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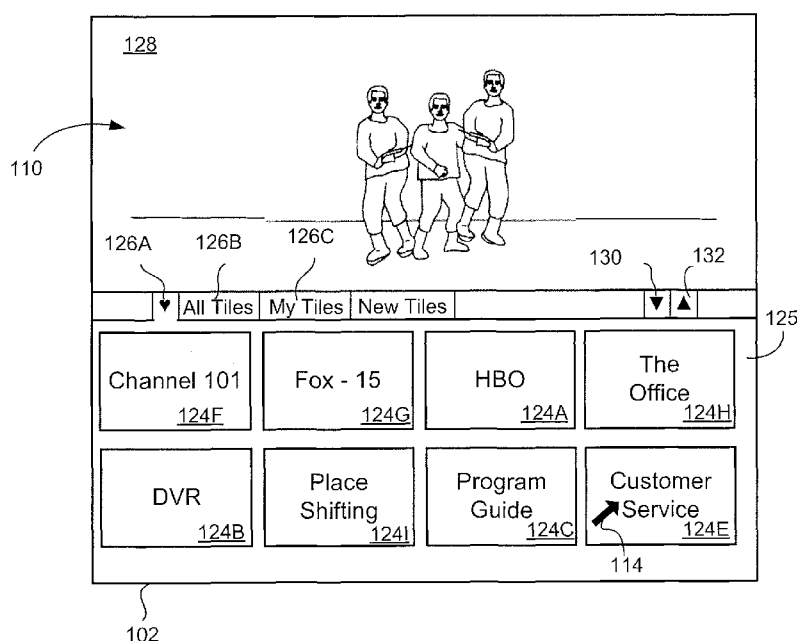
(54) Title: SYSTEMS AND METHODS FOR GRAPHICAL CONTROL OF USER INTERFACE FEATURES IN A TELEVI-
SION RECEIVER

FIG. 3

(57) Abstract: Systems and methods
provide for graphically providing fea-
tures on a set top box (STB) or other
television receiver in response to viewer
instructions received from a remote con-
trol. Imagery including various tiles
each corresponding to one of the pro-
vided features is presented on the dis-
play. A two-dimensional input is re-
ceived from the remote control that indi-
cates a selected one of the plurality of
tiles, and, in response to the received
two-dimensional input, the feature asso-
ciated with the selected tile is provided.



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**SYSTEMS AND METHODS FOR
GRAPHICAL CONTROL OF USER INTERFACE FEATURES IN A
TELEVISION RECEIVER**

PRIORITY CLAIM

[0001] This application claims priority to United States Non-Provisional Application Serial No. 12/241,599 entitled SYSTEMS AND METHODS FOR GRAPHICAL CONTROL OF USER INTERFACE FEATURES IN A TELEVISION RECEIVER and filed on September 30, 2008, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present invention generally relates to user interfaces in television receiver devices, and more particularly relates to systems and methods for providing graphical adjustment and control of user interface features provided by a television receiver device.

BACKGROUND

[0003] Most television viewers now receive their television signals through a content aggregator such as a cable or satellite television provider. For subscribers to a direct broadcast satellite (DBS) service, for example, television programming is received via a broadcast that is sent via a satellite to an antenna that is generally located on the exterior of a home or other structure. Other customers receive television programming through conventional television broadcasts, or through cable, wireless or other media. Programming is typically received at a receiver such as a “set top box” (STB) or other receiver that demodulates the received signals and converts the demodulated content into a format that can be presented to the viewer on a television or other display. In addition to receiving and demodulating television programming, many television receivers are able to provide additional features. Examples of features available in many modern television receivers include electronic program guides (EPGs), digital or other personal video recorders,

“place-shifting” features for streaming received content over a network or other medium, providing customer service information and/or the like.

[0004] Generally speaking, viewers interact with the STB or other receiver using some sort of user interface that receives inputs from a remote control or other input device. To change a channel, for example, the viewer typically depresses a “channel up/down” button, manually enters a number of a desired channel on a numeric keypad, and/or selects the new channel using a program guide feature of the receiver. Alternatively, viewers can often seek out programs using an EPG feature provided by the receiver. In general, the viewer tunes programs, selects features and otherwise interacts with the television receiver using conventional buttons on a remote control.

[0005] While conventional interfaces are useful for many purposes, there remains a continual desire for more efficient and intuitive user interfaces to the various features provided by the receiver. In particular, there is a desire to provide convenient access to user interface features using more advanced input techniques. It is therefore desirable to create systems and methods for improving the viewer interface to the television receiver. These and other desirable features and characteristics will become apparent from the subsequent detailed description and the appended claims, taken in conjunction with the accompanying drawings and this background section.

BRIEF SUMMARY

[0006] According to various exemplary embodiments, systems and methods are provided for graphically providing numeric inputs or other controls a set-top box (STB) or other video receiver.

[0007] In various embodiments, a method is provided for graphically features on a set top box (STB) or other television receiver in response to viewer instructions received from a remote control. Imagery including various tiles each corresponding to one of the provided features is presented on the display. A two-dimensional input is received from the remote control that indicates a selected one of the plurality of tiles, and, in response to the received two-dimensional input, the feature associated with the selected tile is provided.

[0008] In further embodiments, a method is provided for selecting a desired channel in a television receiver configured to present imagery on a display in

response to viewer instructions transmitted from a remote control. The method comprises presenting the imagery on the display, wherein the imagery comprises a plurality of tiles each corresponding to one of the plurality of features, receiving a two-dimensional input from the remote control that indicates a selected one of the plurality of tiles, wherein the selected one of the plurality of tiles has an associated channel number, and, in response to the received two-dimensional input, tuning the television receiver to the associated channel number to thereby present programming from the desired channel on the display.

[0009] Still other embodiments provide a video receiver for presenting imagery on a display in response to viewer input signals provided from a remote control. The receiver comprises a receiver interface configured to receive an incoming modulated signal, a decoder configured to decode the incoming modulated signal to extract a video signal, a wireless receiver configured to receive the viewer input signals from the remote control, wherein the viewer input is a two-dimensional input, and a processor. The processor is configured generate the imagery presented on the display, wherein the imagery comprises a plurality of tiles each corresponding to one of the plurality of features. The processor is further configured to receive the viewer input signals from the remote control, and, in response to the received two-dimensional input indicating a selected one of the plurality of tiles, to provide the feature associated with the selected tile.

[0010] Various other embodiments, aspects and other features are described in more detail below.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0011] Exemplary embodiments will hereinafter be described in conjunction with the following drawing figures, wherein like numerals denote like elements, and

[0012] FIG. 1 is a block diagram of an exemplary television receiver system;

[0013] FIG. 2 is a block diagram of an exemplary television receiver device;

[0014] FIG. 3 is a diagram of an exemplary screen display for receiving and processing inputs from the viewer; and

[0015] FIG. 4 is a flowchart showing an exemplary process for manipulating received viewer inputs in a television receiver or other device.

DETAILED DESCRIPTION

[0016] The following detailed description of the invention is merely exemplary in nature and is not intended to limit the invention or the application and uses of the invention. Furthermore, there is no intention to be bound by any theory presented in the preceding background or the following detailed description.

[0017] Generally speaking, the viewer is able to access channels, programs, program guide information, placeshifting features, customer service features and/or any other features through a graphical user interface that includes various tiles that can be selected using a two-dimensional input device. In various embodiments, the viewer manipulates a touchpad or other two-dimensional input feature incorporated within a remote control to direct a cursor toward one or more tiles. By selecting the tile, a feature associated with the tile can be accessed. Features that can be associated with tiles include tuning particular channels or programs, setting recordings or other features associated with a PVR or placeshifting feature, accessing further menuing features provided by the receiver, and/or the like. Further, in many embodiments, the features associated with one or more tiles may be individually configured by the viewer and/or a content provider to customize the interface provided to the viewer by the receiver.

[0018] Turning now to the drawing figures and with initial reference to FIG. 1, an exemplary system 100 for presenting television signals to a viewer suitably includes a receiver 108 that receives signals 105 in any format and generates appropriate outputs 107 to generate imagery 110 on display 102. Typically, receiver 108 interacts with signals 129 received from a wireless remote control 112 to present television imagery 110 on display 102 as desired by the viewer. The various features presented in imagery 110 may vary widely from embodiment to embodiment. The relative spacing, proportions and locations of the various windows and other features described herein, for example, are entirely exemplary, and may vary widely in other embodiments. Other embodiments may similarly add or omit certain features, or use the various features for purposes other than those described herein.

[0019] Television imagery is presented on display 102 in any manner. Further, two-dimensional navigation features may be presented to allow the viewer to access various features of receiver 108 through control of a cursor 114 or other interface feature via remote control 112. In various embodiments, cursor 114 is able to move in response to two-dimensional input signals 129, which are, in turn, generated in

response to inputs applied to two-dimensional input device 123. By moving cursor 114 to interact with the two-dimensional navigation features presented on display 102, various channels, programs, and/or other features may be tuned, activated or otherwise manipulated as desired.

[0020] Receiver 108 is any component, device or logic capable of receiving and decoding video signals 105. In various embodiments, receiver 108 is a set-top box (STB) or the like capable of receiving satellite, cable, broadcast and/or other signals encoding audio/visual content. Receiver 108 may further demodulate or otherwise decode the received signals 105 to extract programming that can be locally viewed on display 102 as desired. Receiver 108 may also include a content database stored on a hard disk drive, memory, or other storage medium to support a digital or other personal video recorder (DVR/PVR) feature in some embodiments. Receiver 108 may also provide place shifting, electronic program guide, multi-stream viewing and/or other features as appropriate.

[0021] In the exemplary embodiment illustrated in FIG. 1, receiver 108 is shown receiving digital broadcast satellite (DBS) signals 105 from a satellite 106 at an antenna 104. Equivalent embodiments, however, could receive programming 105 from one or more programming sources, including any sort of satellite, cable or broadcast source, as well as any Internet or other network source or the like. In embodiments that include DVR functionality, programming may be stored in any sort of database as desired (e.g., in response to user/viewer programming instructions) for subsequent viewing. Content may also be received from digital versatile disks (DVDs) or other removable media in some embodiments.

[0022] Display 102 is any device capable of presenting imagery 110 to a viewer. In various embodiments, display 102 is a conventional television set, such as any sort of television operating in accordance with any digital or analog protocols, standards or other formats. Display 102 may be a conventional NTSC or PAL television receiver, for example. In other embodiments, display 102 is a monitor or other device that may not include built-in receiver functionality, but that is nevertheless capable of presenting imagery in response to signal 107 received from receiver 108. In various embodiments, receiver 108 and display 102 may be physically combined or interconnected in any manner. A receiver card, for example, could be inserted into a slot or other interface in a conventional television, or the functionality of receiver 108 may be provided within a conventional television display 102. In other

embodiments, signals 107 are transferred between receiver 108 and display 102 using any sort of cable or other interface (including a wireless interface). Examples of common interfaces include, without limitation, component video, S-video, High-Definition Multimedia Interface (HDMI), Digital Visual Interface (DVI), IEEE 1394, and/or any other formats as desired.

[0023] Remote control 112 is any sort of control device capable providing signals 129 to receiver 108 that represent inputs received from one or more viewers. Typically, remote control 112 is an infrared, radio frequency (RF) or other wireless remote that includes any number of buttons or other features for receiving viewer inputs. In an exemplary embodiment, remote control 112 communicates with receiver 108 using the IEEE 802.15.4 (“ZIGBEE”) protocol for wireless personal area networks (WPANs), although other embodiments may instead communicate using IEEE 802.15.1 (“BLUETOOTH”), IEEE 802.11 (“WI-FI”), conventional infrared, and/or any other wireless techniques. In some embodiments, remote control 112 may be able to support multiple types of wireless communication, such as ZIGBEE communications and also infrared communications. This feature may be useful when remote control 112 is a so-called universal remote that is able to provide input signals 129 to multiple devices.

[0024] Remote control 112 generally includes any sort of buttons, sliders, rocker switches and/or other features for receiving physical inputs from the viewer. As the user depresses or otherwise interacts with the features, remote control 112 suitably produces wireless signals 129 in response. In further embodiments, remote control 112 includes a two-dimensional input device 123 that is able to receive inputs from the user in any multi-dimensional format (e.g., “X,Y”, “r,Θ”, and/or the like). Examples of two-dimensional input devices 123 that could be used in various embodiments include, without limitation, touchpads, directional pads, joysticks, trackballs, sets of arrows or other buttons, and/or the like. In a typical implementation, two-dimensional input device 123 provides coordinates or other signals 129 that indicate absolute (e.g., “X,Y”) and/or relative (e.g., “ΔX,ΔY”) movement in two or more dimensions. Such signals 129 may be decoded at controller 108 or elsewhere to coordinate the viewer’s actions with respect to input device 123 to movement of cursor 114 or other features presented on display 102.

[0025] In the exemplary embodiment shown in FIG. 1, remote control 112 is illustrated with a touchpad-type device 123 that accepts viewer inputs applied with a

finger, stylus or other object. FIG. 1 also shows touchpad device 123 as having dedicated scroll regions 122 and 127 for vertical and horizontal scrolling, respectively. Viewer movements within region 122 that are more-or-less parallel to the right edge of device 123, for example, could result in vertical scrolling, whereas movements within region 127 that are more-or-less parallel to the bottom edge of device 123 could result in horizontal scrolling. Dedicated scrolling regions 122, 127 are optional features, however, that may not be present in all embodiments. Further, scrolling could be implemented in any other manner.

[0026] In operation, then, receiver 108 suitably receives television signals 105 from a satellite, cable, broadcast or other source. In a satellite based embodiment, for example, one or more channels can be extracted from a conventional satellite feed; the video content on the selected channel can be demodulated, extracted and otherwise processed as appropriate to display the desired content to the viewer. One or more cable or broadcast channels may be similarly obtained in any manner. In some embodiments, receiver 108 may obtain multiple channel signals from different sources (e.g., one channel from a cable or satellite source and another channel from a terrestrial broadcast, DVD or other source).

[0027] Receiver 108 suitably obtains the desired content from the channel(s) indicated by the viewer, and presents the content on display 102. In various embodiments, viewers are able to further view imagery (e.g., the imagery 110 shown in FIG. 1) that is responsive to two-dimensional inputs generated using remote control 112. By moving cursor 114 with respect to imagery 110, for example, tiles or other features can be pointed and selected to activate various features of receiver 108. A viewer may tune receiver 108 to a particular channel or program, for example, by directing cursor 114 toward a tile that is associated with the desired feature, and then depressing a select or enter key on the remote 112 to select the indicated feature. Selected features may be displayed or otherwise activated as desired.

[0028] Imagery 110 may be organized and presented in any manner. In the exemplary embodiment shown in FIG. 1, imagery 110 includes any number of tiles 124A-E that are organized into one or more windows 125. Imagery 110 also includes icons or other features 130, 132 for decreasing or increasing (respectively) the size of window 125. Selecting feature 130 with cursor 114, for example, could result in window 125 being removed from imagery 110, whereas selecting feature 132 could

increase the size of window 125 so that more tiles 124 are viewable. In some embodiments, selecting feature 132 creates a full-screen view of tile window 125, although in other embodiments this may not be the case. Exemplary imagery 110 in FIG. 1 also shows decoded television imagery presented in window 128. Other embodiments may show generated imagery (e.g., program guide information or the like) when tile window 125 is visible. FIG. 1 also shows several tabs 126A-C that allow for different tile windows 125 to be presented. In the embodiment shown in FIG. 1, tab 126A corresponds to an initial or default view, tab 126A corresponds to a view of all available tiles, and tab 126C corresponds to a window that presents a sub-set of tiles selected by the viewer. Additional tabs 126 could also be provided to allow for multiple custom tile sets, or other features as desired. The particular content presented as part of imagery 110, as well as the layout, spacing, dimensions and particular presentation style of such content, may vary significantly from embodiment to embodiment.

[0029] In the exemplary embodiment shown in FIG. 1, various interface tiles 124A-E are each associated with a program, network, or other feature of receiver 108. Tile 124A, for example, is associated with a television network (e.g., Home Box Office). Tile 124B is shown associated with a digital video recorder. Tile 124C is shown associated with an electronic program guide, and tiles 124D and 124E are shown associated with a search feature and a customer service feature, respectively. Selecting tiles 124B or 124C in this example could open up interface windows related to the DVR or EPG features, respectively, whereas selecting tile 124D could lead to an interface feature that would allow the viewer to search for programs or other content available via a DVR, the EPG, a placeshifting device, or any other source as desired. Customer service tile 124E could allow the viewer to access customer service information such as instructions on using receiver 108, billing information, information that allows for purchase or expansion of services, or any other features as desired.

[0030] The particular tiles 124A-E shown in FIG. 1 are purely exemplary, and alternate embodiments may provide additional tiles, alternate tiles or fewer tiles as appropriate. Moreover, the various tiles may have any shape, appearance or the like. Although tiles 124A-E in FIG. 1 are generally square or rectangular in shape, other embodiments could provide tiles that are round, or that have any regular or irregular shape whatsoever. Further, the information identifying each tile 124A-E

need not be purely textual as shown in FIG. 1; alternate embodiments may provide tiles 124A-E with any sort of graphic, logo, text, numerical information and/or the like.

[0031] In various embodiments, the particular tiles displayed on any window 126 are configurable so that the viewer and/or a service provider are able to choose particular tiles for presentation on display 102. Tab 126C, for example, may allow a customized set of tiles to be provided for a particular viewer or receiver 104. Tabs 126 may be selected in any manner. Viewers may be able to drag tiles, for example, from the default view (tab 126A) or another view (e.g., the “all tiles” tab 126B) to the custom tile view (e.g., tab 126C). Other embodiments may select tabs for custom lists in any other manner. Further, the features performed by certain tiles may be configurable. A “favorite channel” tile, for example, could be configured to tune to a channel that is configurable by the viewer, since this feature would vary from viewer to viewer. Other parameters may be adjusted based on temporal factors, viewer preferences, and/or other factors as appropriate.

[0032] FIG. 2 provides additional detail about an exemplary receiver 108 that includes a receiver interface 208, a decoder 214 and a display processor 218, as appropriate. FIG. 2 also shows a disk controller interface 206 to a disk or other storage device 110, an interface 210 to a local or wide area network, a transport select module 212, a display interface 228, an RF receiver module and control logic 205. Other embodiments may incorporate additional or alternate processing modules from those shown in FIG. 2, may omit one or more modules shown in FIG. 2, and/or may differently organize the various modules in any other manner different from the exemplary arrangement shown in FIG. 2.

[0033] Receiver 108 may be physically and logically implemented in any manner. FIG. 2 shows various logical and functional features that may be present in an exemplary device; each module shown in the figure may be implemented with any sort of hardware, software, firmware and/or the like. Any of the various modules may be implemented with any sort of general or special purpose integrated circuitry, for example, such as any sort of microprocessor, microcontroller, digital signal processor, programmed array and/or the like. Any number of the modules shown in FIG. 2, for example, may be implemented as a “system on a chip” (SoC) using any suitable processing circuitry under control of any appropriate control logic 205. In various embodiments, control logic 205 executes within an integrated

SoC or other processor that implements receiver interface 208, transport selector 212, decoder 214, display processor 218, disk controller 206 and/or other features, as appropriate. The Broadcom Corporation of Irvine, California, for example, produces several models of processors (e.g., the model BCM 7400 family of processors) that are capable of supporting SoC implementations of satellite and/or cable receiver systems, although products from any number of other suppliers could be equivalently used. In still other embodiments, various distinct chips, circuits or components may be inter-connected and inter-relate with each other to implement the receiving and decoding functions represented in FIG. 2.

[0034] Various embodiments of receiver 108 therefore include any number of appropriate modules for obtaining and processing media content as desired for the particular embodiment. Each of these modules may be implemented in any combination of hardware and/or software using logic executed within any number of semiconductor chips or other processing logic.

[0035] Various embodiments of control logic 205 can include any circuitry, components, hardware, software and/or firmware logic capable of controlling the various components of receiver 108. Various routines, methods and processes executed within receiver 108 are typically carried out under control of control logic 205, as described more fully below. Generally speaking, control logic 205 receives user input signals 129 (FIG. 1) via an RF receiver interface 232 that is able to communicate with the remote control 112 using a suitable antenna 234. Control logic receives user inputs from remote control 112 and/or any other source, and directs the other components of receiver 108 in response to the received inputs to present the desired imagery on display 102.

[0036] As noted above, receiver 108 suitably includes a receiver interface 208, which is any hardware, software, firmware and/or other logic capable of receiving media content via one or more content sources 105. In various embodiments, content sources 105 may include cable television, direct broadcast satellite (DBS), broadcast and/or other programming sources as appropriate. Receiver interface 208 appropriately selects a desired input source and provides the received content to an appropriate destination for further processing. In various embodiments, received programming may be provided in real-time (or near real-time) to a transport stream select module 212 or other component for immediate decoding and presentation to the user. Alternatively, receiver interface 208 may provide

content received from any source to a disk or other storage medium in embodiments that provide DVR functionality. In such embodiments, receiver 108 may also include a disk controller module 206 that interacts with an internal or external hard disk, memory and/or other device that stores content in a database 110, as described above.

[0037] In the embodiment shown in FIG. 2, receiver 108 also includes an appropriate network interface 210, which operates using any implementation of protocols or other features to support communication by receiver 108 on any sort of local area, wide area, telephone and/or other network. In various embodiments, network interface 210 supports conventional LAN, WAN or other protocols (e.g., the TCP/IP or UDP/IP suite of protocols widely used on the Internet) to allow receiver 108 to communicate on the Internet or any other network as desired. Network interface 210 typically interfaces with the network using any sort of LAN adapter hardware, such as a conventional network interface card (NIC) or the like provided within receiver 108. Other embodiments may provide interfaces 210 to conventional telephone lines or other communications channels, or may omit network connectivity altogether.

[0038] Transport stream select module 212 is any hardware and/or software logic capable of selecting a desired media stream from the available sources. In the embodiment shown in FIG. 2, stream select module 212 is able to generate video signals for presentation on one or more output interfaces 228. Typically, transport select module 212 responds to viewer inputs (e.g., via control logic 205) to simply switch encoded content received from a broadcast, satellite, cable or other source 105 or from storage 110 to one or more decoder modules 214.

[0039] Receiver 108 may include any number of decoder modules 214 for decoding, decompressing and/or otherwise processing received/stored content as desired. Generally speaking, decoder module 214 decompresses, decodes and/or otherwise processes received content from stream select module 212 to extract an MPEG or other media stream encoded within the stream. The decoded content can then be processed by one or more display processor modules 218 to create a presentation on display 102 (FIG. 1) for the viewer in any appropriate format. FIG. 2 shows a single decoder module 214 operating on one television signal received from transport select module 212. In practice, any number of decoder modules 214 may be used, particularly in “picture in picture” (PIP) situations when multiple

signals are simultaneously decoded and displayed. The term “decoder”, then, may collectively apply to one or more decoder modules that are able to decode one or more signals for presentation on display 104.

[0040] Display processor module 218 includes any appropriate hardware, software and/or other logic to create desired screen displays via display interface 228 as desired. Such displays may include combining signals received from one or more decoder modules 214 to facilitate viewing of one or more channels. In various embodiments, display processing module 218 is also able to produce on screen displays (OSDs) for electronic program guide, setup and control, input/output facilitation and/or other features that may vary from embodiment to embodiment. Such displays are not typically contained within the received or stored broadcast stream, but are nevertheless useful to users in interacting with receiver 108 or the like. The generated displays, including received/stored content and any other displays may then be presented to one or more output interfaces 228 in any desired format. The various interface features described herein, for example, may be generated by display processor module 218 operating alone or in conjunction with control logic 205.

[0041] Display processor 218 may also generate imagery 110 in response to viewer inputs received (and/or in response to instructions from command logic 205) to thereby make up a user interface that allows the viewer select channels or programs, or to perform other tasks as desired. When the viewer provides inputs at tiles 124 or any other user interface features, for example, display processor 218 may be operable to draw (or redraw) imagery 110 in response, and/or to present television content identified by the viewer, as appropriate. As receiver 108 receives user inputs 129 from remote control 112, control logic 205 may direct display processor 218 to adjust any feature(s) of imagery 110 as directed by the viewer. Display processor 218 therefore directs the presentation of imagery 110 in conjunction with one or more navigation features, and adjusts the imagery 110 in response to inputs received from the viewer.

[0042] Display processor 218 produces an output signal encoded in any standard format (e.g., ITU656 format for standard definition television signals or any format for high definition television signals) that can be readily converted to standard and/or high definition television signals at interface 228. In other embodiments,

the functionality of display processor 218 and interface 228 may be combined in any manner.

[0043] FIG. 3 shows an exemplary presentation of imagery 110 that includes any number of tiles 124A-I and that would allow a viewer to select features using a remote control 112 with two-dimensional input capability. Other embodiments may incorporate imagery 110 of different sizes and configurations, and/or may allow for additional or other features in any manner. Practical views of imagery 110 presented on display 102 may vary widely from that shown in FIG. 3 without departing from the concepts discussed herein.

[0044] In the embodiment shown in FIG. 3, the viewer guides cursor 114 over one or more tiles 124 or other images associated with imagery 110 using the touchpad, motion sensor or other two-dimensional feature 123 associated with remote control 112. When the cursor 114 is positioned as desired, the viewer may be able to select the tile 124 or other feature by depressing a “select” or “enter” key, as appropriate. The “select” key may be a button or trigger on remote 112, for example, or may be any other interface feature as desired.

[0045] As noted above, the particular features executed by any particular tile can vary widely from embodiment to embodiment, and even from tile to tile. Selecting a network tile (e.g., tile 124A), for example, may result in any actions associated with that network being executed. A particular channel could be tuned, for example, or other features could be provided as appropriate. Such features may include, for example, specific information about the network or programs produced by the network. Other features could include scheduling or program guide information that is specific to the network. In still other embodiments, the viewer may be able to select and view preview clips, informational clips, or other additional content about programs shown on the associated network. Such information may be downloaded, for example, via a digital network or via satellite, cable and/or other programming signals 105 delivered to receiver 108. In some embodiments, tiles (e.g., network tile 124A) could be sponsored tiles in which a DBS, cable or other television service provider send instructions to receiver 108 to display a sponsored tile 124A at appropriate times.

[0046] Similarly, tiles associated with particular programs (e.g., tile 124H in FIG. 3) could be associated with any features relating to that program. In some embodiments, program tile 124H may be visible only when the associated program

is being broadcast, thereby allowing the program to be immediately tuned by receiver 108 upon selection of tile 124H. In other embodiments, selecting tile 124H could result in setting a DVR to record an upcoming showing of the program. In still other embodiments, selecting tile 124H may result in the viewer being presented with additional information about the associated program, such as “behind the scenes” informational clips, clips of interviews with people associated with the program, episode previews, or even entire episodes for download, “on demand” viewing, or other features as desired. In various embodiments, some or all of the content presented in response to selection of program tile 124H is downloaded from a program source (e.g., satellite 106, or any service provider resource associated with any sort of DBS, cable or broadcast service) beforehand. In still other embodiments, selecting a program tile 124H results in information about the associated program being downloaded from a remote source. Such download may take place immediately (e.g., over a digital network), or at a later time as appropriate.

[0047] Channel tiles (e.g., tiles 124F-G) may be associated with particular channels in any manner. Selection of these tiles may result in the particular channel being immediately tuned by receiver 108 so that programming on that channel can be presented. In other embodiments, program guide information for that channel can be displayed so the viewer can see upcoming programming on that channel. In still other embodiments, particular channels may provide other information (e.g., RSS feeds for weather, traffic, local news and/or other information) that can be displayed in response to selection of the tile. Other features may be alternately or additionally provided as desired.

[0048] As noted above, other tiles could be formulated for any purpose or feature. Other tiles may allow for viewer settings, for example, that would allow the viewer to configure receiver 108 in any manner. Tiles 124B, 124C, 124I shown in FIG. 3 provide for DVR, EGP, or placeshifting features, respectively; simply clicking on these tiles could bring up a window or other interface associated with the selected feature. Again, additional or alternate features may be provided as well.

[0049] FIG. 4 shows an exemplary process 400 for graphically processing inputs in a television receiver or the like. In various embodiments, the steps shown in FIG. 4 may be executed using source or object code in any format that may be stored in mass storage, firmware, memory or any other digital storage medium within

receiver 108. Such code may be executed by any module or combination of modules operating within receiver 108. In an exemplary embodiment, some or all of the steps shown in process 400 are executed by control logic 205 (FIG. 2) operating alone or in conjunction with a display processing module 218 and/or the various other features shown in FIG. 2 and described above. While FIG. 4 specifically shows a technique for tuning channels on a television receiver, the concepts set forth in the figure and accompanying text could be used to perform other tasks, such as recording programs, selecting programs, searching and/or taking other actions as appropriate. The various steps and actions set forth in FIG. 4 may therefore be supplemented or otherwise modified in any manner.

[0050] With reference now to FIG. 4, an exemplary method 400 for graphically providing various features in a television receiver 108 suitably includes the broad steps of displaying imagery 110 that includes one or more tiles 124 (step 402), receiving inputs from a two-dimensional input device 123 (step 404), and processing the received inputs as appropriate to provide the various features directed by the viewer (step 406). Selection and providing of features may be repeated (step 410) on any regular, irregular or other basis. The steps of method 400 may take place in any other temporal order other than that shown in FIG. 4, and/or additional or alternate steps may be provided in alternate embodiments. The actual steps shown in FIG. 4 may be combined or omitted in still other embodiments.

[0051] Step 402 suitably involves presenting imagery 110 with one or more tiles 124 (e.g., tiles 124A-I in FIGS. 1 and 3). As noted above, each tile appropriately corresponds to one or more desired features provided by receiver 104; examples of such features include channel or program tuning, providing content associated with a network, channel, program, DVR, EPG, placeshifting feature, customer service feature, and/or the like. In various embodiments, tiles 124 are incorporated within any sort of imagery 110 generated by display processing module 218 and presented on display 102.

[0052] The viewer interacts with the presented tiles 124 in any manner. As noted above, in various embodiments the viewer provides inputs to receiver 104 using a remote control 112 that incorporates a two-dimensional input device 123 such as a touchpad, motion sensor, directional pad, joystick, trackball and/or the like. Signals 129 from remote control 112 provide receiver 104 with appropriate

information to direct the position of cursor 114 on imagery 110, and to indicate viewer selections of tiles 124 as appropriate.

[0053] In response to the viewer selecting a tile 124, receiver 104 suitably provides the feature(s) associated with the selected tile in any manner (step 408). The particular features, as noted above, can vary significantly from embodiment to embodiment and tile to tile. Some features may include tuning to a selected channel or program, providing downloaded content, providing an interface for additional options (e.g., channel selection, placeshifting, recording, search, device configuration, preference selection and/or the like), or taking any other actions as appropriate. As noted above, the tiles 124 presented in imagery 110 may be configurable by the viewer in any manner, as may the features executed by one or more tiles 124. Accordingly, new systems and techniques are presented for graphically providing various features in a television receiver or the like using two-dimensional graphical interaction between the viewer and a tile or other feature presented on display 102.

[0054] As used herein, the word “exemplary” means “serving as an example, instance, or illustration.” Any implementation described herein as exemplary is not necessarily to be construed as preferred or advantageous over other implementations.

[0055] While the foregoing detailed description will provide those skilled in the art with a convenient road map for implementing various embodiments of the invention, it should be appreciated that the particular embodiments described above are only examples, and are not intended to limit the scope, applicability, or configuration of the invention in any way. To the contrary, various changes may be made in the function and arrangement of elements described without departing from the scope of the invention.

CLAIMS

What is claimed is:

1. A method for graphically providing a plurality of features in a television receiver configured to present imagery on a display in response to viewer instructions received from a remote control, the method comprising:
 - presenting the imagery on the display, wherein the imagery comprises a plurality of tiles each corresponding to one of the plurality of features;
 - receiving a two-dimensional input from the remote control that indicates a selected one of the plurality of tiles; and
 - in response to the received two-dimensional input, providing the feature associated with the selected tile.
2. The method of claim 1 wherein the features associated with at least some of the plurality of tiles are configurable by the viewer.
3. The method of claim 1 wherein at least some of the plurality of tiles presented on the display are selected by the viewer.
4. The method of claim 1 wherein at least one of the plurality of tiles is associated with a television channel.
5. The method of claim 1 wherein at least one of the plurality of tiles is associated with a television program.
6. The method of claim 1 wherein at least one of the plurality of tiles is associated with an electronic program guide.
7. The method of claim 1 wherein at least one of the plurality of tiles is associated with a placeshifting feature.
8. The method of claim 1 wherein at least one of the plurality of tiles is associated with a customer service feature.

9. The method of claim 1 wherein at least one of the plurality of tiles is associated with content downloaded to the television receiver.

10. The method of claim 1 further comprising receiving an instruction from a remote server to present at least one of the plurality of tiles as part of the imagery presented on the display.

11. The method of claim 1 further comprising identifying the selected one of the plurality of tiles based upon a position of a cursor that moves within the imagery presented on the display in response to viewer input signals received from the remote control.

12. A method for selecting a desired channel in a television receiver configured to present imagery on a display in response to viewer instructions transmitted from a remote control, the method comprising:

presenting the imagery on the display, wherein the imagery comprises a plurality of tiles each corresponding to one of the plurality of features;

receiving a two-dimensional input from the remote control that indicates a selected one of the plurality of tiles, wherein the selected one of the plurality of tiles has an associated channel number; and

in response to the received two-dimensional input, tuning the television receiver to the associated channel number to thereby present programming from the desired channel on the display.

13. The method of claim 12 wherein the channel number associated with the selected tile is configurable by the viewer.

14. A video receiver for presenting imagery on a display in response to viewer input signals provided from a remote control, the receiver comprising:

a receiver interface configured to receive an incoming modulated signal;

a decoder configured to decode the incoming modulated signal to extract a video signal;

a wireless receiver configured to receive the viewer input signals from the remote control, wherein the viewer input is a two-dimensional input; and

a processor configured generate the imagery presented on the display, wherein the imagery comprises a plurality of tiles each corresponding to one of the plurality of features, and wherein the processor is further configured to receive the viewer input signals from the remote control, and, in response to the received two-dimensional input indicating a selected one of the plurality of tiles, to provide the feature associated with the selected tile.

15. The video receiver of claim 14 wherein the receiver interface comprises a satellite interface.

16. The video receiver of claim 14 wherein the receiver interface comprises a cable interface.

17. The video receiver of claim 14 wherein the wireless receiver is configured to receive the two-dimensional input signals from a wireless remote control comprising a two-dimensional input device.

18. The video receiver of claim 14 wherein the two-dimensional input device is one of the group consisting of: a touchpad, a trackball, a joystick, a directional pad, and a motion sensor.

19. The video receiver of claim 14 wherein the processor is further configured to allow the viewer to configure the particular features associated with at least some of the plurality of tiles.

20. The video receiver of claim 14 wherein the processor is further configured to identify the selected one of the plurality of tiles based upon a position of a cursor that moves on the display in response to the viewer input signals.

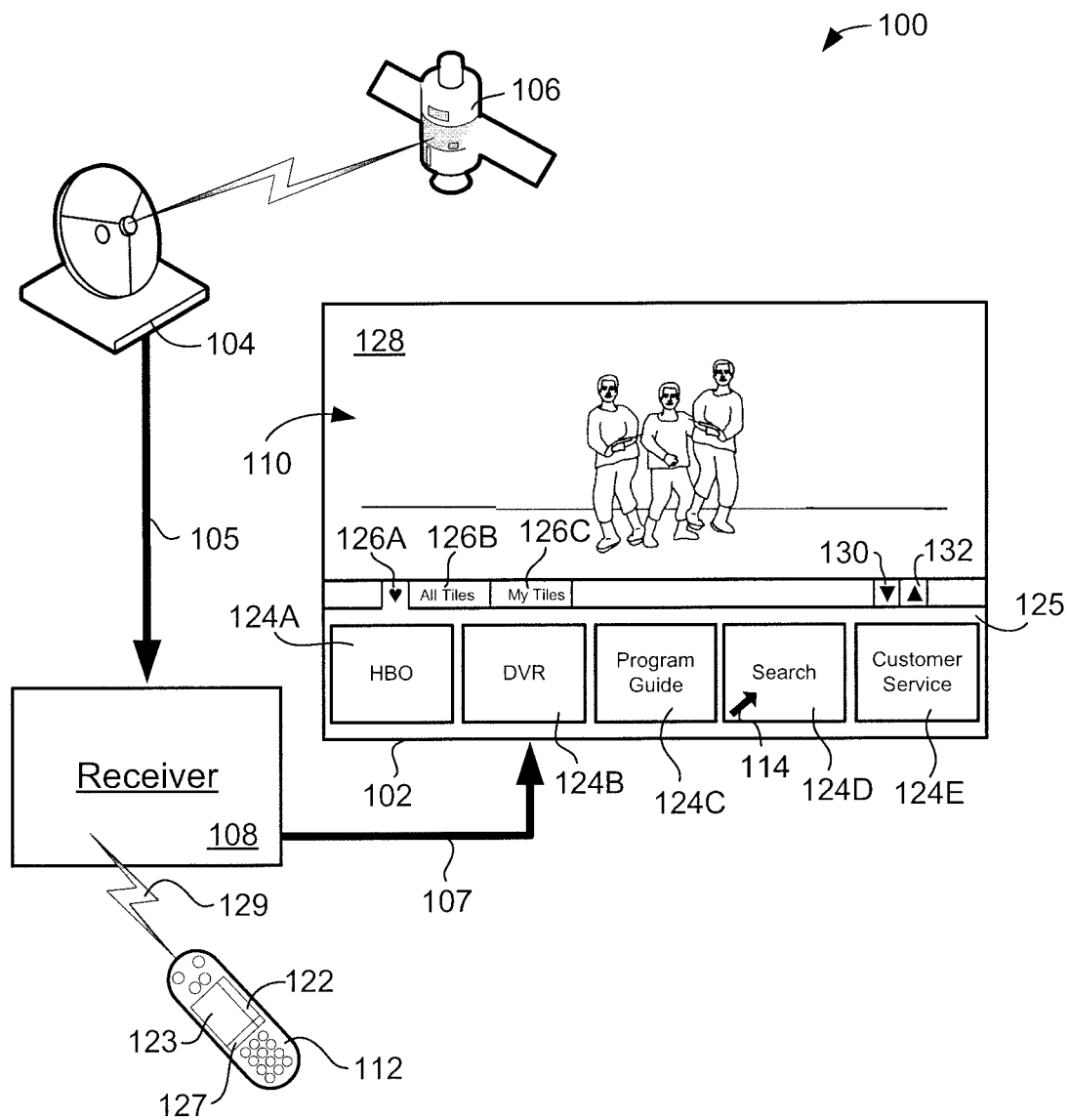


FIG. 1

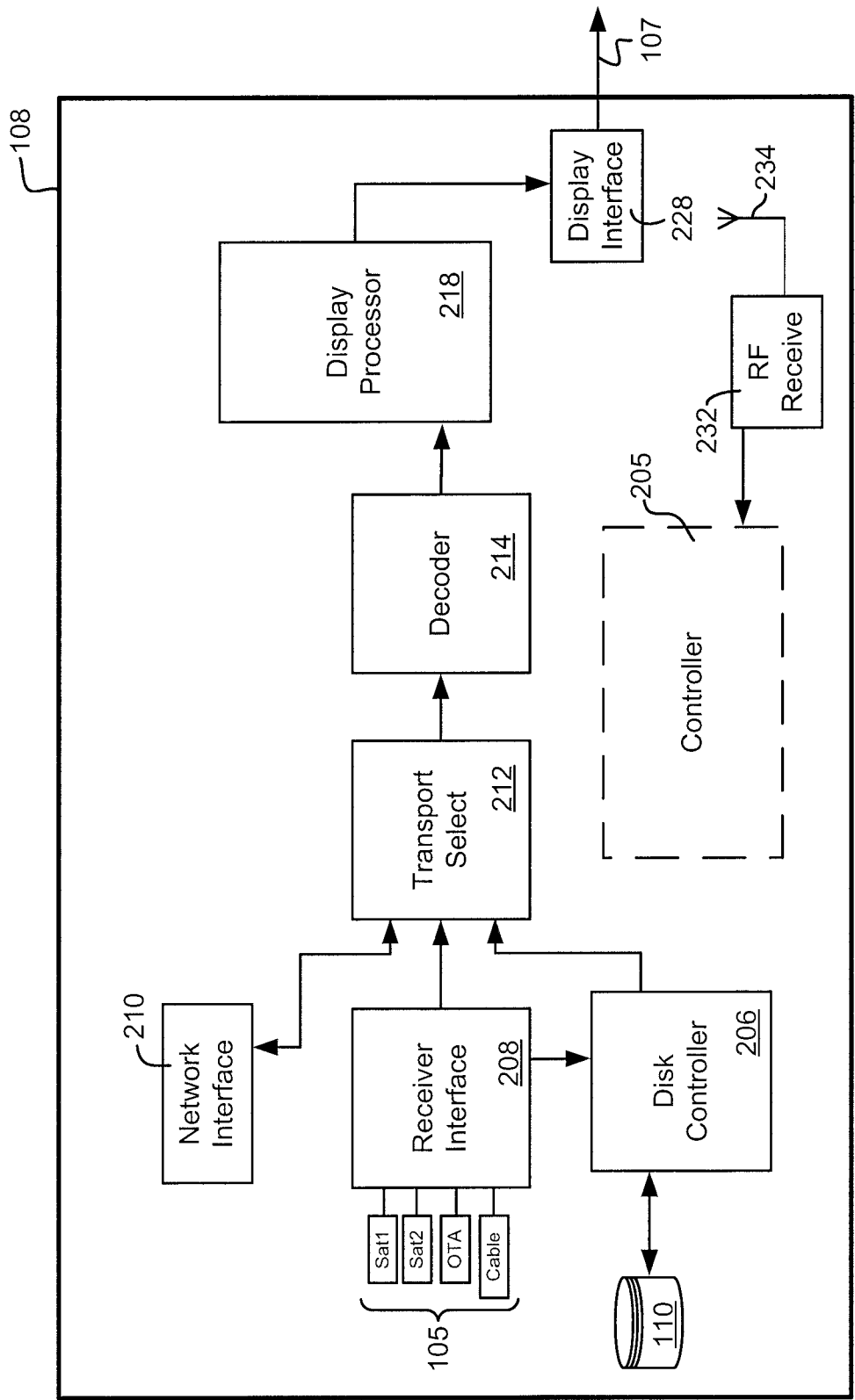


FIG. 2

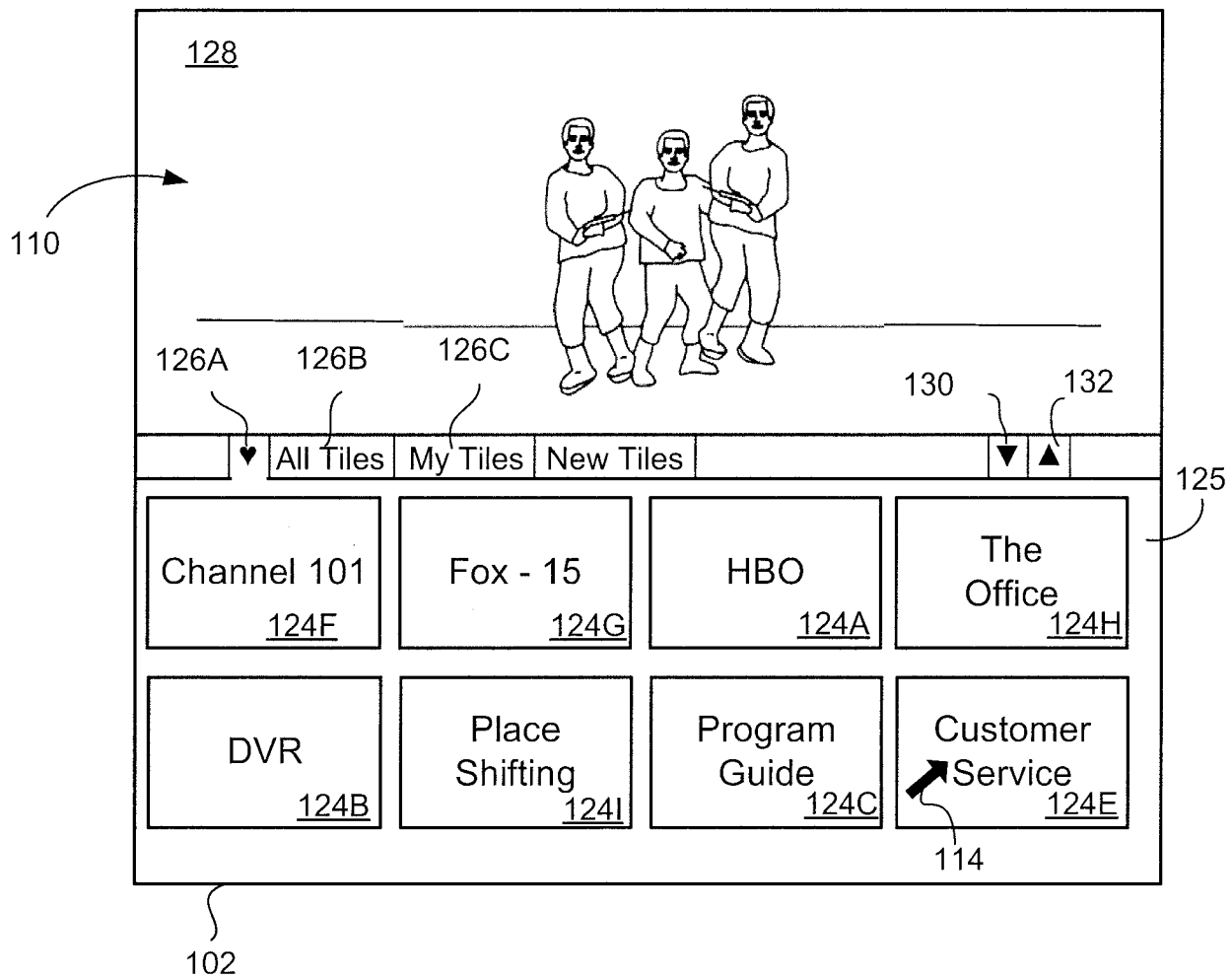


FIG. 3

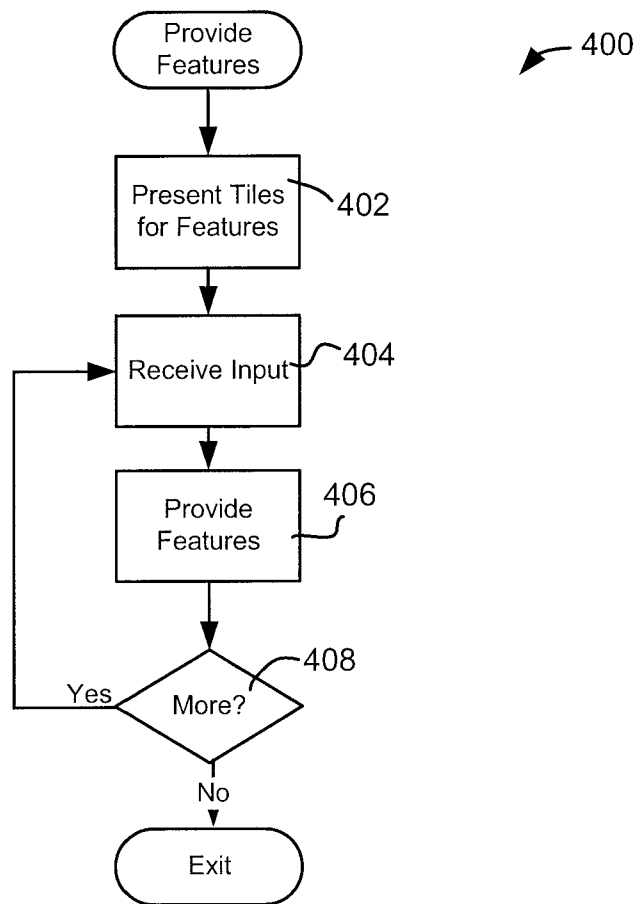


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/058457

A. CLASSIFICATION OF SUBJECT MATTER
 INV. H04N5/445 H04N5/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	WO 01/78054 A1 (INTERLINK ELECTRONICS INC [US]; SEGAL JACK A [US]; YATES WILLIAM ALLEN) 18 October 2001 (2001-10-18) abstract page 1, line 4 - line 21 page 3, line 9 - page 5, line 10 page 8, line 16 - page 11, line 7 page 12, line 22 - line 24 page 14, line 3 - page 15, line 14 page 15, line 1 - line 14 page 17, line 3 - page 21, line 20 page 23, line 9 - line 13 figures 1-18 ----- -/--	1,3-8, 11-12, 14-18,20 2,9-10, 13,19

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

G document member of the same patent family

Date of the actual completion of the international search

30 November 2009

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Schreib, Franz

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/058457

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	US 2007/061724 A1 (SLOTHOUBER LOUIS P [US] ET AL) 15 March 2007 (2007-03-15) abstract paragraph [0004] - paragraph [0005] paragraph [0011] - paragraph [0012] paragraph [0027] paragraph [0033] - paragraph [0038] paragraph [0041] figures 1-3,8(a)-8(h) -----	9-10
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International application No

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