font size, operation continues at Block 1722, at which the broadcast system displays the display information packet using the largest font.

If the broadcast system determines at Block 1714 that the number of characters is not less than 180, then operation continues at Block 1716, at which the broadcasting system determines if the number of characters is greater than 180 and less than 220 characters. If the number of characters is greater than 180 and less than 220 then the broadcast system selects the medium font size. Following selection of the medium font size, operation continues at Block 1722, at which the broadcast system displays the display information packet using the medium sized font.

If the broadcast system determines at Block 1714 that the number of characters is not more than 180 and less than 220, then operation continues at Block 1718, at which the broadcast system determines that the number of characters is more than 220. Operation continues at Block 1720, at which the broadcast system selects the smallest of the three font sizes. Operation continues at Block 1722, at which the broadcast system displays the display information packet using the smallest font size.

Because the number of television broadcasting stations accessible today includes hundreds of stations, many viewers channel surf until they find a channel that has a desirable program. Channel surfing refers to the process of using the channel plus or minus key to sequentially view each channel. While some viewers find channel surfing among hundreds of stations enjoyable, some viewers prefer a

more direct method of program selection. For this reason, an embodiment of the system of the present invention uses two modes, a non-channel surfing mode and a channel surfing mode, from which a user may select channels to view.

The non-channel surfing mode is described with reference to **Figures 9A, 9B, and 9C**. When the user selects the non-channel surfing mode, the broadcast system is first tuned to a channel 233 to provide a broadcast of a program on the screen or display 910. The user then selects a display of an electronic program guide 912 for identifying the channels available on the broadcast system and the programming available on the channels. A display information packet 916 is displayed along with the electronic program guide 912, and the display information packet 916 contains a description of the program to which the broadcast system is currently tuned. Furthermore, a system pointer 918 is displayed on the electronic program guide 912. The system pointer 918 is used to select a program for viewing by the user and, as such, may be manipulated by the user within the area of the electronic program guide 912. In the non-channel surfing mode the broadcast system is tuned to the channel that is pointed to by the system pointer 918. Furthermore, the display information packet 916 displays a program description for the program to which the broadcasting system is tuned. Therefore, when the user manipulates the system pointer to a different channel 229 and 240 in the non-channel surfing mode, the broadcast system tunes to that channel and displays the program 975 and 930 currently being broadcast on that channel, respectively.

In contrast to the non-channel surfing mode, is the channel surfing mode of one embodiment of the present invention. **Figure 18** is an exemplary flowchart illustrative of the process of channel surfing in one embodiment of the present invention. At Block 1802, the broadcast system is tuned to a first channel and a display is generated consisting of a broadcast window, an electronic program guide, a

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display information packet, and a system pointer. A first program broadcast is displayed in the broadcast window. Operation continues at Block 1804, at which a display information packet is displayed for the first program broadcast. This display information packet contains a description of the first program broadcast. At Block 1806, the user moves the system pointer to an area of the electronic program guide associated with a second program broadcast. Operation continues at Block 1808, at which the broadcast system replaces the display information packet of the first program with a display information packet of a second program broadcast. The broadcast system remains tuned to the first program broadcast and continues to display the first program broadcast.

In the channel surfing mode the user may manipulate the system pointer to a program or channel in the electronic program guide that is different from the program or channel currently being broadcast. For this reason, it is preferred that the broadcast system provides in the electronic program guide an indication to the user as to the status of the broadcast system tuner and the system pointer. However, the status indication is not required to operate the channel surfing mode in accordance with the teachings of the present invention. **Figure 19** is an exemplary flowchart illustrative of the process for providing tuner and pointer status display in one embodiment of the present invention. An electronic program guide is generated at Block 1902. At Block 1904, a system pointer is supplied for the electronic program guide. Operation continues at Block 1906, at which a status indication is provided of the system tuner and the system pointer.

Each program displayed in the electronic program guide is displayed in a program block or area that is associated with a particular channel and a particular time slot. The status indication is provided by controlling the appearance of the program block in accordance with the location of the system pointer and the channel to which the

system is tuned. In particular, when the broadcast system is tuned to a program, and therefore the broadcast window displays the programming of the channel the system is tuned to, the corresponding program block is displayed on the electronic program guide as appearing to be depressed into the screen. The program blocks of the remaining programs not broadcasted but shown in the electronic program guide appear to be protruding from the screen. Therefore, when the broadcasting system is not tuned to a program the corresponding program block is displayed on the electronic program guide as appearing to be protruding from the screen. The status indication of the system pointer causes a different effect. In particular, when the system pointer is pointing to a program the corresponding program block is displayed as highlighted on the electronic program guide. When the system pointer is not pointing to a program the corresponding program block is displayed as not highlighted on the electronic program guide.

There are four primary combinations of the status indications as used by an embodiment of the broadcast system of the present invention. First, the display of a program block appears depressed into the screen and highlighted to indicate that the broadcast system is tuned to the corresponding program and the system pointer is pointing to the corresponding program. Second, the display of a program block appears depressed into the screen and unhighlighted to indicate that the broadcast system is tuned to the corresponding program while the system pointer is pointing to a different program. Third, the display of a program block appears protruding from the screen and highlighted to indicate that the system pointer is pointing to the corresponding program while the broadcast system is tuned to a different program. Fourth, the display of a program block appears protruding from the screen and unhighlighted to indicate that the broadcast system is not tuned to the corresponding program and the system pointer is not pointing to the corresponding program.

Figure 13 illustrates a tuner and pointer status display in one embodiment of the present invention. The broadcast system of **Figure 13** is tuned to the National Geographic Explorer program on the TBS network as indicated by the corresponding program block 1380 appearing to be depressed into the screen. The system pointer is also pointing to the National Geographic Explorer program as indicated by the highlighting of program block 1380.

Figure 20 illustrates the situation in which a broadcast system is tuned to one channel and the system pointer is pointing somewhere other than to the channel which is tuned. In particular, the broadcast system of **Figure 20** is tuned to the National Geographic Explorer program on the TBS network as indicated by the corresponding program block 2002 appearing to be depressed into the screen. An electronic category guide is selected for display instead of a display information packet. The system pointer is pointing to the "ALL" category box 2004 in the electronic category guide as indicated by the highlighting of the category block 2004.

As shown in **Figure 20**, instead of selecting a display information packet for display at Block 1806 of **Figure 18**, the user may select an electronic category guide 2006 for display with the electronic program guide 2001. The electronic category guide 2006 includes a number of programming categories 2010. The broadcast system then identifies programs on channels that correspond to each category 2010 contained in the electronic category guide 2006. The programs that correspond to the particular categories of the electronic category guide 2006 are then indicated or highlighted on the electronic program guide 2001. The system pointer may be manipulated by the user to an area of the electronic category guide 2006, and system pointer status is indicated. When the system pointer is pointing to a category block the category block is displayed as highlighted on the electronic category guide 2006. The system pointer is pointing to the "ALL" category block

2004 in the electronic category guide 2006 as indicated by the highlighting of category block 2004.

If the user, typically using the broadcast system remote control, selects one of the categories from the electronic category guide, then the display of the electronic category guide is replaced with a display of an electronic subcategory guide. **Figure 21** illustrates the display of an electronic subcategory guide 2102 with an electronic program guide 2104 in one embodiment of the present invention. The selected category 2106 is displayed along with the electronic subcategory guide 2102 and the electronic program guide 2104. The electronic subcategory guide 2102 includes a number of subcategories 2108. The broadcast system identifies programs on channels that correspond to each subcategory contained in the electronic subcategory guide 2102. The programs that correspond to the particular categories of the electronic subcategory guide 2102 are indicated or highlighted on the electronic program guide. The status of the system pointer is shown and changed as the pointer is moved about the display. For example, the system pointer may be manipulated by the user to an area of the electronic subcategory guide 2102. When the system pointer is pointing to a subcategory block the subcategory block is displayed as highlighted on the electronic category guide. In **Figure 21**, the system pointer is pointing to the "ALL" subcategory block 2108 in the electronic subcategory guide 2102 as indicated by the highlighting of subcategory block 2108.

The multiple channel broadcasting system of one embodiment of the present invention provides a user with several options regarding the programs available for broadcast. The multiple channel broadcasting system allows the user to select pay-per-view broadcasts for purchase. In addition, the broadcast system allows the user to select corresponding programs for recording. Furthermore, the multiple channel broadcasting system allows the user to set a broadcasting system timer to automatically tune the broadcasting

system to a program at a particular time. Moreover, the multiple channel broadcasting system allows the user to designate certain programs as favorite programs. Consequently, the multiple channel broadcasting system of one embodiment of the present invention displays icons that provide the user with the status of the programs while viewing the electronic program guide.

Figure 22 is an exemplary flowchart that illustrates the process for providing an icon to indicate program status in one embodiment of the present invention. Operation begins at Block 2202, at which the broadcasting system is tuned to display a program broadcast. Operation continues at Block 2204, at which an electronic program guide is generated. Electronic menus may be displayed along with the electronic program guide. The electronic menus control pay-per-view purchases, selections of programs for recording, setting of the broadcasting system timer, and selection of favorite programs. At Block 2206, graphic images are generated that indicate program status. Operation continues at Block 2208, at which the graphic images are displayed within the electronic program guide. The icons or graphic images may serve as electronic links between the electronic program guide and a corresponding menu of the electronic menus and a display information packet.

Figure 23 illustrates the display of an electronic program guide having program status icons in one embodiment of the present invention. The icon 2302 displayed in program block 2304 to indicate that a pay-per-view broadcast is selected resembles a dollar sign. The icon 2306 displayed in program block 2308 to indicate that a broadcast is selected for recording resembles a videocassette tape. The icon 2310 displayed in program block 2312 to indicate that the broadcast system timer is set to tune the broadcast system to a program at the time of the corresponding program resembles a clock. An icon may be displayed in a program block to indicate that a program is a favorite

program. Icon 2314 in program block 2316 is one possible representation of a favorite program icon.

The multiple channel broadcasting system of one embodiment of the present invention provides a display of the time wherein a user can view the current time in relation to the times of programming and the program blocks. **Figure 24** is an exemplary flowchart that illustrates a process for providing a time bar with the current time marker in one embodiment of the present invention. Operation begins at Block 2402, at which a television screen or display is currently showing a broadcast of a selected station. Operation continues at Block 2404, at which a user may select a display of an electronic program guide. If the user does not select display of an electronic program guide operation continues at Block 2402, at which the broadcasting system continues to display the broadcast of the currently selected station. If the user selects the display of an electronic program guide, operation continues at Block 2406, at which the electronic program guide is displayed by the broadcast system.

Following display of the electronic program guide, operation continues at Block 2408, at which a time bar is displayed that identifies times of programming on the channels in the broadcasting system. Operation continues at Block 2410, at which a graphical representation of the current time is generated. Operation continues at Block 2412, at which the graphical representation of the current time is displayed in proximity to the time bar so as to indicate the current time in relation to the times of programming on the channels of the broadcast system. In one embodiment of the present invention the graphical representation of time is displayed as an inverted triangle on the time bar. The graphical representation of time may include a digital display of the current time. The graphical representation of time may also include an icon with the display of the current time.

Figure 25 illustrates the display of an electronic program guide and a graphical representation of the current time in relation to the

times of channel programming in one embodiment of the present invention. When the user selects the display of an electronic program guide, the electronic program guide 2502 is displayed by the broadcast system. With the electronic program guide, a time bar 2504 is displayed that identifies times of programming 2506 on the channels in the broadcasting system. An embodiment of the present invention generates a graphical representation of the current time 2508. This graphical representation of the current time 2508 is displayed in proximity to the time bar 2504 so as to indicate the current time in relation to the times of programming on the channels of the broadcast system. This graphical representation of the current time 2508 is displayed as an inverted triangle on the time bar and includes a digital display of the current time.

In addition to the electronic program guide discussed herein, an embodiment of the multiple broadcasting system of the present invention provides an on screen menu display that enables the user to operate different functions of the system. **Figure 26** is an exemplary flowchart that illustrates the process for providing an on screen menu having differing transparency levels in one embodiment of the present invention.

In **Figure 26**, operation begins at Block 2602, at which an electronic menu display is generated. The menu display comprises multiple components, multiple alphanumeric characters, and multiple icons that identify different functions of the broadcast system. Operation continues at Block 2604, at which different levels of transparency are applied to the different electronic menu components. The different levels of transparency are applied to the components so that the number of opaque components is minimized and the background is highly transparent. Operation continues at Block 2606, at which the electronic menu is superimposed over the display of a program broadcast. While the opaque components are minimized, the obstruction of the video of the broadcast by the electronic menu

display is minimized. Preferably, the different transparency levels may be selected by the user.

When the user selects an electronic menu for display, then alphanumeric characters and icons are generated that identify different broadcast system functions. The user may select the transparency levels to be applied to the characters and icons of the electronic menu display. If the user does not select the transparency levels to be applied to the characters and icons of the electronic menu, then the multiple channel broadcasting system applies the least transparent level of transparency to the electronic menu icons. Furthermore, the multiple channel broadcasting system applies the least transparent level of transparency to the verbal description of the broadcasting system functions. Moreover, the multiple channel broadcasting system applies the most transparent level of transparency to the numerals of the electronic menu display.

Figure 27 illustrates the display of an on screen menu having differing transparency levels in one embodiment of the present invention. The electronic menu display 2702 comprises multiple components 2711-2719, multiple alphanumeric characters 2720-2722, and multiple icons 2731-2739 that identify different functions of the broadcast system. Different levels of transparency are applied to the different electronic menu components. The different levels of transparency are applied to the components so that the number of opaque components is minimized and the background is highly transparent. Following generation of the electronic menu 2702, the electronic menu 2702 is superimposed over a program broadcast 2750.

The invention has been described in conjunction with the preferred embodiment. Although the present invention has been described with reference to specific exemplary embodiments, it will be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the invention as set forth in the claims. Accordingly, the specification

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and drawings are to be regarded in an illustrative rather than a restrictive sense.

CLAIMS

What is claimed is:

1. In a multiple channel broadcasting system in which programs are broadcasted for display on a screen, a method for generating an on-screen guide for a user to select channels to view, comprising the steps of:

tuning to a channel to provide a display of a broadcast of a first program on the screen;

displaying an electronic program guide identifying channels and programming in the broadcasting system;

translating the display of a broadcast of the first program to a smaller broadcast window on the screen, said step of translating comprising the steps of superimposing at least one of a series of successively smaller broadcast window outlines over the display of the broadcast on the screen and displaying the broadcast in the smaller broadcast window; and

displaying the electronic program guide along with the broadcast on the screen, such that no portion of the broadcast is covered by the electronic program guide.

2. The method as set forth in claim 1, wherein a display information packet containing a description of the program is displayed with the electronic program guide.

3. The method as set forth in claim 2, wherein an electronic category guide is displayed with the electronic program guide.

4. The method as set forth in claim 1, further comprising the steps of:
displaying a first display information packet containing a description of said first program;
displaying a system pointer;

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manipulating said system pointer in response to input by said user to an area of the electronic program guide associated with a second program; and

replacing the display of the first display information packet with a display of a second display information packet containing a description of the second program.

5. The method as set forth in claim 4, further comprising the steps of:
indicating selection of a channel pointed by the pointer;
tuning said broadcast system to said channel if said channel is different from said first channel; and
removing the electronic program guide and display information packet in response to selection of a channel.

6. The method as set forth in claim 4, further comprising a method for generating an on-screen guide in a second mode for a user to select channels to view, comprising the steps of:

tuning to a first channel to provide a broadcast of a first program on the screen;

displaying an electronic program guide identifying a plurality of channels and programming on the channels;

displaying a first display information packet containing a description of said first program;

displaying a system pointer;

manipulating said system pointer in response to input by said user to an area of the electronic program guide associated with a second program; and

tuning said broadcasting system to said second program and displaying a second display information packet containing a description of said second program.

7. The method as set forth in claim 1, further comprising the steps of:
displaying a status indication on said electronic program guide that indicates to said user a status of said broadcasting system tuner;

displaying a status indication on said electronic program guide that indicates to said user a status of said system pointer.

8. The method set forth in claim 7, wherein said step of displaying said status indication of said broadcasting system tuner comprises the steps of:

displaying said channel program on said electronic program guide as appearing to be depressed into said screen when said broadcasting system is tuned to said channel program;

displaying said channel program on said electronic program guide as appearing to be protruding from said screen when said broadcasting system is not tuned to said channel program.

9. The method as set forth in claim 7, wherein said step of displaying said status indication of said system pointer comprises the steps of:

displaying said channel program on said electronic program guide as highlighted when said pointer is pointing to said channel program;

displaying said channel program on said electronic program guide as unhighlighted when said pointer is not pointing to said channel program.

10. The method as set forth in claim 1, further comprising the steps of:

displaying an electronic category guide; and

displaying a system pointer that can be manipulated in response to input by said user to an area of the electronic category guide.

11. The method as set forth in claim 10, wherein the user selects one of the plurality of categories, the selection displaying an electronic subcategory guide comprising the steps of:

displaying said selected category;

displaying a subcategory guide identifying a plurality of subcategories;